PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY
A Company setup under Section 42 of the Companies Ordinance, 1984 (now Companies Act, 2017)

PIE/OGRA/CEO/0365
09th February 2022

To: Chairman
Oil & Gas Regulatory Authority (OGRA)
54-B, Fazal-e-Haq Road, Blue Area
Islamabad

Subject: **SUBMISSION OF PETITION FOR GRANT OF GAS DISTRIBUTION AND SALES LICENSE FOR QUAID-E-AZAM BUSINESS PARK (QABP) SHEIKHUPURA**

Dear Sir:

Punjab Industrial Estates Development and Management Company (PIEDMC) is the largest developer and operator of industrial estates in Pakistan. PIEDMC has been establishment u/s 42 of the Companies Ordinance 1984 (now Company Act 2017) and is fully owned by Government of the Punjab.

The industrial estates of PIEDMC are located in nine districts of the Punjab. Quaid-e-Azam Business Park (QABP), located in Sheikhupura, is also one of our project. QABP, spanning over 1536 acres, is one of the landmark project of the Government with the potential to provide enormous social and economic benefits. QABP has been formally notified as "Special Economic Zone" (SEZ) by Government of Pakistan, vide BOI's notification no. SRO (I)/2020, dated 07-12-202 (copy attached).

PIEDMC is committed to provide best services to its industrialists including supplying gas through one-stop shop/ one window concept.

To achieve the above objective, we hereby submit an application for grant of 'gas distribution and sales license' (with all annexures) for Quaid-e-Azam Business Park project as per Natural Gas Regulatory Authority (Licensing) Rules, 2002.

You are requested to please process and approve our application.

Thanking you.

(ALI MUAZZAM SYED)
Chief Executive Officer

Copy to:
- PS to Minister Industries, Punjab
- PS to Secretary, ICI & SD Department
- PS to Secretary, Board of Investment (BOI), Islamabad

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CERTIFICATION

It is certified that currently PIEDMC has the approved Audited Financial Statements for Financial Year 2017-18, and it is further certified that the Audit of the Financial Year 2018-19 is at the final stage and it will be approved by April 2022.

The Management will make all the possible efforts to get the Audited Financial Statements of financial year 2019-20 and 2020-21, ASAP and submit to the Authority.

For & Behalf of PIEDMC
Acting Chief Financial Officer
February 9, 2022

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY
A Company setup under Section 42 of the Companies Ordinance, 1984 (now Companies Act, 2017)

SUBJECT: **Submission of Petition before OGRA for Grant of Gas Distribution and Sales License for Quaid-e-Azam Business Park, M-2, Motorway, District Sheikhupura**

(Details of Rule No. 4 and Sub Rule 'n')

Undertaking

PIEDMC is hereby undertakes that to provide any information and documentation as the Authority may, from time to time, require, including without limitation, supplementary information or documentation required by the Authority to clarify the information contained in application.

Muhammad Nouman Rafique
Chief Engineer
Punjab Industrial Estates
Development & Management Company
Government of Punjab

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY
A Company setup under Section 42 of the Companies Ordinance, 1984 (now Companies Act, 2017)

SUBJECT: **Submission of Petition before OGRA for Grant of Gas Distribution and Sales License for Quaid-e-Azam Business Park, M-2, Motorway, District Sheikhupura**

Details of annexures as per Rule 4 & 5 of National Gas Regulatory Authority (Licensing) Rules-2002, as under:

Sr. No.	Description as per Rules	Attachments	Flag
1.0	Rule No. 4 (a)	Attested Copies of Memorandum & Articles of Association PIEDMC	A
2.0	Rule No. 4 (b)	Attested Copy of Certificate of Commencement of Business	B
3.0	Rule No. 4 (c)	Attested Copy of Certificate of Incorporation at District Office of Registrar Joint Stock Companies City District Government Lahore	C
4.0	Rule No. 4 (d)	Attested Copies of Latest Audited Annual & Unaudited half yearly financial Statements	D
5.0	Rule No. 4 (e)	Attested Copy of Corporate Authorization Allowing the Submission of Application	E
6.0	Rule No. 4 (f)	In Case of an Applicant being Subsidiary Company,	Not Applicable
7.0	Rule No. 4 (g)	Details of Consents required under applicable laws, from persons other than the Authority,	F

Sr. No.	Description as per Rules	Attachments	Flag
		• Land Acquisition Record duly signed by the Assistant Commissioner (LAC), Skeikhupura, Dy. Commissioner Sheikhupura and Commissioner Lahore • NOC from Environment Protection Agency (EPA) • EIA Report by Nespak • Consent Letter of SNGPL to Execute Services as EPC Contractor for O & M Works • Consent Letter of SNGPL for RLNG Gas Sales Agreement with PIEDMC. • Copy of GSA (Gas Sales Agreement)	
8.0	Rule No. 4 (h)	Details of Technical and Financial Expertise and Resources available for carrying out activities: • PIEDMC Organization Chart • Agreement with SNGPL for Laying External Transmission Line for QABP • Consent Letters of SNGPL for Laying of Gas Internal Network at QABP	G

Sr. No.	Description as per Rules	Attachments	Flag
		• Submission of QABP Demand Note to SNGPL for Construction of Internal Network	
9.0	Rule No. 4 (i)	Details of Resources and Expertise available to handle Emergency Situations Arising Out of natural climates, accidental etc. • M/s Sakru Security Services Agreement at QABP • Insurance Agreement, Policy /LOA of Vehicles, Manpower etc.	H
10.0	Rule No. 4 (j)	A list of Names and business addresses of applicants senior management and divisional heads	I
11.0	Rule No. 4 (k)	If the applicants or any of its officers or directors, directly or indirectly, own, control etc.	Not Applicable
12.0	Rule No. 4 (I)	A List of all other applications, petitions or fillings files by the Applicant which are pending before Authority,,	Not Applicable
13.0	Rule No. 4 (m-i)	An Estimate of Volume of Natural Gas to be transmitted, distributed or sold,	F

Sr. No.	Description as per Rules	Attachments	Flag
		• GSA Agreement of 65 MMCFD with SNGPL along with consent letter of SNGPL	
14.0	Rule No. 4 (m-ii)	Number and consumption details of consumers at QABP	K
15.0	Rule No. 4 (m-iii)	The applicant's total Annual peak day natural gas requirement	L
16.0	Rule No. 4 (m-iv)	Total Past (if applicable) and expected curtailments of services by the applicant	Not Applicable
17.0	Rule No. 4 (n)	Such other information or documentation as the Authority may, from time to time, require, including without limitation, • Undertaking at PIEDMC Letter Head attached	M
18.0	Rule No. 5 (a)	Maps issued or certified by Survey of Pakistan, details of areas where distribution facilities are proposed, geographical features, details of roads, buildings etc. • Maps QABP by Survey of Pakistan • Map of External transmission line by Survey of Pakistan	N

Sr. No.	Description as per Rules	Attachments	Flag
		• Technical Feasibility of QABP by Nespak	
19.0	Rule No. 5 (b)	Details of the Sources and quality of Supply of Natural Gas including forecast • RLNG Supply Agreement with SNGPL	O & F
20.0	Rule No. 5 (c)	Details of how the applicant proposes to meet the safety and service obligations by the Authority • PIEDMC Detailed HSE Manual for QABP attached for reference regarding Safety and Services	P
21.0	Rule No. 5 (d)	Technical Specifications of distribution facilities (existing and proposed) or pipelines for sales of natural gas, • QABP System Design Report by SNGPL covering all technical aspects as per Authority along with consent letter	Q

13 A

(THE COMPANIES ORDINANCE, 1984)

A COMPANY LIMITED BY GUARANTEE
HAVING A SHARE CAPITAL

Memorandum

and

Articles of Association

of

PUNJAB INDUSTRIAL ESTATE DEVELOPMENT
AND MANAGEMENT COMPANY

THE COMPANIES ORDINANCE, 1984

(A COMPANY LIMITED BY GUARANTEE HAVING A SHARE CAPITAL)

ESTABLISHED UNDER SECTION 42
OF THE COMPANIES ORDINANCE, 1984

MEMORANDUM OF ASSOCIATION

OF

PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

1. The name of "The Company" is Punjab Industrial Estate Development and Management Company, having a share capital, (hereinafter referred to as "The Company").

2. The registered office of "The Company" shall be situated in the Province of the Punjab, city of Lahore.

3. "The share capital of "The Company" will be as follows:-

(i)	Authorized Capital	Rs.150.00 Million (Rupees One Hundred and Fifty Million).
(ii)	Paid-up Capital	Rs.50.00 Million (Rupees Fifty Million).

The Capital is divided into Five (05) Million Ordinary Shares of Rupees Ten (10) each.

4. The objects for which "The Company" is established are as follows:-

i. "The Company" is an association of non-profit organization, within the meaning of section 42 of the Companies Ordinance, 1984 and is being formed as a public company;

ii. organized and established for orderly, planned and rapid industrialization of Punjab, headed by a Chairman from private sector, a Board of Directors and a General Body as per Articles of Association, all to be nominated by Government of the Punjab, (hereinafter referred to as Government);

iii. to establish new Industrial Estate(s) as defined in Articles of Association of "The Company" and to upgrade those existing Industrial Estate(s) as may be assigned to "The Company" by Government, in financially sustainable

xiv. to promote creation of jobs by capitalization on strengths of each region by prioritizing the type(s) of industry, already prevalent in that particular area;

xv. to collect statistical data from within the Industrial Estate(s) for undertaking future improvements;

xvi. to promote interaction between the industrialists and Government to create an over all conducive industrial environment in the Industrial Estate(s);

xvii. to arrange workshops and meeting points for creating interaction with international investors, government regulators, non government organizations (NGOs) and various similar services organizations and bodies for creating a highly conducive local/international investment environment;

xviii. to arrange interaction between academia and industry for creating platform to initiate research projects for the benefits of all concerned;

xix. to provide the platform for the financial institutions to meet the stake holders and create specific products and services to solve the financial requirements of SMEs and the fiscal requirements of the financial institution(s) to create healthy loaning environment with a reduced risk of failure and to arrange systematic recovery/closure of such units;

xx. to take necessary steps to attract industrialists to set up units in the Industrial Estate(s);

xxi. to borrow or raise money by all legal means/instruments, with the specific permission of Government;

xxii. to open and operate banking account(s) and to draw, make, accept, endorse, discount, execute and issue promissory notes, bills of exchange, bills of lading, warrants, drafts, cheques, bonds, debentures and other negotiable or transferable instruments subject to compliance of relevant prudential regulations;

xxiii. to undertake and execute such agency agreement(s) which may promote directly the objects of "The Company";

xxiv. to print and publish any periodicals, books or leaflets in furtherance of "The Company's" objectives;

xxv. to invest the monies of "The Company" not immediately required in short term secured investment;

xxvi. to enter, with permission of Government into any arrangements with any government(s) and authority(ies), municipal, local or otherwise or any

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shape of other benefits, by way of profit, or otherwise howsoever, to the members of "The Company"; provided that nothing therein contained shall prevent the payment in good faith of remuneration to any officers or servants of "The Company" or any other person including Legal Advisor, except a Member in return for any services actually rendered to "The Company", nor prevent the payment of interest on money borrowed or rent out any property leased or hired from any person other than a Member of "The Company". No member of BOD of "The Company" shall be appointed to any salaried office of "The Company", or any office of "The Company" generating fee and that no remuneration shall be given by "The Company" to its members of BOD, but the Chairman/BOD shall be provided with the facilities for boarding, lodging and/or travel domestic or abroad undertaken for furtherance of the objects of "The Company".

7. No addition, alteration or amendment shall be made to or in the provisions or regulations contained in the Memorandum and/or Articles of Association, for the time being in force, except in accordance with the Companies Ordinance, 1984 and with the prior approval of the Government and thereafter the same shall be submitted to and approved by the Registrar of Companies, Lahore Region.

8. Patronage of any government or authority, express or implied, shall not be claimed unless such government or authority has signified its consent thereto in writing.

9. Each member of "The Company" undertakes to contribute to the assets of "The Company" in the event of its being wound up, while he is a member, or within one year afterwards for payment of the debts and liabilities of "The Company" contracted before he ceases to be member, and of the costs, charges and expenses of winding up. The sum to be contributed by the Members shall be as follows.

   All Members of "The Company" shall individually contribute a sum not exceeding Rs.1000.00 (Rupees one thousand only).

   If the total sum required on winding up for payment of the debts and liabilities of "The Company" and of the said costs and expenses shall be less than Rs.1000.00 then the Member shall contribute thereto in proportion to their maximum specified liability.

10. Notwithstanding what is stated herein, if upon the winding up or dissolution of "The Company" there remains, after the satisfaction of all its debts and liabilities, any property whatsoever, the same shall be given or transferred to Government.

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Advocate High Court
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THE COMPANIES ORDINANCE, 1984

ARTICLES OF ASSOCIATION

OF

PUNJAB INDUSTRIAL ESTATES DEVELOPMENT AND MANAGEMENT COMPANY
(A COMPANY LIMITED BY GUARANTEE HAVING A SHARE CAPITAL)

PRELIMINARY

1. **WHEREAS IT HAS BEEN** agreed by several persons whose names are hereunto subscribed to establish and incorporate a Company Limited by Guarantee having a Share Capital under the provisions of the Companies Ordinance, 1984 in the name of Punjab Industrial Estate Development and Management Company (hereinafter referred to as "The Company") in accordance with the provisions of the Memorandum of Association hereto annexed and subject to several regulations hereinafter contained which shall be the regulations for management of "The Company" and for the observance of Members thereof and their representatives and the same shall subject to exercise powers of "The Company", in reference to the repeal or alteration of or addition to, its regulations by Special Resolution as prescribed by the "Ordinance", be such as are contained in "These Presents".

INTERPRETATION

2. The marginal notes hereto shall not affect the construction hereof, and in "These Presents" unless there be something in the subject or context inconsistent therewith:

   I. "Attorney" includes an attorney duly constituted or appointed under power of attorney or any other authority in writing.

   II. "Board of Directors" means the Board of Directors (BOD) of "The Company" as constituted under provisions of "These Presents".

   III. "Board of Management" mean representatives of occupiers of each Industrial Estate, nominated and appointed as such by BOD subject to Article 22 hereof. For the purposes of this clause an "occupier" means an owner in-possession of an industrial unit in industrial estate(s).

   IV. "Chairman" means Chairman of "The Company" duly nominated from time to time by "Government" under the provisions of "These Presents".

   IV-a "Chief Executive Officer" means the contractual employee, selected through an open competitive selection process by BOD to perform functions within the meaning of section 2(6) of the Companies Ordinance, 1984 and appointed as such in accordance with the terms and conditions to be determined by BOD.

   V. "Federal Government" means Government of Pakistan.

XXVII. Words importing persons include bodies corporate and otherwise, firms, registered or un-registered associations, and non-government, semi-government and government organizations.

XXVIII. Words of expressions in "These Presents" shall, except where it is repugnant to the subject or context, bear the same meanings as in a Standard English Dictionary.

XXIX. "Written" and "In Writing" includes printing, lithography, type-writing, telex, tele-facsimile (fax) and other modes of representing or reproducing words in a visible form.

BUSINESS OF "THE COMPANY"

3. The business of "The Company", its affairs and/or functions shall comprise of achieving the objects given in the Memorandum and include undertaking of all or any of the several objects, and any act, deed or thing done in pursuance thereof, ancillary and/or incidental thereto as expressed in, and authorized by the Memorandum of Association hereto annexed, and can be commenced immediately after incorporation of "The Company" as BOD may think fit.

SHARE CAPITAL OF "THE COMPANY"

4. The Equity of "The Company" which shall be provided by the "Government" as follows:

- Authorized Capital Rs.150.00 Million (Rupees One Hundred and Fifty Million)
- Paid up Capital Rs.50.00 Million (Rupees Fifty Million)

The Capital shall be divided into Five (05) Million Ordinary Shares of Rupees Ten (10) each. "The Company" may from time to time, by Special Resolution, increase, consolidate, subdivide, reduce or otherwise reorganize the Share Capital, subject to the "Ordinance" and with prior approval of the "Government".

TRANSFER AND TRANSMISSION OF SHARES

5. The "Government" shall have the exclusive right to transfer any share.

No shares can be mortgaged, pledged, sold, hypothecated, transferred or disposed of by any Member without previous sanction of Government.

In case of death of any Member, his share shall automatically stand transferred to Government, which shall have the exclusive right to allot the same to any other person/institution/entity.

MEMBERSHIP

6. The subscribers to "These Presents" and to the Memorandum of Association hereunto annexed shall be admitted to the Membership of "The Company" from time to time and shall be deemed to have agreed to become a "Member" of "The Company" in accordance with and in pursuance to "These Presents" and whose names appear in the Register, shall be the "Member" of "The Company".

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"The Company" or acts in a manner as is not conducive to the objects of "The Company".

11. Subject to the foregoing and/or other provisions, Membership of "The Company" shall be open to all Pakistani citizens.

12. If a vacancy occurs, among the "Members", such vacancy shall be filled in as provided in Article (08) supra.

13. When a "Member" desires to resign from his Membership of "The Company", he shall forward his letter of resignation to the Chairman and such resignation shall take effect only from the date of its acceptance by BOD.

14. "The Company" shall function notwithstanding any vacancy in any of its bodies and no act, direction or proceeding of "The Company" shall be rendered invalid merely by reason of such vacancy or because of any defect in the appointment of any of the officers of "The Company".

15. The Chairman and the members of BOD will not be paid any remuneration but will be provided traveling, boarding, lodging traveling and transportation facilities on such terms as decided by BOD.

16. "Members" of "The Company" shall not be paid any remuneration or dividend.

OFFICERS OF "THE COMPANY"

17. "The Company" shall comprise the following: -

I. General Body

II. BOD

III. Chairman

IV. Chief Executive Officer

V. Secretary

VI. Board of Management for specific Industrial Estates, exercising such powers as may be specifically "Prescribed" by BOD.

GENERAL BODY

18. There shall be a "General Body" of "The Company", which shall comprise of all the share holders.

19. The Chairman shall preside over all meetings of "General Body".

20. The Chairman may invite any person other than a Member to attend a meeting of "General Body". Such invitee to be known as special invitee, shall not, however, be entitled to vote at the meeting.

21. "General Body" shall have the following powers and functions, namely:

a. to give overall policy guidance and direction for the efficient functioning of "The Company";

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or deemed to be served, but inclusive of the day on which the notice is given), specifying the place, the day and the hour of the meeting, and in case of special business, the general nature of such business, shall be given of every General Meeting whether Annual or Extraordinary to the "Members" in the manner in which notices are required to be served in accordance with the provisions contained herein below. Notwithstanding anything contained herein before, a meeting may be convened by such shorter notice and in such manner as those "Members" may think fit with the consent of all the "Members" entitled to receive notice thereof and the permission of the Registrar Companies, Lahore Region.

31. The accidental omission to give any such notice to or the non-receipt of notice by any of the "Member" shall not invalidate the proceedings of any such meeting.

PROCEEDING AT GENERAL MEETINGS

32. The business of an Annual General Meeting shall be to receive and consider the income and expenditure account and balance sheet, the Annual Report of BOD and of the Auditors, if required or found necessary, and the appointment of the Auditors and fixation of their remuneration and to transact any other business which may be transacted at an Annual General Meeting. All other business transacted at Annual General Meeting and all business transacted at an Extraordinary General Meeting shall be deemed special.

33. Two third (2/3) of the voting power of "Members" of "The Company" present personally, shall be a quorum for a General Meeting for all purposes. No business shall be transacted at any General Meeting unless the quorum is present at the commencement of business.

34. If within an hour of the time appointed for the meeting a quorum is not present, the meeting if called on the requisition of "Members", shall be dissolved. In any other case, it shall stand adjourned to the same day in the next week at the same time and place, and if at the adjourned meeting, a quorum is not present within half an hour from the time appointed for the meeting, "Members" being not less than one fourth (1/4) of the total voting power of "Members" of "The Company", shall be a quorum.

35. The Chairman shall be entitled to take the chair at every General Meeting of "The Company". If the Chairman is unable due to sickness or some other unavoidable reasons, BOD may elect one of the Director's to preside.

36. The Chairman may, with the consent of any meeting at which a quorum is present (and shall if so directed by the meeting), adjourn the meeting from time to time and from place to place, but no business shall be transacted at any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place. When a meeting is adjourned for ten days or more, notice of the adjourned meeting shall be given as in the case of an original meeting. Save as aforesaid, it shall not be necessary to give any notice of an adjournment or of the business to be transacted at an adjourned meeting.

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Company" in accordance with the objectives specified in Memorandum of Association. It shall also have the responsibility to approve projects and assignments as well as providing technical assistance as may be mutually agreed upon, to the "Local Governments" and to approve and administer the annual and supplementary budgets.

45. The term of office of a member of BOD shall be three years, unless he resigns earlier or becomes disqualified from being a Director or otherwise ceases to hold office.

46. No member of BOD shall serve for more than three (03) consecutive terms of three (03) years each except *ex officio* members.

47. Members of BOD shall function in their individual capacity exercising individual judgment under the Chairman, and shall not be subjected to or be bound by instructions or orders of the office, organization or agencies with which they may be associated, except *ex officio* members.

48. No action or decision by BOD shall be rendered invalid or inoperative on account of any vacancy or vacancies in the composition of BOD.

49. The meetings of BOD shall be held in the following manner:

    a. The BOD shall hold at least six regular meetings every year and shall be called by notice under the signature of "Secretary".

    b. All meetings of BOD shall be presided over by the Chairman or in his absence, by a Director to be elected by BOD.

    c. Minutes of the meetings of BOD shall be recorded by "Secretary" or in his absence by a member of BOD, appointed by the Chairman. The minutes shall be duly approved or corrected at the following regular meeting and filed in the permanent records of "The Company".

    d. Members of BOD shall not receive any compensation for their services to "The Company" and/or any profit out of the business of "The Company".

50. Every notice calling for a meeting of BOD shall state "In Writing" the date, time and place of the meeting and shall be sent to every member of BOD ordinarily seven clear days before the day appointed for the meeting.

51. Any inadvertent omission to give notice or the non-receipt or late receipt of a notice by any member shall not invalidate the proceedings of the meetings.

52. At least 1/4th of the members of the BOD shall constitute a quorum provided at least one Director shall be the representative of the "Government".

53. Each member of BOD shall have one vote. All questions at meetings of BOD shall be determined by a vote of members present, provided that in case of equality of votes, the Chairman shall have a casting vote.

54. Subject to the "Ordinance" any business which BOD may consider necessary to perform, except such as may be required to be placed before "General Body" in general meeting, may be performed by a resolution in Writing circulated among all members of BOD, and any such resolution so circulated and approved by a majority

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XIV. appoint boards, committees, sub-committees and panels, consisting of persons who may or may not be Members of "The Company" or employees of "The Company" to deal with any specific task as may be determined from time to time and to confirm the appointment of Legal Advisor appointed by the Chairman;

XV. to impose and recover fees and charges for the services rendered by "The Company"; and

XVI. to contract out operational and management functions as and when required, to reputable firms or companies;

58. BOD may by resolution delegate such administrative, financial and other powers to the Chairman, Chief Executive, committees, sub-committees, panels and boards or any other officer of "The Company" as it may consider necessary and proper, subject to the condition that action taken by them under the powers so delegated, shall have to be confirmed and/or ratified in the next meeting of BOD.

CHAIRMAN

59. A. The Chairman shall be nominated by the "Government".

B. The Chairman shall not be paid any remuneration for his services, but shall be provided all secretarial/material/ technical support in order to facilitate the efficient handling of "The Company". He will also be provided boarding, lodging, traveling and transportation facilities and shall be reimbursed for out of pocket expenses.

60. The Chairman shall be responsible *inter-alia* for:

I. coordinating and exercising general supervision over all activities of "The Company"; and

II. any other task as may be delegated by BOD.

CHIEF EXECUTIVE OFFICER (CEO):

60 - A. a. The CEO shall be a contractual employee to be hired for a period of three years renewable term. He shall be duly selected through an open competitive selection process by the BOD from private sector having engineering/management qualification and experience of at least 10 years managing industrial projects, and appointed as such in accordance with terms and conditions of his appointment to be determined by BOD.

b. The CEO shall work under the directions of the BOD through Chairman and he shall be responsible for day-to-day management and administration of "The Company". Without prejudice to the generality of the foregoing, he shall be responsible:

I. to determine powers, duties and fix salaries or emoluments of the managers, secretaries, officers, clerks and employees, either permanent or temporary and to require security in such instances and to such amount as deemed appropriate;

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63. "The Company" may in furtherance of its objectives;

I. invest and deal with "Funds" and monies of "The Company" according to "These Presents";

II. borrow and raise resources for "The Company" according to "These Presents";

III. draw, accept, make, endorse, sign, negotiate, deposit, promissory notes, bills of exchange, cheques or any other negotiable instruments; and

IV. create, with the permission of "Government", a reserve company, sinking company, insurance company or any other special company whether for depreciation, repair, improvement, extension or maintenance of any of the properties or rights of "The Company" and/or for recouping wasting assets and for any other purposes for which "The Company" deems it expedient or proper to create or maintain any such company or companies.

64. All properties of "The Company", moveable or immovable, shall vest in "The Company" and shall be administered by Chief Executive Officer, on behalf of "The Company" within the parameters set by "The Company" in its General Meeting or otherwise as directed by BOD.

65. "The Company" may purchase, hire, lease, exchange or otherwise acquire property, moveable or immovable, tangible or intangible (including copyrights, patents and intellectual properties) which may be necessary or convenient for the purpose of "The Company" and construct, alter and/or maintain such buildings and works as may be necessary for carrying out the objects of "The Company"; provided that for acquisition or disposal of immovable property through any mode, prior permission of "Government" shall be mandatory.

66. The income and the property of "The Company", however derived, shall be applied towards the promotion and furtherance of the objectives of "The Company" as set forth in the Memorandum of Association hereto annexed. Save as otherwise provided elsewhere, no portion of the income and property of "The Company" shall be paid or transferred directly or indirectly by way of dividend, or by way of profit to persons who at any time are or have been "Members" of "The Company" or to any of them or to any person claiming through them provided that nothing herein shall prevent the payment in good faith any remuneration to any employee or other person in return for services rendered to "The Company" or for traveling allowance, and other similar out of pocket expenses.

67. A. All funds should be paid into "The Company's" account(s) with the bank(ers) of "The Company" and shall not be withdrawn except by cheque signed by authorized representatives in accordance with the procedure to be "Prescribed";

B. Unless otherwise authorized by BOD, no new account in the name of "The Company" shall be opened.

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If an appointment of an auditor(s) is not made at an Annual General Meeting, the Securities and Exchange Commission may appoint an auditor(s) as per provisions of the "Ordinance".

I. A member of BOD or an officer of "The Company", or a partner of or person in the employment of such member of BOD or officer or any person, indebted to "The Company" shall not be appointed auditor of "The Company".

II. If any person after being appointed auditor becomes indebted to "The Company", his appointment shall thereupon be terminated.

III. The First Auditor(s) of "The Company" may be appointed by BOD within 60 days of the date of incorporation and auditor(s), if so appointed, shall hold office until the first Annual General Meeting, unless previously removed by a resolution of "The Company" in General Meeting in which "Member" of "The Company" may appoint auditor(s) at such a meeting.

IV. Retiring auditor(s) shall be eligible for re-appointment.

V. No person other than a retiring auditor(s) shall be capable of being appointed to the office of the auditor at the Annual General Meeting unless notice of an intention to nominate him be given to "The Company" not less than fourteen days before the day fixed for the holding of such Annual General Meeting and upon receipt of such notice, the provisions of the "Ordinance" shall be complied with.

B. Any other audit of "The Company" shall be conducted as provided in the "Ordinance".

78. The remuneration of the auditor(s) shall be fixed by "The Company" in the General Meeting except that the remuneration of any auditor(s) appointed before the first Annual General Meeting or to fill any casual vacancy may be fixed by BOD.

79. Every auditor of "The Company" shall have a right of access at all times to the books, assets and accounts and vouchers of "The Company" and shall be entitled to require from the members of BOD and officers of "The Company" such information and explanation as may be necessary for the performance of duties of the auditor(s) and auditor(s) shall make a report to Members of "The Company" on the accounts examined by them, and on every balance-sheet, income and expenditure account laid before "The Company" in the General Meeting, during their tenure of office and the report shall state whether or not they have obtained all information and explanations they have required and whether or not in their opinion the balance-sheet, is in conformity with the law and whether or not such balance-sheet, and income and expenditure account, exhibit true and correct view of the state of "The Company's" affairs according to the best of their information and explanations given to them as shown by the books of "The Company" and whether or not in their opinion the books of accounts have been kept by "The Company" as required by the "Ordinance"; where any of the matters referred to herein above and answered in the negative or with a qualification, the report shall state the reasons for such answers and the report shall be attached to the balance-sheet.

ATTESTED
TARIQ IQBAL MAHER
Advocate High Court
Notary Public
ISLAMABAD

We, the several persons, whose names and addresses are hereunder subscribed, are desirous of being formed into a Company in pursuance of these Articles of Associal.

Name and surname (present and former in) full and block letters	Father's/Husband's name in full	Nationality/former Nationality	Occupation	Residential address in full	Signature
Mohsin M. Syed	Syed M. Musa	Pakistani	Engineer	71-S, Defence Phase-II, Lahore Cantt.	
Mr. Fayyaz Bashir	Bashir Ahmad	Pakistani	Secretary Industries, Commerce & Investment	7-Aikman Road, GOR, Lahore.	
Mr. Khawaja Muhammad Owais	Khawaja Khuda Bakhsh	Pakistani	Industrialist	House No.2, Nisar Colony Kashina Dastgir Lahore.	
Mr. Sikandar Mustafa Khan	Bashir A. Khan	Pakistani	Chairman PEMRA	House No.30-D, Sarwar Road, Lahore Cantt., Lahore.	
Mr. Sabir P. Chohan	Dr. M. A. Chohan	Pakistani	Engineer	House No.16, St. No. 83, Sector F7/3, Islamabad.	
Mr. Almas Hyder	Dr. S. M. Naqi	Pakistani	Businessman	House No. L-41, Gulberg-II, Lahore.	
Mr. Syed Nabeel Hashmi	Syed Ouwat Ali Shah	Pakistani	Chief Executive Thermoclay Industries (Pvt.) Ltd.	House No. 588 Block-3 Sector C-I, Township, Lahore.	
Mr. M. I. Khurram	Haji Barkat Ali	Pakistani	Chief Executive Bata Pakistan Ltd.	45-E/I, Gulberg-III, Lahore.	
Major (R) Shahnawaz Badar	S. M. Badar	Pakistani	Secretary Labour and Human Resources	House No. 88 GOR-III, Shadman, Lahore. House No. 224 F-10/3, Islamabad.	
Mr. Kamran Lashari	Sardar Abdul Majeed Khan Lashari	Pakistani	Secretary Environment Protection	House No.18 Fateh Sher Road Mozang, Lahore.	
Mr. Zaheer Ahmad Khan	Naseer Ahmad Khan	Pakistani	Engineer	122-R, Phase-II, Lahore.	
Dr. Faisal Bari	Abdul Bari	Pakistani	Economist	House No.29 Ghazi Road, Karachi, Mohallah Saddar Bazar, Lahore.	

Dated the day of

WITNESS TO ABOVE SIGNATURES

Full Name: Hasana Abbad

Father's Name: S. Nakhtam Hussain

Full Address: 109 BY. LDA Flats

Signatures:

Occupation:

ATTESTED

Advocate High Court Lahore

Senior Officer
enterprises & Investment Promotion
for Registrar Joint Stock Companies
Lahore District

ATTESTED
TARIQ IQBAL MAHER
Advocate High Court
Notary Public
ISLAMABAD

I, MUHAMMAD ASHIQ
OATH COMMISSIONER
DISTT. COURTS
LAHORE

26 B

Certificate for Commencement of Business

(Pursuant to section 146 of the Companies Ordinance, 1984)

Certified that the [illegible]

[illegible]

Which was incorporated under the Companies Ordinance, 1984, on the [illegible]

day of [illegible] *2003*

and which has this day filed a duly verified declaration in the Prescribed form that the conditions of section 69 and 146 of the said Act, been complied with, is entitled to commence business.

Given under my hand at [illegible]

This [illegible] *day of* [illegible]

~~One thousand nine hundred and~~ [illegible]

REGISTRAR JOINT STOCK COMPANIES LAHORE

[illegible]

(ATIQ-UR-REHMAN)
DISTRICT OFFICER
ENTERPRISE & INVESTMENT PROMOTION
LAHORE
FOR JOINT STOCK COMPANIES
LAHORE REGION.

ATTESTED
TARIQ IQBAL MAHER
Advocate High Court
ISLAMABAD

27 C

CERTIFICATE OF INCORPORATION

No. AP/3.79 of 200 – 200

I hereby certify that "PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY, "13-PAK ROAD, LAHORE."

is this day incorporated under the Companies Ordinance of 1984, and that the company is limited by Guarantee without addition of the word "Limited" to its name.

Given under my hand at LAHORE

this 18TH *day of* SEPTEMBER, 2003.

Two Thousand THREE

Fee : Rs. 25,000/- (TWENTY FIVE THOUSAND ONLY).

REGISTRAR JOINT STOCK COMPANIES

(ATIQ-UR-REHMAN)
District Officer
For Registrar
Joint Stock Companies
CITY District Government.
Lahore.

No. EF/1251/L/S/2003/587
Dated. 18.09.2003

ATTESTED
TARIQ IQBAL M...
Advocate High C...
Notary Public

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY
A Company setup under Section 42 of the Companies Ordinance, 1984 (now Companies Act, 2017)

CERTIFICATION

It is certified that currently PIEDMC has the approved Audited Financial Statements for Financial Year 2017-18, and it is further certified that the Audit of the Financial Year 2018-19 is at the final stage and it will be approved by April 2022.

The Management will make all the possible efforts to get the Audited Financial Statements of financial year 2019-20 and 2020-21, ASAP and submit to the Authority.

For & Behalf of PIEDMC
Acting Chief Financial Officer
February 9, 2022

ATTESTED
MARIO IQBAL MAHER
Advocate High Court
Notary Public
ISLAMABAD

PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984. NowCompanies Act, 2017)

Statement of Financial Position

As At June 30, 2021

	Note	Unaudited June 2021 Rupees	Unaudited June 2020 Rupees
Equity and liabilities			
Equity			
Share Capital	7	**50,000,000**	50,000,000
Excess of income over expenditure		**5,843,826,479**	4,958,028,749
Total equity		**5,893,826,479**	5,008,028,749
Liabilities			
Non-current liabilities			
Long term financing - Government of Punjab	8	**2,353,862,063**	2,715,533,542
Deferred income	9	**163,581,061**	180,288,581
Deferred credit	10	**922,054,292**	1,151,573,490
Deferred grant	11	**197,689,266**	201,522,810
Deferred liability	12	**57,882,950**	41,984,159
Total non-current liabilities		**3,695,069,632**	4,290,902,582
Current liabilities			
Current portion of long term financing	8	**7,718,038,594**	7,147,397,917
Accrued mark up on financing	13	**531,970,597**	249,973,003
Trade and other payables	14	**2,069,043,781**	1,527,340,699
Security deposits	15	**469,282,187**	437,831,853
Advance from customers against consultancy services	16	**160,338,779**	212,924,311
Advances received for sale of plots	17	**5,790,838,699**	2,325,836,035
Total current liabilities		**16,739,512,637**	11,901,303,818
Total equity and liabilities		**26,328,408,748**	21,200,235,148
Contingencies and commitments	18		
Assets			
Non-current assets			
Property, plant and equipment			
Property, plant and equipment	19	**587,929,224**	571,255,040
Intangibles	21	**216,667**	39,201
Capital work in progress	22	**563,077,077**	445,898,868
Long term deposits		**218,870,323**	219,008,717
Total non-current assets		**1,370,093,291**	1,236,201,826
Current assets			
Stores, spare parts and loose tools		**125,077,004**	64,970,350
Inventory (projects in progress)	23	**13,164,804,109**	12,623,221,301
Trade debts	24	**1,409,834,244**	1,076,072,980
Advances, deposits, prepayments and other receivables	25	**493,117,930**	362,595,314
Income tax refundable		**680,183,375**	678,496,716
Short term investments	26	**7,390,000,000**	3,590,000,000
Accrued interest		**137,913,103**	130,424,544
Cash and bank balances	27	**1,557,385,692**	1,438,252,117
Total current assets		**24,958,315,457**	19,964,033,322
Total assets		**26,328,408,748**	21,200,235,148

The annexed notes from 1 to 47 form an integral part of these financial statements.

Chief Executive Officer

ATTESTED
TARIQ IQBAL MAHER
Advocate High Court
NOTARY PUBLIC
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PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984. Now Companies Act, 2017)

Statement of Income and Ex penditure and Other Comprehensive Income

For the Year Ended June 30, 2020

	Note	Unaudited June 2021 Rupees	Unaudited June 2020 Rupees
Revenue			
Amortization of grants	11	3,833,544	2,882,400
Sales	28	752,572,520	323,965,386
Income from construction and supervision services		52,585,532	27,981,943
Electricity billing	29	8,544,838,596	6,889,918,515
Fees	30	370,508,807	102,838,298
Operations, maintenance and allied service billing	31	429,548,139	388,511,785
Sales of electrical material		117,200	322,400
Other income	32	807,424,913	821,723,416
Total income		10,961,429,251	8,558,144,143
Expenditure			
Cost of sales	33	341,118,835	260,293,830
Development expenditures of managed estates	34	17,162,540	4,005,499
Cost on construction and supervision services - QASP	35	52,585,532	27,981,943
Cost of operation, maintenance and allied service billing	36	412,942,487	364,318,212
Cost of electricity billed	37	8,378,763,265	6,654,350,396
Administrative expenses	38	360,928,544	339,127,325
Selling expenses	39	25,052,112	23,339,633
Finance cost	40	487,078,206	377,161,807
Total expenditure		10,075,631,521	8,050,578,645
Net surplus for the year		885,797,730	507,565,498
Taxation	41	-	-
Net surplus after tax		885,797,730	507,565,498
Other comprehensive income			
Items that will not be reclassified to income & ependiture		-	-
Items that may be reclassified subsequently to income & ependiture:			
Remeasurement of post employment benefit obligation - actuarial loss	12.6		
Other comprehensive loss for the year		-	-
Total comprehensive income for the year		885,797,730	507,565,498
		885,797,733	
		- 2.94	

The annexed notes from 1 to 47 form an integral part of these financial statements.

Chief Executive Officer

ATTESTED
TARIQ IQBAL MAHER
Advocate High Court
Notary Public
ISLAMABAD

PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984. Now Companies Act, 2017)

Statement of Changes in Equity

For the Year Ended June 30, 2020

	Note	Paid Up Share Capital	Excess of (deficit)/ income over expenditures	Total
		Rupees	Rupees	Rupees
Balance as at July 01, 2019		50,000,000	4,450,463,251	3,004,319,643
Excess of income over expenditure		-	507,565,498	507,565,498
Balance as at June 30, 2020 (Unaudited)		50,000,000	4,958,028,749	3,511,885,140
Excess of income over expenditure		-	885,797,730	885,797,730
Balance as at June 30, 2021 (Unaudited)		50,000,000	5,843,826,479	4,397,682,871

The annexed notes from 1 to 47 form an integral part of these financial statements.

Chief Executive Officer

ATTESTED
TARIQ IQBAL MAHER
Advocate High Court
Notary Public
ISLAMABAD

PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984. Now Companies Act, 2017)

Statement of Cashflows

For the Year Ended June 30, 2021

	Note	Unaudited 2021 Rupees	Unaudited 2020 Rupees
Cash from/(used in) operations	42	**3,722,176,091**	343,654,759
Interest paid		**(904,125)**	(1,205,500)
Return on bank deposits received		**466,298,256**	378,026,082
Increase/Decrease in long term deposits		**138,394**	(46,366,804)
Gratuity contributions paid		**(41,940,042)**	(27,910,100)
Net cash from/(used in) operating activities		**4,145,768,574**	646,198,437
Cash flows from investing activities			
Capital expenditure incurred		**(87,235,612)**	(15,857,409)
Addition in capital work in progress		**(119,669,387)**	(351,208,214)
Proceeds from sale of assets		**820,000**	3,264,999
Net cash (used in) investing activities		**(206,084,999)**	(363,800,624)
Cash flow from financing activities			
Repayment of long term loan		(120,550,000)	(120,550,000)
Loan Received during The period		100,000,000	1,950,000,000
Net cash (used in) financing activities		**(20,550,000)**	**1,829,450,000**
Net (decrease)/increase in cash and cash equivalents		**3,919,133,575**	2,111,847,813
Cash and cash equivalents at the beginning of the year		**5,028,252,117**	2,916,404,304
Cash and cash equivalents at the end of the year		**8,947,385,692**	5,028,252,117
Cash and cash equivalents			
Cash and bank balances	27	**1,557,385,692**	1,438,252,117
Short term investments	26	**7,390,000,000**	3,590,000,000
Cash and cash equivalents at the end of the year		**8,947,385,692**	5,028,252,117

The annexed notes from 1 to 47 form an integral part of these financial statements.

ATTESTED

Chief Executive Officer

PUNJAB INDUSTRIAL ESTATES DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984. Now Companies Act, 2017)

Notes to the Financial Statements

For the year ended June 30, 2020

1 Legal status and nature of business

1.1 Punjab Industrial Estates Development and Management Company ("the Company") was incorporated in Pakistan on 18 September 2003 as a public company limited by guarantee having a share capital, licensed as a non-profit organization under section 42 of the Repealed Companies Ordinance,1984 (now Companies Act, 2017). The Company is wholly owned by the Government of Punjab. The principal activity of the Company is to develop new industrial estates together with updating and managing the existing industrial estates as may be assigned by the Government of Punjab. The registered office of the Company is situated at Commercial Area (North) Sundar Industrial Estate, Raiwind road, Lahore.

1.2 The Company is managing Quaid e Azam Industrial Estate ("QIE") and Sundar Industrial Estate ("SIE") in Lahore and Multan Industrial Estate - Phase I ("MIE I") in Multan while the following projects are in development phase:

- Multan Industrial Estate - Phase II ("MIE II") in Multan;
- Rahim Yar Khan Industrial Estate in Rahim Yar Khan;
- Bhalwal Industrial Estate in Bhalwal;
- Vehari Industrial Estate in Vehari;
- Quaid-e-Azam Business Park in Sheikhupra.
- Chunian Industrial Estate in Chunian; and
- Bahawalpur Industrial Estate in Bahawalpur

2 Basis of preparation

2.1 Statement of compliance

These financial statements have been prepared in accordance with approved accounting standards as applicable in Pakistan. Approved accounting standards comprise such International Financial Reporting Standards (IFRSs) issued by the International Accounting Standards Board Accounting Standard for Not for Profit Organization issued by ICAP as are notified under the Companies Act, 2017 and provisions of and directives issued under the Companies Act, 2017. In cases where requirements differ, the provisions of and directives issued under the Companies Act, 2017 shall prevail.

2.2 Standards, amendments or interpretations that became effective during the year

The Company has adopted following new standards which became effective for the current year:

- IFRS 9 'Financial instruments' – This standard replaces the provisions of IAS 39 that relate to the recognition, classification and measurement of financial assets and financial liabilities, derecognition of financial instruments, impairment of financial assets and hedge accounting. It also includes an expected credit losses model that replaces IAS 39 incurred loss impairment model. On July 1, 2018 (the date of initial application of IFRS 9), the Company's management has assessed which business models apply to the financial assets held by the Company and has classified its financial instruments into the appropriate IFRS 9 categories (i.e. mainly financial assets previously classified as 'loans and receivables' have now been classified as 'amortised cost').

- IFRS 15 'Revenue from contracts with customers' – This standard introduces a single five-step model for revenue recognition with a comprehensive framework based on core principle that an entity should recognise revenue representing the transfer of promised goods or services under separate performance obligations under the contract to customer at an amount that reflects the consideration to which the entity expects to been titled in exchange for those goods or services. IFRS 15 replaces the previous revenue standards: IAS 18 Revenue, IAS 11 Construction Contracts, and the related interpretations on revenue recognition.

The adoption of above new standards did have significant effect on the financial statements of the Company. Impact of these standards have been disclosed in Note 6.20.

2.3 Standards, amendments and interpretations to the approved accounting standards that are relevant but not yet effective

IFRS 16 'Leases' will be effective for the Company's annual accounting period beginning July 1, 2019. It will result in almost all leases being recognised on the statement of financial position, as the distinction between operating and finance leases is removed. Under the new standard, an asset (the right to use the leased item) and a financial liability to pay rentals are recognised. The only exceptions are short-term and low-value leases. At present the Company is in the process of determining the impacts of application of IFRS 16 on future financial statements of the Company.

Additionally there is another new standard, certain amendments and an interpretation to the approved accounting and reporting standards that will be mandatory for the Company's annual accounting periods beginning on or after July 1, 2019. However, these will not have any significant impact on the financial reporting of the Company and, therefore, have not been disclosed in these financial statements.

The changes laid down by these standards do not have any significant impact on these financial statements of the Company. However, related changes to the accounting policies have been made in these financial statements.

2.4 Standards, amendments and interpretations to the published standards that are not yet notified by the Securities and Exchange Commission of Pakistan (SECP)

In addition to the above, following standards have been issued by IASB which are yet to be notified by the SECP for the purpose of applicability in Pakistan:

Standards or Interpretations	
IFRS-14	Regulatory Deferral Accounts
IFRS 17	Insurance Contracts

The Company is in process of assessing impact of these standards, amendments and interpretations on the financial statements of the Company.

ATTESTED IQBAL MAHER TARIQ Advocate High Court Notary Public ISLAMABAD

3 Basis of measurement

These financial statements have been prepared under the historical cost convention except for certain balances which are stated in accounting policies below.

4 Functional and presentational currency

These financial statements have been prepared in Pak Rupees which is also the Company's functional currency. All financial information presented in Rupees has been rounded off to the nearest rupee, unless otherwise stated.

5 Use of estimates and judgments

The preparation of financial statements in conformity with approved accounting standards requires management to make judgments, estimates and assumptions that effect the application of policies and reported amount of assets and liabilities and income and expenses. The estimates and associated assumptions are based on historical experience and various other factors that are believed to be reasonable under circumstances, and the results of which form the basis for making judgment about carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revision to accounting estimates are recognized in the period in which the estimate is revised if the revision affects only that period, or in the period of revision and future periods if the revision affects both current and future periods. The areas where assumptions and estimates are significant to the Company's financial statements or where judgment was exercised in application of accounting policies are as follows:

5.1 Leave Encashment

Balanced/un-availed Annual Leave is encashed at the rate of current gross salary of the employee at the end of fiscal year. Days to be reimbursed of new employees are counted on pro-rata basis.

5.2 Taxation

Current

Provision for current taxation is based on taxable income at the current rates of taxation after considering rebates and tax credits available, if any. The charge for the current tax also includes adjustments where necessary, relating to prior periods which arise from assessment framed / finalized during the period, if any.

Deferred

Deferred tax is provided using the balance sheet method for all temporary differences at the balance sheet date between tax bases of assets and liabilities and their carrying amounts for financial reporting purposes.

Deferred income tax asset is recognized for all deductible temporary differences and carry forward of unused tax losses and tax credits, if any, to the extent that it is probable that taxable profits will be available against which such temporary differences and tax losses/credits can be utilized. Deferred tax liabilities are recognized for all major taxable temporary differences.

Deferred income tax assets and liabilities are measured at the tax rates that are expected to apply to the period when the asset is realized or the liability is settled, based on tax rates that have been enacted or substantively enacted at the date of statement of financial position. Deferred tax is charged or credited to statement of profit or loss, except in the case of items credited or charged to equity in which case it is included in equity.

5.3 Impairment

The management of the Company reviews carrying amounts of its assets including receivables and advances and cash generating units for possible impairment and makes formal estimates of recoverable amount if there is any such indication.

5.4 Expected Credit Loss

Management reviews its trade debts at each reporting date to identify the existence of any doubtful debts and to assess whether a provision should be recorded in the statement of profit or loss. In particular, judgment by management is required in the estimation of the amount and timing of the future cash flows, when determining the level of provision required. Such estimates are based on assumptions about a number of factors and actual results may differ, resulting in future changes to the provisions.

5.5 Contingencies

Where it is not probable that an outflow of resources embodying economic benefits will be required to settle the obligation or the amount of the obligation can not be measured with sufficient reliability, it is disclosed as contingent liability.

5.6 Stores, spare parts and loose tools

The Company reviews the stores, spare parts and loose tools for possible impairment on an annual basis. Any change in estimates in future years might affect the carrying amounts of the respective items of stores and spare parts and loose tools with a corresponding effect on the provision.

5.7 Inventory

The Company reviews the carrying amount of inventory on a regular basis. Carrying amount of inventory is adjusted where the net realizable value is below the cost. Net realizable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and estimated costs necessary to make the sale.

6 Summary of significant accounting policies

These accounting polices stated below have been consistently applied to all periods presented in these financial statements.

6.1 Long term financing

These are classified as 'financial liabilities at amortized cost'. On initial recognition, these are measured at fair values less attributable transaction costs. Subsequent to initial recognition, these are measured at amortized cost with any difference between cost and value at maturity recognized in the statement of income and expenditure over the period of the borrowings on an effective interest rate basis.

Loans at a below-market rate of interest from Government are recognized and measured at amortized cost (i.e. the present value of the future cash flows discounted at a market rate of interest). The benefit, that is the difference between the fair value of the loan on initial recognition and the amount received, is accounted for as additional government grant. The benefit is accounted for as deferred credit and is amortized over the period of borrowings.

6.2 Government grants

Government grants are recognized when there is reasonable assurance that the Company will comply with all conditions attaching to them and these will be received.

When the grant relates to expense item, it is recognized as income over the period necessary to match the grant on systematic basis to the cost that is intended to compensate. When the grant relates to an asset, it is recognized as deferred income and changes to the income in equal amounts over the expected useful life of related assets.

Non monetary grants are recognised at fair value of the assets received in kind.

6.3 Post retirement benefit

The Company operates approved funded gratuity scheme covering all its full time permanent workers who have completed the minimum qualifying period of service as defined under the respective scheme. The gratuity scheme is managed by trustees. The calculation of the benefit requires assumptions to be made of future outcomes, the principal ones being in respect of increase in remuneration and the discount rate used to convert future cash flows to current values. The assumptions used for the plan are determined by independent actuary on annual basis using projected unit credit method.

6.4 Trade and other payables

Liabilities relating to trade and other payables are carried at fair value of consideration to be paid in the future for goods and services received, whether or not billed to the Company. Subsequently, these are recorded at amortized cost.

6.5 Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period of time to get ready for their intended use or sale, are added to the cost of those assets, until such time as the assets are substantially ready for their intended use or sale. Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying asset is deducted from the borrowing costs eligible for capitalization. All other borrowing costs are recognized in the statement of income and expenditure as incurred.

6.6 Provisions

Provisions are recognized when the Company has a legal or constructive obligation as a result of past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate of the amount can be made. Provisions are reviewed at date of each statement of financial position and adjusted to reflect the current best estimate.

6.7 Property, plant and equipment

Property and equipment are stated at cost less accumulated depreciation and impairment in value, if any. Cost of property plant and equipment consist of historical costs and directly attributable costs in bringing the assets to their working condition.

The management of the Company reassesses useful lives, depreciation method and rates for each item of property, plant and equipment annually by considering expected pattern of economic benefits that the Company expects to derive from that item and the maximum period up to which such benefits are expected to be available. Any change in estimate may affect the depreciation charge or impairment.

Depreciation is calculated by applying the rates mentioned in the Note 20 on reducing balance method. Depreciation is charged on additions from the month the asset is available for use and on disposals up to the month preceding the month of disposal. The assets' residual values and useful lives are reviewed and adjusted, if appropriate, at each reporting date.

Normal repair and maintenance is charged to income as and when incurred whereas major renewals and improvements are capitalized. Gain or loss on disposal of assets is charged to the statement of income and expenditure.

6.8 Capital work-in-progress

Capital work in progress represents expenditure on property, plant and equipment in the course of construction and installation including material, labour and overheads directly relating to the project. Capital work-in-progress is stated at cost less any identified impairment loss. All expenditure connected with specific assets incurred during installation and construction period are carried under capital work-in progress. These are transferred to specific assets as and when these are available for use.

6.9 Intangibles

Expenditure incurred to acquire intangibles is capitalized as intangible and stated at cost less accumulated amortization and any identified impairment loss. The estimated useful life and amortization method is reviewed at the end of each annual reporting period, with effect of any changes in estimate being accounted for on a prospective basis.

Intangibles are amortized using straight-line method over a period of three years. Amortization on additions to intangible assets is charged from the month the asset is available for use and on disposals up to the month preceding the month of disposal.

6.10 Stores, spare parts and loose tools

These are stated at lower of cost and net realizable value. Cost is determined using the weighted average method. Items in transit are valued at cost comprising invoice value plus other charges paid thereon.

6.11 Inventory

This represents saleable land received from government and land purchased for various projects, expenditure incurred on its development and is intended to be sold in the ordinary course of business.

Expenditure incurred on development of infrastructure forms part of the cost of over all project and is included in the cost of inventory as and when incurred.

ATTESTED
TARIQ IQBAL MAHER
Advocate High Court
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Inventory is valued at lower of the cost and net realizable value. Net realizable value is the estimated selling price of plots in the ordinary course of business less the estimated costs of completion of projects in progress. Cost is determined on worked performed basis.

6.12 Trade debts

Trade debts are carried at amortized cost based on review of outstanding amounts at the year end. Bad debts are written off when identified.

6.13 Cash and cash equivalents

Cash and cash equivalents comprise of cash in hand and at bank and short term investments with maturities of three months or less. These are readily convertible to known amount of cash therefore they are subject to insignificant risk of changes in value and are used by the Company in the management of its short-term commitments.

6.14 Loans and receivables

Loans and receivables are recognized initially at fair value, plus attributable transaction costs. Subsequent to initial recognition, loans and receivables are stated at amortized cost with any difference between cost and redemption value being recognized in the statement of income and expenditure over the period of the investments on an effective yield method less impairment.

6.15 Financial instruments

Financial assets at amortised cost
Assets that are held for collection of contractual cash flows where those cash flow represents solely payments of principal and interest are measured at amortised cost. Interest income from these financial assets, impairment losses, foreign exchange gains and losses, and gain or loss arising on derecognition are recognised directly in profit or loss.

Financial assets at fair value through other comprehensive income
Financial assets at fair value through other comprehensive income are held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets and the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Financial assets at fair value through profit or loss
Assets that do not meet the criteria for amortised cost or fair value through other comprehensive income or assets that are designated at fair value through profit or loss using fair value option, are measured at fair value through profit or loss. A gain or loss on debt investment that is subsequently measured at fair value through profit or loss is recognised in profit or loss in the period in which it arises.

Equity instrument financial assets are measured at fair value at and subsequent to initial recognition. Changes in fair value of these financial assets are normally recognised in profit or loss. Dividends from such investments continue to be recognised in profit or loss when the Company's right to receive payment is established. Where an election is made to present fair value gains and losses on equity instruments in other comprehensive income there is no subsequent reclassification of fair value gains and losses to profit or loss following the derecognition of the investment.

Financial assets are derecognized when the Company loses control of the contractual rights that comprise the financial asset. Assets or liabilities that are not contractual in nature and that are created as a result of statutory requirements imposed by the Government are not the financial instruments of the Company.

Financial liabilities

Financial liabilities are recognised at the time when the Company becomes a party to the contractual provisions of the instrument. Financial liabilities at amortised cost are initially measured at fair value less transaction costs. Financial liabilities at fair value through profit or loss are initially recognised at fair value and transaction costs are expensed on profit or loss.

Financial liabilities, other than those at fair value through profit or loss, are subsequently measured at amortised cost using the effective yield method.

A financial liability is derecognised when the obligation under the liability is discharged, cancelled or expired. Where an existing financial liability is replaced by another from the same lender or substantially different terms, or the terms of an existing liability are substantially modified, such an exchange and modification is treated as a derecognition of the original liability and the recognition of a new liability, and the difference in respective carrying amounts is recognised in profit or loss.

6.16 Impairment

Financial assets

The Company assesses on a forward looking basis the expected credit losses associated with its financial assets. The Company applies the simplified approach to recognise lifetime expected credit losses for trade debts, contract assets. Individually significant financial assets are tested for impairment on an individual basis. The remaining financial assets are assessed collectively in groups that share similar credit risk characteristics. The Company recognises in profit or loss, as an impairment gain or loss, the amount of expected credit losses (or reversal) that is required to adjust the loss allowance at the reporting date.

Non-financial assets

The carrying amounts of non-financial assets are assessed at each reporting date to ascertain whether there is any indication of impairment. If such an indication exists, the asset's recoverable amount is estimated to determine the extent of impairment loss, if any. An impairment loss is recognized as an expense in the statement of profit or loss. The recoverable amount is the higher of an asset's fair value less cost of disposal and value-in-use. Value-in-use is ascertained through discounting of the estimated future cash flows using a discount rate that reflects current market assessments of the time value of money and the risk specific to the assets. For the purpose of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows (cash-generating units).

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An impairment loss is reversed if there is a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization, if no impairment loss had been recognized.

Offsetting of financial assets and financial liabilities

A financial asset and financial liability is offset and the net amount is reported in the statement of financial position if the Company has a legally enforceable right to set off the transaction and also intends either to settle on a net basis or to realize the asset and settle the liability simultaneously.

6.17 Revenue

Revenue is recognised when followings are met:

- Identify the contract(s) with a customer;
- Identify the performance obligations in the contract;
- Determine the transaction price;
- Allocate the transaction price to the performance obligations in the contract;
- Recognise revenue when (or as) the entity satisfies a performance obligation.

- Revenue from sale of industrial plots is recognized when customers obtain control of the plot and chances of cancellation of the allotment of the plot is remote, and the following conditions fulfilled:
  - Full Payment Received;
  - Agreement to sell executed;
  - Physical possession given;
- Revenue from electricity bills is recognized on the basis of electricity supplied to customers at rates determined by NEPRA for DESCO. Electricity sale is recorded over the period of time i.e. when the consumers have consumed the electricity supplied.
- Fee and other charges are charged to customers at prescribed rates and they are recognized as income over the period of time.
- Operations and maintenance charges billed to customers are recorded over the period of time.
- Transfer fee is charged to customers at prescribed rates and it is recognized as income on accrual basis.
- Return on bank deposits/interest income is recognized as and when accrued on effective interest method.
- Miscellaneous income represents fee for providing temporary connections and repair/replacement of cables and temporary meters. The fee for installation/replacement of temporary connections is recognized on installation of meters at allottees' sites. The income related to repair of meters and cables is recognised on performance of repair and maintenance services.

6.18 Advances received for sale of plots

Advances received from customers against sale of plots are stated at cost. They are recognized as revenue when customers obtain control of the plot and chances of cancellation of the allotment of the plot is remote, and the following conditions fulfilled:

- Full Payment Received;
- Agreement to sell executed;
- Physical possession given;

6.19 Deferred income

Amount received from customers for electric transformers are recognised as deferred income and recognized as income over the useful life of the transformers from the date of installation.

PUNJAB INDUSTRIAL ESTATES DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984. Now Companies Act, 2017)

Notes to the Financial Statements

For the year ended June 30, 2021

		Note	2021 Rupees	2020 Rupees
7	**Share capital**			
	Authorized share capital			
	15,000,000 (2020:15,000,000) ordinary shares of rupees 10 each		150,000,000	150,000,000
	Issued, subscribed and paid up capital			
	5,000,000 (2020:5,000,000) ordinary shares of rupees 10 each fully paid in cash		50,000,000	50,000,000
	Total		50,000,000	50,000,000
	100% Shares of the Company are held by the Government of the Punjab (through Industries, Commerce Investment & Skill Development Department).			
8	**Long term financing**			
	Loan from Government of Punjab I - SIE	8.1	935,000,000	935,000,000
	Loan from Government of Punjab II - VIE	8.2	151,000,000	151,000,000
	Loan from Government of Punjab III - SIE	8.3	100,000,000	100,000,000
	Loan from Government of Punjab IV - PEETCO	8.4	19,500,000	19,500,000
	Sub total	8.5	1,205,500,000	1,205,500,000
	Loan from Government of Punjab V - VIE	8.6	150,000,000	150,000,000
	Loan from Government of Punjab VI - SIE	8.7	100,000,000	100,000,000
	Loan from Government of Punjab VII - QABP	8.8	3,315,668,000	3,315,668,000
	Loan from Government of Punjab VII - QABP	8.9	1,587,332,000	1,587,332,000
	Loan from Government of Punjab VIII - CIE	8.10	470,000,000	470,000,000
	Loan from Government of Punjab IX - QABP	8.11	1,650,000,000	1,650,000,000
	Loan from Government of Punjab (QABP)		1,700,000,000	1,700,000,000
	Loan from Government of Punjab (Bahawalpur)		250,000,000	250,000,000
	Loan from Government of Punjab (Bahawalpur)		100,000,000	-
	Sub total		9,323,000,000	9,223,000,000
	Loan against state land			
	Loan from Government of Punjab I - BIE	8.12	127,328,437	127,328,437
	Loan from Government of Punjab II - BIE	8.12	3,238,125	3,238,125
	Loan from Government of Punjab III - VIE	8.13	132,000,000	132,000,000
	Loan from Government of Punjab IV - CIE	8.14	103,203,387	103,203,387
	Loan from Government of Punjab V - BWP	8.15	1,064,085,000	1,064,085,000
			1,429,854,949	1,429,854,949
	Total long term financing		11,958,354,949	11,858,354,949
	Less: Repayment of loan		(964,400,000)	(843,850,000)
	Less: Deferred credit	10	(3,614,680,682)	(3,614,680,682)
			7,379,274,267	7,399,824,267
	Opening balance of amortization of deferred credit		2,463,107,192	2,203,641,089
	Add: Amortization of deferred credit during the year		229,519,198	259,466,103
		8.16 & 8.17	2,692,626,390	2,463,107,192
	Total Financing	8.19	10,071,900,657	9,862,931,459
	Current portion of long term financing	8.18	(7,718,038,594)	(7,147,397,917)
			2,353,862,063	2,715,533,542

8.1 This represents loan for development of infrastructure and ancillary facilities at Sundar Industrial Estate. For terms refer to Note 8.5.

8.2 This represents loan for the establishment of Vehari Industrial Estate. For terms, refer to Note 8.5.

8.3 This represents loan for shifting of Hazardous Industries from city to Sundar Industrial Estate. For terms, refer to Note 8.5.

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8.4 This represents loan on behalf of Punjab Environmental Effluent Treatment Company ("PEETCO"), a related party, for combined effluent treatment plant at Sundar Industrial Estate. For terms, refer to Note 8.5.

8.5 Aggregate loan of Rs.1,205.50 million is repayable in ten equal annual instalments commencing from 31 December 2013 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.6 This loan of Rs. 150 million is for establishment of Vehari Industrial Estate. The loan is repayable in three equal annual instalments commencing from 30 June 2017 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.7 This loan of Rs. 100 million is for shifting of Hazardous Industries from City to Sundar Industrial Estate. The loan is repayable in three equal annual instalments commencing from 30 June 2017 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.8 This loan received is for establishment of Quaid-e-Azam Business Park Sheikhupura. The loan was received in the form of land having award value of Rs. 3,316 million with area measuring 1,562 acres during the year ended 30 June 2014. The loan is repayable in three equal annual instalments commencing from 30 June 2017 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.9 This loan is for the establishment of Quaid-e-Azam Business Park Sheikhupura. The loan is repayable in three equal annual instalments commencing from 30 June 2018 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.10 This loan is for the establishment of Chunian Industrial Estate. The loan is repayable in three equal annual instalments commencing from 30 June 2019 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.11 This loan is for the establishment of Quaid-e-Azam Business Park Sheikhupura. The loan is repayable in three equal annual instalments commencing from 30 June 2020 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.12 The represents land sold by the Government of Punjab (GoPb) to the Company for the establishment of Bhalwal Industrial Estate having award value of Rs. 127.33 million and Rs. 3.24 million with area measuring 385.84 acres and 4.91 acres during the year ended 30 June 2011 and 2013, respectively. In accordance with letter received from the GoPb sale price of such land is converted into loan. It carries interest rate at 0.25% per anum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.13 The represents land sold by the Government of Punjab (GoPb) to the Company for the establishment of Vehari Industrial Estate having award value of Rs. 132 million with area measuring 200 acres during the year ended 30 June 2013. In accordance with letter received from the GoPb sale price of such land is converted into loan. It carries interest rate at 0.25% per anum.Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.14 The represents land sold by the Government of Punjab (GoPb) to the Company for the establishment of Chunian Industrial Estate having award value of Rs. 103.20 million with area measuring 130.11 acres during the year ended 30 June 2014. In accordance with letter received from the GoPb sale price of such land is converted into loan. It carries interest rate at 0.25% per anum.Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.15 The represents land sold by the Government of Punjab (GoPb) to the Company for the establishment of Bahawalpur Industrial Estate having award value of Rs. 1,064.09 million with area measuring 483.18 acres during the year ended 30 June 2017. In accordance with letter received from the GoPb sale price of such land is converted into loan. It carries interest rate at 0.25% per anum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.16 This represents difference between amortized cost and face value of subsidised loan. Amortized cost has been determined using effective mark-up at 8.75 % to 12.95% per annum (2018: 8.75% to 12.95%).

8.17 The Company has recognized the present value effect of low interest bearing loan from Government of Punjab in statement of financial position as deferred credit.

8.19 Subsequent to year end, Government of Punjab in a 13th meeting of standing committee of cabnit on finance and development held on July 30, 2019 decided to defer the loan repayment vide letter SO(CAB-II) 1-11/2019(SCCFD) dated August 16, 2019 amounting to Rs. 6,553 million uptill 31 December, 2019.

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		Note	2021 Rupees	2020 Rupees
9	**Deferred income (Against transformer sharing)**			
	Opening balance		**180,288,581**	197,940,762
	Received from customers against cost of sharing transformers		**-**	911,730
	Amortization for the year	32	**(16,707,519)**	(18,563,911)
	Closing balance as at 30 June	9.1	**163,581,061**	180,288,581

9.1 Amount received from customers for sharing of electric transformers are recognised as deferred income and recognized as income over the useful life of the transformers from the date of installation.

10	**Deferred Credit**			
	Opening balance	10.1	**3,614,680,682**	3,614,680,682
	Less Opening Amortization	8.16	**(2,463,107,192)**	(2,203,641,089)
	Less Amortization for the year	8.17	**(229,519,198)**	(259,466,103)
	Closing balance as at 30 June		**922,054,292**	1,151,573,490
10.1	**Amortization of new loan**			
	Opening balance		**3,614,680,682**	2,942,526,107
	Charge during the year			672,154,575
	Closing balance as at 30 June		**3,614,680,682**	**3,614,680,682**

10.2 Deferred Credit present the effect of low interest bearing loan from Government of Punjab in statement of financial position.

11	**Deferred grants**			
	Opening balance	11.1	**201,522,810**	204,405,210
	Grants received during the year		**-**	-
			201,522,810	204,405,210
	Grants amortized related to income		**-**	-
	Grants amortized related to assets		**(3,833,544)**	(2,882,400)
	Closing balance as at 30 June		**197,689,266**	201,522,810

11.1 This includes grant of Rs. 80 million from Government of Punjab for setting up a pharmaceutical laboratory at Sundar Industrial Estate and Rs. 180 million received in cash for acquisition of land and development of new industrial estate in Gujrat. No development work has been started till 30 June 2019 in Gujrat Industrial Estate.

12 **Deferred liabilities**

The latest actuarial valuation of the Company's defined benefit gratuity scheme was conducted on 30 June 2019 using projected unit credit method. Details of obligation for defined benefit gratuity scheme is as follows:

		Note	2021 Rupees	2020 Rupees
12.1	Opening Balance		**41,984,159**	30,847,075
	Provision for the year		**57,838,833**	39,047,184
	Payment during the year		**(3,322,906)**	(4,276,242)
	Transfer to fund		**(38,617,136)**	(23,633,858)
	Liability as at 30 June		**57,882,950**	**41,984,159**
13	**Accrued mark up on financing**		**531,970,597**	249,973,003
13.1	**Accrued mark up**			
	Overdue interest		**110,440,401**	88,833,951
	Interest accrued for the year		**27,385,572**	22,811,950
	Paid during the year		**(904,125)**	(1,205,500)
			136,921,848	110,440,401
13.2	**Accrued penelty**			
	Overdue penelty		**139,532,602**	25,225,779
	Penelty accrued for the year		**255,516,147**	114,306,823
	Paid during the year		**-**	-
			395,048,749	139,532,602

14 Trade and other payables

Creditors	688,070,326	494,450,979
Advances from customers	201,361,014	188,528,728
Accrued liabilities	118,847,899	38,041,313
Bills payable	161,427,831	58,335,452
Retention money payable	331,837,075	333,224,332
Tax payable	136,060,689	107,630,068
Payable To Tannery Zone allottees	2,923,403	2,923,403
Other payables	100,098,037	98,408,079
Inter Office Payables	328,417,507	205,798,345
	2,069,043,781	1,527,340,699

15 Security Deposits

Security deposits against electricity connections	15.1	465,274,937	434,064,603
Security deposit against rent		4,007,250	3,767,250
		469,282,187	437,831,853

15.1 These represent security deposits received from customers in the Sundar Industrial Estate and Rahim Yar Khan Industrial Estate against electricity connections given to their plots and security deposits received against rent.

16 Advance from customers against consultancy services

In accordance with agreement executed between the Company and the Energy Department, the Government of Punjab (Energy Department) was entered on 06 March 2015 where under Energy Department has released Rs. 1,619.57 million to the Company in advance for Engineering, Construction & Procurement Services of all works mentioned in agreement and as per the approved development plan of the Quaid-e- Azam Solar Park, Bahawalpur. Out of Rs. 1,619.57 million transferred by Energy Department, the Company has incurred Rs.1,378.66 million (2018: Rs. 1,248.21 million) for development of infrastructure of Quaid-e-Azam Solar Park Bahawalpur up to 30 June 2019. As per the understanding between the Company and Energy Department, all expenditure under this agreement are on cost reimbursement basis.

17 Advances received for sale of plots

	Note	2021 Rupees	2020 Rupees
Sundar Industrial Estate		342,773,155	584,083,772
Multan Industrial Estate Phase I		74,407,510	74,407,510
Multan Industrial Estate Phase II		861,807,894	754,361,809
Rahim Yar Khan Industrial Estate		617,005,629	325,548,498
Bhalwal Industrial Estate		680,341,201	366,962,797
Vehari Industrial Estate		292,376,540	220,471,649
Quaid-e-Azam Business Park		3,922,126,770	-
		5,790,838,699	2,325,836,035

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18 Contingencies and Commitments

Contingencies

18.1 The Company is distributing electricity in SIE and RIE without having a distribution license from National Electric Power Regulatory Authority (NEPRA). As per Section 20 of the Electric Power Project Act, 1997, no person can engage in distribution of electric power without having a distribution license issued by NEPRA under the Act. The Company by engaging in the distribution of electric power is acting in violation of the said section of the Act. Under Rule 3 of the National Electric Power Regulatory Authority (Fines) Rules, 2002 (the "Rules") NEPRA can impose fines as specified in the first schedule to the said Rules in case of such violation.

In this regard, the Company submitted applications to NEPRA on 9 October 2006 and 17 October 2016 for SIE and RIE respectively. SIE application was turned down on 17 October 2006. The Company again submitted an application to NEPRA which was admitted for consideration of grant of distribution license on 25 July 2011. In response to this Lahore Electric Supply Company submitted its comments on 25 August 2011. Consequently NEPRA sought the Company's view point vide its letter dated 29 August 2011. The Company, in this regard, submitted its reply to NEPRA on 28 February 2012 through its legal consultant hired for this purpose. After a long time, NEPRA asked the Company to submit another application for power supplier license vide its letter dated 15 October 2018 in view of amendments in NEPRA Act. The Company again submitted an application for electric power supplier license to NEPRA on 26 March 2019. The Company requested NEPRA for early issuance of Distribution License through its letter dated 30 May 2019 after meeting of Chairman PIEDMC with Chairman NEPRA on 6 May 2019. The Company has again submitted its application to NEPRA on 26 July 2021 for grant of license for distrubution of electricity in SIE, RIE, BIE and QABP.

The management is confident that distribution license will be granted to the Company and accordingly no adverse impact in these financial statements is expected.

18.2 There are 132 (2018: 133) cases pending in various courts relating to land, contractors, consultants and Employees at Sundar, Quaid-e-Azam, Multan, Rahim Yaar Khan Industrial Estates and Quaid-e-Azam Business Park. Because of the number of cases involved and their uncertain nature, it is not possible to quantify their financial effect at present. However, based on the opinion of legal advisors no adverse impact on the financial statements is expected to arise on settlement of these cases.

18.3 Proceedings U/S 161 of the Income Tax Ordinance, 2001 were finalized by the Assistant Commissioner Inland Revenue (ACIR) on 28-06-2016 for the tax year 2012 to 2015 by raising an impugned demand u/s 235 of the Income Tax Ordinance, 2001 amounting to Rs. 294.16 along with default surcharge of Rs. 126.55 million. Appeal against the order for tax years 2012 to 2015 was filed before the Commissioner Inland Revenue-Appeals (CIR-A). CIR-A has rejected the appeal and maintained the order of ACIR dated 28-06-16 by passing orders on 23-05-2017. The Company has paid full amount of Rs. 294.16 million (without default surcharge) against demand raised by ACIR for Tax Years 2012 to 2015. However, the management and tax advisor is of view that the matter regarding default surcharge will be decided in favor of the Company, accordingly, no further provision regarding default surcharge of Rs. 126.55 million has been accounted for in these financial statements.

18.4 Certain petitioners of Civil Society filed a petition in the Honourable Lahore High Court on 23 October 2017 challenging incorporation of the Company along with other companies incorporated u/s 42 of the repealed Companies Ordinance, 1984 which are operating in Punjab. Currently, proceedings of the Courts are in process. Based on opinion of the legal advisor, the Company would be able to continue as going concern as such petition is most likely to be dismissed.

	2021 Rupees	2020 Rupees
Commitments		
Commitments in respect of development projects	**2,111,284,516**	2,111,284,516

	Note	2021 Rupees	2020 Rupees
19 Property, plant and equipment		**587,929,224**	571,255,040

2021

Description	Cost as at July 1, 2020	Additions during the year	Disposal during the year	Cost as at June 30, 2021	Accumulated depreciation as at July 1, 2020	Depreciation for the year	Depreciation on disposals	as at June 30, 2021	Book value as at June 30, 2021	Annual rate of depreciation %
Land	12,480,403	-	-	12,480,403	-	-	-	-	12,480,403	0%
Buildings	246,762,794	7,459,546	(820,000)	253,402,340	(93,362,969)	(15,797,003)	-	(109,159,972)	144,242,368	10%
Office equipments	46,367,757	6,898,032	-	53,265,789	(28,435,297)	(4,335,484)	-	(32,770,781)	20,495,008	20%
Lab Equipments	66,827,753	-	-	66,827,753	(57,093,098)	(2,797,152)	-	(59,890,250)	6,937,503	30%
Computers	59,651,507	6,266,215	-	65,917,722	(43,086,287)	(5,269,552)	-	(48,355,839)	17,561,883	30%
Furniture and fixtures	26,737,475	2,018,767	-	28,756,242	(19,718,607)	(1,479,370)	-	(21,197,977)	7,558,265	20%
Electric installations	3,297,794	-	-	3,297,794	(2,889,954)	(81,567)	-	(2,971,521)	326,273	20%
Machinery	39,344,919	28,590,806	-	67,935,725	(26,605,593)	(3,237,781)	-	(29,843,374)	38,092,351	20%
Vehicles	187,916,208	25,500,447	-	213,416,655	(114,661,664)	(16,613,568)	-	(131,275,232)	82,141,423	20%
Transformers	267,971,961	-	-	267,971,961	(87,683,372)	(16,707,519)	-	(104,390,891)	163,581,070	10%
Grid Stations	93,200,064	-	-	93,200,064	(5,766,754)	(4,371,666)	-	(10,138,420)	83,061,644	5%
Bill Board	-	12,749,226	-	12,749,226	-	(1,298,193)	-	(1,298,193)	11,451,033	20%
	1,050,558,635	89,483,039	(820,000)	1,139,221,674	(479,303,595)	(71,988,855)	-	(551,292,450)	587,929,224	

2020

Description	Cost as at July 1, 2019	Additions during the year	Disposal during the year	Cost as at June 30, 2020	Accumulated depreciation as at July 1, 2019	Depreciation for the year	Depreciation on disposals	as at June 30, 2020	Book value as at June 30, 2020	Annual rate of depreciation %
Land	12,480,403	-	-	12,480,403	-	-	-	-	12,480,403	0%
Buildings	240,883,198	5,879,596	-	246,762,794	(78,502,400)	(14,860,569)	-	(93,362,969)	153,399,825	10%
Office equipments	42,662,719	3,705,038	-	46,367,757	(23,907,043)	(4,528,254)	-	(28,435,297)	17,932,460	20%
Lab Equipments	66,827,753	-	-	66,827,753	(53,097,170)	(3,995,928)	-	(57,093,098)	9,734,655	30%
Computers	57,223,936	2,427,571	-	59,651,507	(36,397,455)	(6,688,832)	-	(43,086,287)	16,565,220	30%
Furniture and fixtures	26,260,722	476,753	-	26,737,475	(18,017,181)	(1,701,426)	-	(19,718,607)	7,018,868	20%
Electric installations	3,297,794	-	-	3,297,794	(2,787,995)	(101,959)	-	(2,889,954)	407,840	20%
Machinery	39,297,164	1,851,858	(1,804,103)	39,344,919	(24,012,648)	(4,044,833)	1,451,888	(26,605,593)	12,739,326	20%
Vehicles	190,109,916	2,943,000	(5,136,708)	187,916,208	(98,127,762)	(21,282,637)	4,748,735	(114,661,664)	73,254,544	20%
Transformers	267,060,231	911,730	-	267,971,961	(69,119,461)	(18,563,911)	-	(87,683,372)	180,288,589	10%
Grid Stations	93,200,064	-	-	93,200,064	(1,165,091)	(4,601,753)	-	(5,766,754)	87,433,310	5%
	1,039,303,900	18,195,546	(6,940,811)	1,050,558,635	(405,134,116)	(80,370,102)	6,200,623	(479,303,595)	571,255,040	

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		Note	2021 Rupees	2020 Rupees
20	**The depreciation charged for the year has been allocated as follows:**			
	Operations and maintenance expenses	36	21,265,628	24,544,230
	Cost of electricity	37	4,371,666	4,601,753
	Administrative expenses	38	46,351,562	51,224,120
	Total	20.1	71,988,856	80,370,103

20.1 It includes depreciation expense on laboratory equipment and building of PDTRC amounting to Rs. 5,901,336 (2018: Rs. 7,746,282) for which grant was provided by the Government of Punjab (related party).

21	**Intangible assets**			
	Cost			
	Opening balance		3,125,000	3,125,000
	Additions during the year		243,750	-
	Closing balance		3,368,750	3,125,000
	Accumulated Amortization			
	Opening balance		3,085,799	3,033,539
	Amortization during the year		66,284	52,260
	Closing balance		3,152,083	3,085,799
	NBV as at 30 June		216,667	39,201
22	**Capital work in progress**			
	Balance as at 1 July		445,898,868	96,117,063
	Additions during the year		119,669,387	351,208,214
	Transfers to operating fixed assets		(2,491,178)	(1,426,409)
	Balance as at 30 June	22.1	563,077,077	445,898,868
22.1	**Capital Work in progress**			
	Office building SIE		309,592	309,592
	Construction office boundary wall - MIE		1,426,409	
	QIE		-	2,491,178
	Surveillance System		44,853,921	141,606,468
	Grid stations SIE (T-4)		84,883,702	131,908,789
	Grid stations RIE		80,582,053	169,582,841
			212,055,677	445,898,868

23	**Inventory (projects in progress)**	Note	2021 Rupees	2020 Rupees
	Sunder Industrial Estate		20,308,887	59,648,322
	Multan Industrial Estate II		739,954,639	642,397,528
	Bhalwal Industrial Estate		1,993,094,473	1,848,439,319
	Rahim Yar Khan Industrial Estate		1,704,263,626	1,809,271,835
	Bahawalpur Industrial Estates		1,425,746,253	1,357,480,360
	Vehari Industrial Estate		1,047,539,539	1,077,597,600
	Quaid-e-Azam Apparel Park (Quaid-e-Azam Business Park)		5,897,256,378	5,488,931,209
	Chunian Industrial Estate		417,758,431	414,972,754
	Quaid-e-Azam Industrial Estate (plots)		25,341,651	25,341,651
	P. D. Khan Industrial Estate		12,282,216	12,282,216
	Research & Planning		62,851,131	68,451,622
			13,346,397,224	12,804,814,416
	Less: NRV adjustment		(181,593,115)	(181,593,115)
		22.1 & 22.2	13,164,804,109	12,623,221,301

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23.1 It includes land measuring area 667 acres in Multan Industrial Estate Phase II, 483 acres in Bahawalpur Industrial Estate, 200.00 acres in Vehari Industrial Estate, 130.11 acres in Chunian Industrial Estate and 390.75 acres in Bhalwal Industrial Estate, the title of these estates have not yet been transferred in the name of the Company.

23.2 This includes borrowing cost capitalized amounting to Rs. 88.23 million (2018: 66.47 million) against the loan received from Government of Punjab.

24	**Trade debts**			
	- Considered good	23.1	1,409,834,244	1,076,072,980
	- Considered doubtful		629,180,631	635,823,876
		23.2	2,039,014,875	1,711,896,856
	Less: Provision for doubtful debts	23.3	(629,180,631)	(635,823,876)
			1,409,834,244	1,076,072,980

23.1 These includes receivables against sale of electricity amounting to Rs. 187.45 million (2019: 40.00 million) which is secured against security deposit.

23.2	**Trade debts** - *unsecured*		
	Accrued electricity billing	803,706,679	642,171,674
	Electricity bills receivables	376,668,456	187,448,871
	Operation and maintenance charges receivable	118,961,836	123,097,389
	Water charges receivable	18,608,182	25,069,603
	Aquifer Charges receivable	23.4 1,583,852	3,321,666
	Sewerage charges receivable	22,455,122	31,426,765
	Lease rentals receivable	752,368	1,041,506
	Rent Receivables	1,333,775	1,992,537
	Annual recurring expenses receivable	893,394	961,029
	Sub letting fee receivable	5,947,438	7,124,598
	Receivables against fee and penalties (NUF)	643,832,305	647,060,908
	Mark-up on outstanding dues	44,271,469	41,180,310
		2,039,014,875	1,711,896,856

		Note	2021 Rupees	2020 Rupees
23.3	**Provision for doubtful debts - unsecured**			
	Opening balance		635,823,876	635,823,876
	Provision for the year (including ECL)			
	Recoveries / adjustments made during the year		(6,643,245)	
	Closing balance		629,180,631	635,823,876

23.4 These have been adjusted to incorporate for taking impact of Supreme Court of Pakistan (SCP) order regarding decreased in water charges

25	**Advances, deposits prepayments and other receivables**			
	Advances to suppliers - *unsecured*	25.1	139,046,968	160,615,344
	Advances to employees - *considered good*	25.2	39,995,269	32,447,848
	Security deposits		3,478,927	3,379,427
	Prepayments		10,431,278	6,395,028
	Donations recoverable from plot owners - considered doubtful		167,035	173,621
	Sales tax adjustable		347,140,080	211,209,028
	Receivable from related party (PEETCO)	25.3	19,500,000	19,500,000
	Others		14,082,032	9,598,677
			573,841,589	443,318,973
	Less: Provision for doubtful advances and other receivables	25.4	(80,723,659)	(80,723,659)
			493,117,930	362,595,314

25.1	**This includes:**		
	Mobilization advances to contractors - good	7,129,778	20,629,778
	Material advances to contractors - good	24,488,093	23,433,287
	Advances to suppliers - good	24,637,657	33,760,839
	Advance to contractors (Deposits Work)	82,791,440	82,791,440
		139,046,968	160,615,344

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23.1 It includes land measuring area 667 acres in Multan Industrial Estate Phase II, 483 acres in Bahawalpur Industrial Estate, 200.00 acres in Vehari Industrial Estate, 130.11 acres in Chunian Industrial Estate and 390.75 acres in Bhalwal Industrial Estate, the title of these estates have not yet been transferred in the name of the Company.

23.2 This includes borrowing cost capitalized amounting to Rs. 88.23 million (2018: 66.47 million) against the loan received from Government of Punjab.

24	**Trade debts**		
	- Considered good	23.1	1,409,834,244	1,076,072,980
	- Considered doubtful		629,180,631	635,823,876
		23.2	2,039,014,875	1,711,896,856
	Less: Provision for doubtful debts	23.3	(629,180,631)	(635,823,876)
			1,409,834,244	1,076,072,980

23.1 These includes receivables against sale of electricity amounting to Rs. 187.45 million (2019: 40.00 million) which is secured against security deposit.

23.2	**Trade debts** - *unsecured*		
	Accrued electricity billing	803,706,679	642,171,674
	Electricity bills receivables	376,668,456	187,448,871
	Operation and maintenance charges receivable	118,961,836	123,097,389
	Water charges receivable	18,608,182	25,069,603
	Aquifer Charges receivable	23.4 1,583,852	3,321,666
	Sewerage charges receivable	22,455,122	31,426,765
	Lease rentals receivable	752,368	1,041,506
	Rent Receivables	1,333,775	1,992,537
	Annual recurring expenses receivable	893,394	961,029
	Sub letting fee receivable	5,947,438	7,124,598
	Receivables against fee and penalties (NUF)	643,832,305	647,060,908
	Mark-up on outstanding dues	44,271,469	41,180,310
		2,039,014,875	1,711,896,856

	Note	2021 Rupees	2020 Rupees
23.3	**Provision for doubtful debts - unsecured**		
	Opening balance	635,823,876	635,823,876
	Provision for the year (including ECL)		
	Recoveries / adjustments made during the year	(6,643,245)	
	Closing balance	629,180,631	635,823,876

23.4 These have been adjusted to incorporate for taking impact of Supreme Court of Pakistan (SCP) order regarding decreased in water charges.

25	**Advances, deposits prepayments and other receivables**		
	Advances to suppliers - *unsecured*	25.1 139,046,968	160,615,344
	Advances to employees - *considered good*	25.2 39,995,269	32,447,848
	Security deposits	3,478,927	3,379,427
	Prepayments	10,431,278	6,395,028
	Donations recoverable from plot owners - considered doubtful	167,035	173,621
	Sales tax adjustable	347,140,080	211,209,028
	Receivable from related party (PEETCO)	25.3 19,500,000	19,500,000
	Others	14,082,032	9,598,677
		573,841,589	443,318,973
	Less: Provision for doubtful advances and other receivables	25.4 (80,723,659)	(80,723,659)
		493,117,930	362,595,314

25.1	**This includes:**		
	Mobilization advances to contractors - good	7,129,778	20,629,778
	Material advances to contractors - good	24,488,093	23,433,287
	Advances to suppliers - good	24,637,657	33,760,839
	Advance to contractors (Deposits Work)	25.1.1 82,791,440	82,791,440

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25.1.1 Advance to contractor (Deposits Work) includes advance given to LESCO - related party amounting to Rs. 80 million (2018: 151 million). The ageing analysis of advance given to related party LESCO is as follows:

up to 1 year	403,344,592	403,344,592
1 to 2 years	-	-
2 to 3 years	-	-
3 to 4 years	-	-
5 years and more	80,000,000	80,000,000
	483,344,592	483,344,592

25.2 **This includes:**

Advances to employees against salary	10,754,099	8,111,613
Advances to employees against expenses	29,241,170	24,336,235
	39,995,269	32,447,848

25.3 The Company received a loan , on 19 August 2009, from Government of Punjab for Punjab Environmental Effluent Treatment Company ("PEETCO"), a related party, for combined effluent treatment plant at Sundar Industrial Estate. The funds were transferred to PEETCO on 10 September 2009. As the new loan agreement with the Government of Punjab includes this loan, it was recognized as a liability, as disclosed in note 8.4, with a corresponding receivable from PEETCO.

25.3.1 The maximum aggregate amount of receivables due from related parties at the end of any month during the year was Rs. 19,500,000 (2018: Rs 19,500,000).

25.3.2 The ageing analysis of receivable from related party PEETCO is as follows:

up to 1 year	-	-
1 to 2 years	-	-
2 to 3 years	-	-
3 to 4 years	-	-
5 years and more	19,500,000	19,500,000

	Note	2021 Rupees	2020 Rupees
25.4 **Provision for doubtful advances and other receivables**			
Opening balance		80,723,659	80,723,659
Reversal of provision during the year		-	-
Recovery during the year		-	-
Write-off during the year		-	-
Closing balance		80,723,659	80,723,659
26 **Short term investments - amortized cost**			
Maturity within 3 months		-	3,300,000,000
Maturity within 6 months		7,250,000,000	275,000,000
Maturity within 1 Year		140,000,000	15,000,000
Total		7,390,000,000	3,590,000,000

26.1 This represents investment in term deposit certificates of the Bank of Punjab carrying mark up ranging from 5.5% to 9% per annum (2018: 5.5% to 5.60% per annum).

	Note	2021 Rupees	2020 Rupees
27 **Cash and bank balances**			
Cash in hand		694,709	810,615
Current accounts		910,190	910,190
Deposit accounts		1,555,780,793	1,436,531,312
		1,557,385,692	1,438,252,117

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27.1 Cash and Bank include bank balances of Rs. 124.76 million (2018: Rs. 510.62 million) held in account not bearing title 'Punjab Industrial Estate Management and Development Company'.

27.2 The balances in deposit accounts carry mark up which ranges from 4.5% to 10.25% (2020: 2.4% to 5.4%) per annum.

		Note	2021 Rupees	2020 Rupees
28	**Sales**			
	Sale of plots Sundar Industrial Estate		30,680,854	30,680,854
	Sale of plots Multan Industrial Estate Phase II		-	-
	Sale of plots Rahimyar Khan Industrial Estate		199,260,150	199,260,150
	Sale of plots Bhalwal Industrial Estate		42,039,050	42,039,050
	Sale of plots Vehari Industrial Estate		44,137,150	44,137,150
	Additional area charges QIE		7,848,182	7,848,182
	Total		752,572,520	323,965,386
29	**Electricity billing**			
	Electricity billing	29.1	9,186,198,055	7,531,277,974
	Less: Sales tax		(641,359,459)	(641,359,459)
	Total		8,544,838,596	6,889,918,515

29.1 This represents distribution of the electricity purchased from LESCO and MEPCO and further distributed to industry holders in Sunder Industrial Estate & Rahim Yar Khan Industrial Estate.

		Note	2021 Rupees	2020 Rupees
30	**Fees**			
	Fees	30.1	370,508,807	102,838,298
	Total		370,508,807	102,838,298

30.1 These includes non utilization fee, transfer fee, map approval fee, water meter fees, bidding fees and possession fees etc.

		Note	2021 Rupees	2020 Rupees
31	**Operations, maintenance and allied service billing**			
	Operations & maintenance		244,267,110	218,368,007
	Water		77,773,646	64,279,181
	Aquifer		107,507,383	105,864,597
			429,548,139	388,511,785

		Note	2021 Rupees	2020 Rupees
32	**Other Income**			
	Return on bank deposits and investments		473,786,815	479,997,819
	Gain on disposal of vehicles		-	2,524,811
	Rental Income		44,983,796	28,361,330
	Mark up on outstanding dues		8,399,137	9,200,118
	Amortization of deferred income	9	16,707,520	18,563,911
	Amortization of deferred credit	10	229,519,198	259,466,103
	Miscellaneous income		34,028,447	23,609,324
			807,424,913	821,723,416

		Note	2021 Rupees	2020 Rupees
33	**Cost of Sales**			
	Cost of plots sold	33.1	341,118,835	260,293,830
	Net Realizable Value	33.2	-	-
	Total		341,118,835	260,293,830
33.1	**Cost of plots sold**			
	Sundar Industrial Estate		44,363,174	15,991,377
	Multan Industrial Estate			-
	Rahim Yar Khan Industrial Estate		163,737,366.22	167,353,913
	Bhalwal Industrial Estate		67,462,432	37,764,296
	Vehari Industrial Estate		65,555,862	39,184,244
	Total		341,118,835	260,293,830

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33.2	**Net Realizable Value of Inventory**		
	Rahim Yar Khan Industrial Estate	-	-
	Vehari Industrial Estate	-	-
	Bhalwal Industrial Estate	-	-
	Total	-	-
34	**Development Expenditures of Managed Estates**		
	Road and water supply development cost	17,162,540	4,005,499
	34.1	17,162,540	4,005,499

34.1 This includes development expenditure incurred on development and major rehabilitation in Sundar Industrial Estate, Multan Industrial Estate Phase I, and Quaid-e-Azam Industrial Estate.

	Note	2021 Rupees	2020 Rupees
35	**Cost on construction and supervision services - QASP**		
	Development cost (outsourced)	8,190,933	(2,227,270)
	Salaries & benefits	14,981,026	16,039,151
	Consultancy	10,862,543	-
	Cost of CCTVs		-
	Utilities	11,616,892	8,025,487
	Others	6,934,138	6,144,575
	35.1	52,585,532	27,981,943

35.1 This cost is incurred for providing services to Energy department of Government of Punjab for development of QASP.

	Note	2021 Rupees	2020 Rupees
36	**Cost of operation, maintenance and allied services**		
	Salaries & benefits	184,710,898	169,207,050
	Road, drain and sewerage cleaning	23,632,419	26,699,070
	Security	7,894,669	4,860,290
	Maintenance of disposal station	40,865,998	28,486,197
	Fuel & Power	15,096,713	13,453,912
	Repair and maintenance	10,570,471	19,165,151
	Depreciation	**20.0** 21,265,628	24,544,230
	General maintenance	53,021,707	28,912,149
	Insurance	343,144	329,213
	Uniform and liveries	542,860	2,177,750
	Utilities	53,121,186	45,597,957
	Miscellaneous	1,876,794	885,243
		412,942,487	364,318,212

	Note	2021 Rupees	2020 Rupees
37	**Cost of electricity**		
	Electricity purchased from LESCO and MEPCO	8,289,411,812	6,566,418,414
	Cost Of Self Generation of Electricity	-	-
	Stores consumed	22,118,359	27,525,442
	Salaries & benefits	52,848,355	50,998,523
	Fuel and utilities	4,611,582	3,665,636
	Repair and maintenance	3,837,874	334,880
	Entertainment	406,060	356,175
	Depreciation	4,371,666	4,601,753
	Uniform and liveries	-	-
	Misc Expenses	1,157,557	449,573
		8,378,763,265	6,654,350,396

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38	**Administrative expenses**			
	Salaries & benefits		231,825,973	206,047,216
	Rent, rates and taxes		4,391,510	8,404,222
	Repair and maintenance		10,975,933	7,703,874
	Fuel		17,764,388	17,048,814
	Insurance		7,948,669	8,244,831
	Travelling and conveyance		6,505,983	5,866,710
	Utilities		8,170,836	7,945,950
	Printing and stationery		4,935,937	3,440,464
	Network and website expenses		5,294,591	4,890,590
	Advertisement		1,715,276	2,212,209
	Security charges		197,280	57,862
	Entertainment		2,372,001	2,339,614
	Depreciation	20.0	46,351,562	51,224,120
	Amortization of Intengibal Assets	21	66,284	52,260
	Postage		1,267,332	1,349,332
	Legal and professional		8,647,899	7,895,764
	Bad debts		114,650	1,316,216
	Auditor's remuneration	38.1	-	900,000
	Books and periodicals		106,295	135,359
	Janitorial services		348,026	293,731
	Fees and subscriptions		868,105	356,873
	Uniform and liveries		215,330	436,808
	Miscellaneous		844,684	964,506
			360,928,544	339,127,325

		Note	2021 Rupees	2020 Rupees
39	**Selling expenses**			
	Image Building & Branding		2,523,328	980,790
	Foreign collaboration		-	-
	Marketing & Promotion		6,926,011	4,573,531
	Advertisement		2,073,643	193,614
	Salaries & benefits		9,152,325	9,684,123
	Rent, rates and taxes		2,288,352	6,177,440
	Repair and maintenance		359,565	90,485
	Insurance		224,857	325,754
	Utilities		1,272,940	1,042,814
	Entertainment		81,683	103,517
	Printing and stationery		76,444	20,810
	Others		72,964	146,755
			25,052,112	23,339,633

40	**Finance cost**			
	Unwinding of discount on subsidized loan - GoPb		229,519,198	259,466,103
	Mark up on loan - GoPb		1,003,438	1,304,807
	Penalty on loan default	40.1	255,516,147	114,306,823
	Bank charges		1,039,423	2,084,074
			487,078,206	377,161,807

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40.1 This includes the late payment penalty @ 4 % on default amount against loans obtained from Government of Punjab.

41 **Taxation**

41.1 No provision for income tax including deferred tax has been made in these financial statements as the Company being a non-profit organization under section 42 of the repealed Companies Ordinance, 1984 is registered with tax authorities under section 2(36) of the Income Tax Ordinance, 2001. Further, tax credit equal to the tax payable including minimum tax and final tax payable is allowed under section 100C valid till 30 June, 2019 which was subsequently renewed till 30 June, 2022 of the Income Tax Ordinance, 2001.

41.2 Numerical reconciliation between average effective tax rate and applicable tax rate is not required due to above mentioned fact.

	Note	2021 Rupees	2020 Rupees (Restated)
42 Cash generated from operations			
Excess of income over expenditure		885,797,730	507,565,498
Adjustments for non cash items:			
Depreciation		71,988,856	80,370,103
Amortization		66,284	52,260
Finance cost		512,420,917	396,584,876
Amortization of deferred credit		(229,519,198)	(259,466,103)
Amortization of deferred Income		(16,707,520)	(18,563,911)
Amortization of deferred grants		(3,833,544)	(2,882,400)
Bad Debts		114,650	1,316,216
(Gain) / loss on sale of property, plant and equipment		-	(2,524,811)
Return on bank deposits		(473,786,815)	(479,997,819)
Staff gratuity		57,838,833	39,047,184
Operating surplus before working capital changes		804,380,193	261,501,093
Working capital changes	42.1	2,917,795,898	82,153,667
Cash used in for operations		3,722,176,091	343,654,759

	Note	2021 Rupees	2020 Rupees (Restated)
42.1 Working capital changes			
(Increase) / decrease in current assets			
Stores, spare parts and loose tools		(60,106,654)	(14,783,566)
Inventory		(541,582,808)	(520,984,463)
Trade debts		(333,875,914)	(175,213,443)
Advances, deposits, prepayments and other receivables		(132,209,275)	479,010,546
		(1,067,774,651)	(231,970,926)
Increase / (decrease) in current liabilities			
Trade and other payables		541,703,082	75,931,483
Advances received for sale of plots		3,465,002,664	258,108,031
Advance from customers against consultancy services		(52,585,532)	(27,981,943)
Security deposits		31,450,334	8,067,022
		3,985,570,548	314,124,593
		2,917,795,898	82,153,667

43 Financial risk management

43.1 Financial risk factors

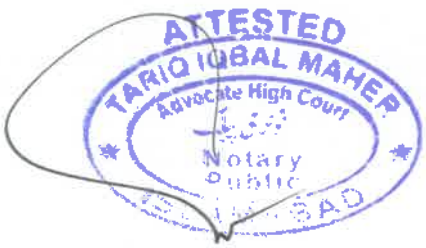
The Company's activities expose it to a variety of financial risks: market risk (including currency risk, other price risk and interest rate risk), credit risk and liquidity risk. It's overall risk management program focuses on the unpredictability of financial markets and seeks to minimize potential adverse effects on the financial performance.

(a) Market risk

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. Market risk comprises of currency risk other price risk and interest rate risk.

(i) Currency risk

The Company is exposed to currency risk to the extent that there is a mismatch between the currencies in which sales and purchase are denominated and the respective functional currency of the Company. The functional currency of the Company is Pak rupee. The Company is not exposed to any currency risk as there are no financial instruments at the reporting date that are sensitive to currency fluctuations.



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Independent Auditor's Report

To the members of Punjab Industrial Estate Development and Management Company

Report on the Audit of the Financial Statements

Opinion

We have audited the annexed financial statements of **Punjab Industrial Estate Development and Management Company** (the Company), which comprise the statement of financial position as at **June 30, 2018**, and the statement of income and expenditure and other comprehensive income, the statement of changes in equity, the statement of cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies and other explanatory information, and we state that we have obtained all the information and explanations which, to the best of our knowledge and belief, were necessary for the purposes of the audit.

In our opinion and to the best of our information and according to the explanations given to us, the statement of financial position, statement of profit or loss and other comprehensive income, the statement of changes in equity and the statement of cash flows together with the notes forming part thereof conform with the accounting and reporting standards as applicable in Pakistan and give the information required by the Companies Act, 2017 (XIX of 2017), in the manner so required and respectively give a true and fair view of the state of the Company's affairs as at June 30, 2018 and of the surplus and other comprehensive income, the changes in equity and its cash flows for the year then ended.

Basis for Opinion

We conducted our audit in accordance with International Standards on Auditing (ISAs) as applicable in Pakistan. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Company in accordance with the International Ethics Standards Board for Accountants' Code of Ethics for Professional Accountants as adopted by the Institute of Chartered Accountants of Pakistan (the Code) and we have fulfilled our other ethical responsibilities in accordance with the Code. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Emphasis of Matter

As disclosed in note 13 to the financial statements, the Company has received various lands for estates development in the form of loan from Government of Punjab. These loans have been classified as current liabilities due to the fact that terms of these loans have not been formalized with the Finance Department of Government of Punjab through agreements.

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Notary Public
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Information Other than the Financial Statements and Auditor's Report Thereon

Management is responsible for the other information. The other information comprises directors' report, but does not include the financial statements and our auditor's report thereon.

Our opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of Management and Board of Directors for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with the accounting and reporting standards as applicable in Pakistan and the requirements of Companies Act, 2017(XIX of 2017) and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Company's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Company or to cease operations, or has no realistic alternative but to do so.

Board of directors are responsible for overseeing the Company's financial reporting process.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs as applicable in Pakistan will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with ISAs as applicable in Pakistan, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

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- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Company's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Company to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with the board of directors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Report on Other Legal and Regulatory Requirements

Based on our audit, we further report that in our opinion:

a) proper books of account have been kept by the Company as required by the Companies Act, 2017 (XIX of 2017);

b) the statement of financial position, the statement of income and expenditure and other comprehensive income, the statement of changes in equity and the statement of cash flows together with the notes thereon have been drawn up in conformity with the Companies Act, 2017 (XIX of 2017) and are in agreement with the books of account and returns;

c) investments made, expenditure incurred and guarantees extended during the year were for the purpose of the Company's business; and

d) no zakat was deductible at source under the Zakat and Ushr Ordinance, 1980 (XVIII of 1980).

Other Matter:

The financial statements of the Company for the year ended June, 2017 were audited by another auditor who expressed an unmodified opinion on those statements on November 25, 2019.

The engagement partner on the audit resulting in this independent auditor's report is Imran Afzal.

Grant Thornton Anjum Rahman
CHARTERED ACCOUNTANTS
Lahore

Dated: July 5, 2021

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Financial Statements 2017-18

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Punjab Industrial Estates

Development & Managements Company

Commercial Area (North) Sundar Industrial Estate
Raiwind Road Lahore.
UAN:042-111-743-743
Tel: PABX 042-35297203-6 Fax:042-

PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984, Now Companies Act, 2017)

Statement of Financial Position

As At June 30, 2018

	Note	2018 Rupees	2017 Rupees (Restated)	2016 Rupees (Restated)
Equity and liabilities				
Equity				
Share capital	7	50,000,000	50,000,000	50,000,000
Accumulated Surplus		3,001,805,426	2,954,319,643	2,341,548,119
Total equity		3,051,805,426	3,004,319,643	2,391,548,119
Liabilities				
Non-current liabilities				
Long term financing	8	2,293,671,350	3,788,021,849	3,876,117,563
Deferred income	9	201,832,629	168,275,480	101,097,884
Deferred credit	10	680,973,150	1,181,505,985	1,281,626,938
Deferred grants	11	210,306,546	218,052,828	228,341,382
Deferred liabilities	12	33,031,644	18,545,342	8,551,187
Total non-current liabilities		3,419,815,319	5,374,401,493	5,495,734,954
Current liabilities				
Current portion of long term financing	8	4,901,806,001	3,026,772,667	1,309,106,000
Loan from the Govt. of Punjab - *interest*	13	1,429,854,949	1,429,854,949	365,769,949
Accrued mark up on long term financing		66,631,743	45,326,685	29,984,736
Trade and other payables	14	1,543,371,050	902,552,240	1,140,828,330
Security deposits	15	408,311,907	372,254,472	315,594,624
Receipt against deposit works	16	371,364,881	341,602,791	934,132,834
Advances received for sale of plots	17	5,397,927,491	5,233,664,560	5,019,865,307
Total current liabilities		14,119,568,022	11,352,028,364	9,115,281,780
Total equity and liabilities		20,590,188,767	19,930,749,500	17,002,564,853
Contingencies and commitments	18			

The annexed notes from 1 to 45 form an integral part of these financial statements.

Chief Financial Officer

Chief Executive Officer

Chairman

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Notary Public
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PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984. Now Companies Act, 2017)

Statement of Financial Position

As At June 30, 2018

	Note	2018 Rupees	2017 Rupees (Restated)	2016 Rupees (Restated)
Assets				
Non-current assets				
Property, plant and equipment	19	576,014,142	505,367,952	405,649,588
Intangibles	20	304,675	321,862	482,770
Long term deposits		170,159,193	172,831,630	90,241,914
Total non-Current assets		746,478,010	678,521,444	496,374,272
Current assets				
Stores, spare parts and loose tools		41,430,936	23,091,809	20,130,870
Inventory, projects in progress	21	13,749,446,045	12,621,155,741	11,055,219,147
Trade debts, unsecured - considered good	22	1,191,230,739	950,641,399	571,853,901
Advances, deposits, prepayments and other receivables	23	1,114,308,619	258,417,138	236,308,756
Income tax refundable		661,485,568	634,644,503	605,884,869
Short term investments	24	2,210,000,000	2,410,000,000	2,610,000,000
Accrued interest		23,945,617	24,827,534	34,229,150
Cash and bank balances	25	851,863,233	2,329,449,932	1,372,563,888
Total current assets		19,843,710,757	19,252,228,056	16,506,190,581
Total assets		20,590,188,767	19,930,749,500	17,002,564,853

The annexed notes from 1 to 45 form an integral part of these financial statements.

GMK

Chief Financial Officer

Chief Executive Officer

Chairman

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PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984. Now Companies Act, 2017)

Statement of Income and Expenditure and Other Comprehensive Income

For the Year Ended June 30, 2018

	Note	2018 Rupees	2017 Rupees (Restated)
Revenue			
Amortization of grants	11	7,746,282	10,288,554
Sale of plots	26	473,594,589	399,780,700
Electricity billing	27	4,050,593,950	3,471,221,534
Fees	28	391,983,243	618,791,393
Operation, maintenance and allied service billing	29	209,344,025	195,009,062
Sales of electrical material		167,400	7,654,028
Other income	30	864,510,552	816,380,665
Total income		5,997,940,041	5,519,125,936
Expenditure			
Cost of plots sold	31	451,456,595	276,833,867
Development expenditures	32	29,564,450	55,488,011
Operations and maintenance expenses	33	293,401,582	215,988,985
Cost of electricity	34	4,123,623,170	3,482,596,666
Administrative expenses	35	480,201,678	303,289,696
Selling expenses	36	45,682,198	9,769,471
Finance cost	37	505,540,559	544,544,873
Total expenditure		5,929,470,232	4,888,511,569
Net surplus for the year		68,469,809	630,614,367
Taxation	38	-	-
Net surplus after tax		68,469,809	630,614,367
Other comprehensive income			
Items that will not be reclassified to income & expenditure		-	-
Items that may be reclassified subsequently to income & expenditure:			
Remeasurement of post employment benefit obligation - actuarial loss		(20,984,026)	(17,842,843)
Other comprehensive loss for the year		(20,984,026)	(17,842,843)
Total comprehensive income for the year		47,485,783	612,771,524

The annexed notes from 1 to 45 form an integral part of these financial statements.

Chief Financial Officer

Chief Executive Officer

Chairman

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MANAGEMENT COMPANY

	Excess of income over expenditures Rupees	Equity portion of shareholder loan and other benefits Rupees	Total Rupees
	1,789,019,559	2,062,496,880	3,901,516,439
	552,528,560	(2,062,496,880)	(1,509,968,320)
	2,341,548,119	-	2,391,548,119
	630,614,367	-	630,614,367
	(17,842,843)	-	(17,842,843)
	2,954,319,643	-	3,004,319,643
	68,469,809	-	68,469,809
	(20,984,026)	-	(20,984,026)
	3,001,805,426	-	3,051,805,426

Chief Executive Officer

Chairman

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PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984. Now Companies Act, 2017)

Statement of Cashflows
For the Year Ended June 30, 2018

	Note	2018 Rupees	2017 Rupees (Restated)
Cash used in for operations	39	(1,588,116,127)	(860,562,201)
Interest paid		(1,808,251)	(2,109,632)
Return on bank deposits		230,298,362	213,917,855
Long term deposits		2,672,437	(59,843,789)
Gratuity contributions paid		(37,336,629)	(29,116,904)
Net cash used in operating activities		(1,394,290,208)	(737,714,671)
Cash flows from investing activities			
Capital expenditure		(137,975,523)	(118,347,723)
Capital work in process		(29,798,652)	(47,522,749)
Proceeds from sale of assets		5,027,684	3,849,211
Short term investments		-	200,000,000
Net cash generated from / (used in) investing activities		(162,746,491)	37,978,748
Cash flows from financing activities			
Net loan received from Government		-	1,650,000,000
Repayment of long term loan		(120,550,000)	(120,550,000)
Net cash (used in)/from financing activities		(120,550,000)	1,529,450,000
Net (decrease)/increase in cash and cash equivalents		(1,677,586,699)	829,714,077
Cash and cash equivalents at the beginning of the year		4,449,449,932	3,619,735,855
Cash and cash equivalents at the end of the year		2,771,863,233	4,449,449,932
Cash and cash equivalents			
Cash and bank balances	25	851,863,233	2,329,449,932
Short term investments	24	1,920,000,000	2,120,000,000
Cash and cash equivalents at the end of the year		2,771,863,233	4,449,449,932

The annexed notes from 1 to 45 form an integral part of these financial statements.

Chief Financial Officer

Chief Executive Officer

Chairman

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PUNJAB INDUSTRIAL ESTATES DEVELOPMENT AND MANAGEMENT COMPANY

(a company set up under section 42 of the repealed Companies Ordinance, 1984, Now Companies Act, 2017)

Notes to the Financial Statements

For the year ended June 30, 2018

1 Legal status and nature of business

Punjab Industrial Estates Development and Management Company ("the Company") was incorporated in Pakistan on 18 September 2003 as a public company limited by guarantee, licensed as a non-profit organization under section 42 of the Repealed Companies Ordinance,1984 (now Companies Act, 2017). The Company is wholly owned by the Government of Punjab. The principal activity of the Company is to develop new industrial estates together with updating the existing industrial estates as may be assigned by the Government of Punjab. The registered office of the Company is situated at Commercial Area (North) Sundar Industrial Estate, Raiwind road, Lahore.

The Company is managing Quaid e Azam Industrial Estate ("QIE") and Sundar Industrial Estate ("SIE") in Lahore and Multan Industrial Estate - Phase I ("MIE I") in Multan while it is currently developing:

- Multan Industrial Estate - Phase II ("MIE II") in Multan;
- Rahim Yar Khan Industrial Estate in Rahim Yar Khan;
- Bhakrai Industrial Estate in Bhalwal;
- Vehari Industrial Estate in Vehari;
- Quaid-e-Azam Business Park in Sheikhupra.
- Chunian Industrial Estate in Chunian; and
- Bahawalpur Industrial Estate in Bahawalpur

2 Basis of preparation

2.1 Statement of compliance

These financial statements have been prepared in accordance with approved accounting standards as applicable in Pakistan. Approved accounting standards comprise such International Financial Reporting Standards (IFRSs) issued by the International Accounting Standards Board Accounting Standard for Not for Profit Organization issued by ICAP as are notified under the Companies Act, 2017 and provisions of and directives issued under the Companies Act, 2017. In cases where requirements differ, the provisions of and directives issued under the Companies Act, 2017 shall prevail.

2.2 Standards, amendments or interpretations that became effective during the year

The fifth schedule to the Companies Act, 2017 became applicable to the Company for the preparation of these financial statements. The Companies Act, 2017 (including its fifth schedule) forms an integral part of the statutory financial reporting framework applicable to the Company and among others, prescribes the nature and content of disclosures in relation to various elements of the financial statements.

The Company has also adopted following amendments of standards which became effective for the current year:

Standard or Interpretation	
IAS-7	Statement of Cash Flows
IAS-12	Income Taxes

The adoption of the above standards and amendments did not have any significant effect on the financial statements of the Company.

2.3 Standards, amendments and interpretations to the approved accounting standards that are relevant but not yet effective

The following standards, amendments or interpretations with respect to the approved accounting standards and interpretations as applicable in Pakistan would be effective from the dates mentioned below against the respective standards:

Standard or interpretation	Effective Date
IFRS 9 Financial Instruments	1-Jul-18
IFRS 15 Revenue from Customers	1-Jul-18
IFRS 16 Leases	1-Jul-19
IFRS 2 Share-based Payment – Classification and Measurement of Share based Payment Transactions	1-Jan-18
IFRS 4 Insurance Contracts – Applying IFRS 9 Financial Instruments with IFRS 4 Insurance Contracts	1-Jan-18
IAS 40 Investment Property – Transfers of Investment Property	1-Jan-18

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5.9 Stores, spare parts and loose tools

The Company reviews the stores, spare parts and loose tools for possible impairment on an annual basis. Any change in estimates in future years might affect the carrying amounts of the respective items of stores and spare parts and loose tools with a corresponding effect on the provision.

5.10 Inventory

The Company reviews the carrying amount of inventory on a regular basis. Carrying amount of inventory is adjusted where the net realizable value is below the cost. Net realizable value is the estimated selling price in the ordinary course of business, less the estimated costs of completion and estimated costs necessary to make the sale.

6 Summary of significant accounting policies

These accounting polices stated below have been consistently applied to all periods presented in these financial statement.

6.1 Long term financing

These are classified as 'financial liabilities at amortized cost'. On initial recognition, these are measured at fair values less attributable transaction costs. Subsequent to initial recognition, these are measured at amortized cost with any difference between cost and value at maturity recognized in the statement of income and expenditure account over the period of the borrowings on an effective interest rate basis.

Loan at a below-market rate of interest from Government are recognized and measured at amortized cost (i.e. the present value of the future cash flows discounted at a market rate of interest). The benefit, that is the difference between the fair value of the loan on initial recognition and the amount received, is accounted for as additional government grant. The benefit is accounted for as deferred credit and is amortized over the period of borrowings.

6.2 Government grants

Government grants are recognized when there is reasonable assurance that the Company will comply with all conditions attaching to them and these will be received.

When the grant relates to expense item, it is recognized as income over the period necessary to match the grant on systematic basis to the cost that is intended to compensate. When the grant relates to an asset, it is recognized as deferred income and changes to the income in equal amounts over the expected useful life of related assets.

Non monetary grants are recognised at fair value of the assets.

6.3 Post retirement benefit

The Company operates approved funded gratuity scheme covering all its full time permanent workers who have completed the minimum qualifying period of service as defined under the respective scheme. The gratuity scheme is managed by trustees. The calculation of the benefit requires assumptions to be made of future outcomes, the principal ones being in respect of increase in remuneration and the discount rate used to convert future cash flows to current values. The assumptions used for the plan are determined by independent actuary on annual basis.

6.4 Trade and other payables

Liabilities relating to trade and other payables are carried at fair value of consideration to be paid in the future for goods and services received, whether or not billed to the Company.

6.5 Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets, which are assets that necessarily take a substantial period of time to get ready for their intended use or sale, are added to the cost of those assets, until such time as the assets are substantially ready for their intended use or sale. Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying asset is deducted from the borrowing costs eligible for capitalization. All other borrowing costs are recognized in the statement of income and expenditure as incurred.

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6.6 Provisions

Provisions are recognized when the Company has a legal or constructive obligation as a result of past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate of the amount can be made. Provisions are reviewed at each statement of financial position and adjusted to reflect the current best estimate.

6.7 Property, plant and equipment

Property and equipment are stated at cost less accumulated depreciation and impairment in value, if any. Cost of property plant and equipment consist of historical costs and directly attributable costs in bringing the assets to their working condition.

Depreciation is calculated by applying the rates mentioned in the Note 19 on reducing balance method. Depreciation is charged on additions from the month the asset is available for use and on disposals up to the month preceding the month of disposal. The assets' residual values and useful lives are reviewed and adjusted, if appropriate, at each reporting date.

Normal repair and maintenance is charged to income as and when incurred whereas major renewals and improvements are capitalized. Gain or loss on disposal of assets is charged to the statement of income and expenditure.

6.8 Capital work-in-progress

Capital work in progress represents expenditure on property, plant and equipment in the course of construction and installation including material, labour and overheads directly relating to the project. Capital work-in-progress is stated at cost less any identified impairment loss. All expenditure connected with specific assets incurred during installation and construction period are carried under capital work-in progress. These are transferred to specific assets as and when these are available for use.

6.9 Intangibles

Expenditure incurred to acquire intangibles is capitalized as intangible and stated at cost less accumulated amortization and any identified impairment loss. The estimated useful life and amortization method is reviewed at the end of each annual reporting period, with effect of any changes in estimate being accounted for on a prospective basis.

Intangibles are amortized using straight-line method over a period of three years. Amortization on additions to intangible assets is charged from the month the asset is available for use and on disposals up to the month preceding the month of disposal.

6.10 Stores, spare parts and loose tools

These are stated at lower of cost and net realizable value. Cost is determined using the weighted average method. Items in transit are valued at cost comprising invoice value plus other charges paid thereon.

6.11 Inventory

This represents saleable land received from government and land purchased for various projects, expenditure incurred on its development, and is intended to be sold in the ordinary course of business.

Expenditure incurred on development of infrastructure forms part of the cost of over all project and is included in the cost of inventory as and when incurred.

Inventory is valued at lower of the cost and net realizable value. Net realizable value is the estimated selling price of plots in the ordinary course of business less the estimated costs of completion of projects in progress. Cost is determined on worked performed basis.

6.12 Impairment

Financial assets

A financial asset is assessed at each reporting date to determine whether there is any objective evidence that it is impaired. Individually significant financial assets are tested for impairment on an individual basis. The remaining financial assets are assessed collectively in groups that share similar credit risk characteristics. A financial asset is considered to be impaired if objective evidence indicates that one or more events have had a negative effect on the estimated future cash flows of the asset.

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An impairment loss in respect of a financial asset measured at amortized cost is calculated as the difference between its carrying amount, and the present value of the estimated future cash flows discounted at the original effective interest rate. Impairment loss in respect of a financial asset measured at fair value is determined by reference to that fair value. All impairment losses are recognized in statement of income and expenditure. An impairment loss is reversed if the reversal can be related objectively to an event occurring after the impairment loss was recognized. An impairment loss is reversed only to the extent that the financial asset's carrying amount after the reversal does not exceed the carrying amount that would have been determined, net of amortization, if no impairment loss had been recognized. Reversal of impairment loss is recognised in statement of income and expenditure except in the case of available for sale instruments where the reversal is included in other comprehensive income.

Non-financial assets

The carrying amount of the Company's non-financial assets, other than inventories and deferred tax assets are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated. The recoverable amount of an asset or cash generating unit is the greater of its value in use and its fair value less cost to sell. In assessing value in use, the estimated future cash flows are discounted to their present values using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or cash generating unit.

An impairment loss is recognized if the carrying amount of the assets or its cash generating unit exceeds its estimated recoverable amount. Impairment losses are recognized in statement of income and expenditure. Impairment losses recognized in respect of cash generating units are allocated to reduce the carrying amounts of the assets in a unit on a pro rata basis. Impairment losses recognized in prior periods are assessed at each reporting date for any indications that the loss has decreased or no longer exists. An impairment loss is reversed if there has been a change in the estimates used to determine the recoverable amount. An impairment loss is reversed only to that extent that the asset's carrying amount after the reversal does not exceed the carrying amount that would have been determined, net of depreciation and amortization, if no impairment loss had been recognized.

6.13 Trade debts

Trade debts are carried at original invoice amount less an estimate made for doubtful debts based on review of outstanding amounts at the year end. Bad debts are written off when identified.

6.14 Cash and cash equivalents

Cash and cash equivalents comprise of cash in hand and at bank and short term investments with maturities of three months or less. These are readily convertible to known amount of cash therefore they are subject to insignificant risk of changes in value and are used by the Company in the management of its short-term commitments.

6.15 Loans and receivables

Loans and receivables are recognized initially at fair value, plus attributable transaction costs. Subsequent to initial recognition, loans and receivables are stated at amortized cost with any difference between cost and redemption value being recognized in the statement of income and expenditure over the period of the investments on an effective yield method.

6.16 Financial instruments

Financial assets comprise of deposits, trade debts, other receivable, short term investments and balance with banks and financial liabilities comprise of long term financing, trade and other payables, accrued mark up, deposits and loan from the Government of Punjab. Financial assets and liabilities are recognized when the Company becomes party to the contractual provisions of the instruments. Financial assets are de-recognized when the Company looses control of the contractual rights that comprise the financial assets. Financial liabilities are de-recognized when they are extinguished, that is, when the obligation specified in the contract is extinguished, cancelled, or expired. Any gain or loss on de-recognition of the financial assets and financial liabilities is taken to statement of income and expenditure.

Non-derivative financial liabilities are initially recognized at fair value less any directly attributable transaction costs. Subsequent to initial recognition, these liabilities are measured at amortized cost using effective interest method. The carrying values of liabilities approximates to their amortized cost.

Offsetting of financial assets and financial liabilities

Financial assets and liabilities are off-set and the net amount reported in the statement of financial position when there is a legally enforceable right to offset the recognized amounts and there is an intention to settle on a net basis, or realize the asset and settle the liability simultaneously.

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6.17 Revenue

Revenue is recognized to the extent that it is probable that the economic benefits will flow to the Company and the revenue can be measured reliably. Revenue is measured at fair value of consideration received or receivable on the following basis:

- Revenue from sale of industrial plots is recognized at the completion of the project for its intended use by the owner of the plot and the chances of cancellation of the allotment of the plot is remote at which stage the Company determines that the risks and rewards associated to sale of plot is transferred to the buyer.
- Revenue from electricity bills is recognized on the basis of electricity supplied to customers at rates determined by NEPRA for LESCO. Electricity sale is recorded on accrual basis i.e. when the consumers have consumed the electricity supplied.
- Fee and other charges are charged to customers at prescribed rates and they are recognized as income on accrual basis.
- Operations and maintenance charges billed to customers are recorded on accrual basis.
- Non-utilization fee is recognized if the project is not completed in accordance with terms of allotment of the plot and the recovery of the fee is certain.
- Return on bank deposits is recognised as and when accrued on effective interest method.
- Miscellaneous income represents fee for providing temporary connections and repair/replacement of cables and temporary meters. The fee for installation/replacement of temporary connections is recognized on installation of meters at allottees' sites. The income related to repair of meters and cables is recognised on performance of repair and maintenance services.

6.18 Advances received for sale of plots

Advances received from customers against sale of plots are stated at cost. They are recognized as revenue when the chances of cancellation of the allotted plot are remote and the customer has completed the project.

6.19 Deferred income

Amount received from customers for electric transformers are recognised as deferred income and recognized as income over the useful life of the transformers from the date of installation.

6.20 Summary of significant events and transactions

- Due to the first time application of financial reporting requirements under the Companies Act, 2017 and NPO standards, including disclosure and presentation requirements of the fifth schedule of the Companies Act, 2017, the Company has presented additional disclosures in these financial statements and represented certain comparative figures;
- During the year, the Company has purchased property plant and equipment amounting to Rs. 173 million; and
- During the year, the Company had dispose off investment amounting to Rs. 200 million.

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6.21 Effect of restatement

(a) During the year, due to application of the Companies Act, 2017 and NPO standards, the Company has changed its accounting policies w.r.t. amortization of subsidize loans obtained from sponsors. The Company has recognised the present value effect of low interest-bearing loan from Government of Punjab in statement of financial position as government grant. Loans or similar assistances provided by Governments or similar institutions with an interest free loan or interest rate below the current applicable market rate is recorded as government grant. The effect has been incorporated by restating the comparative figures.
The Company had originally recognised the present value effect of low interest-bearing loan from Government of Punjab in statement of changes in equity being loan provided by the Government of Punjab in the capacity of shareholder. (TR-32 issued by ICAP).

(b) The Company has restated grants received from sponsors for setting up a pharmaceutical laboratory at Sundar Industrial Estate and acquisition of land and development of new industrial estate in Gujrat and which had been included in equity in accordance with TR-32 of ICAP previously.

Effect of restatements are as follows:

	Original	Effect of Restatement	Restated
	----------	Rupees	----------
	Balance as at 30/06/2016	Increase/(Decrease)	Balance as at 30/06/2016
Statement of changes in equity			
Accumulated surplus	1,789,019,559	552,528,560	2,341,548,119
Equity portion of shareholder loan	2,062,496,880	(2,062,496,880)	-
Net Decrease in Statement of changes in equity		(1,509,968,320)	
Statement of financial position			
Deferred credit	-	1,281,626,938	1,281,626,938
Deferred Grants	-	228,341,382	228,341,382
Net Increase in Statement of financial position		1,509,968,320	

	Original	Effect of Restatement	Restated
	----------	Rupees	----------
	Balance as at 30/06/2017	Increase/(Decrease)	Balance as at 30/06/2017
Statement of changes in equity			
Accumulated surplus	1,859,770,286	1,094,549,357	2,954,319,643
Equity portion of shareholder loan	2,494,108,170	(2,494,108,170)	-
Net Decrease in Statement of changes in equity		(1,399,558,813)	
Statement of financial position			
Deferred credit	-	1,181,505,985	1,181,505,985
Deferred Grants	-	218,052,828	218,052,828
Net Increase in Statement of financial position		1,399,558,813	

	Original	Effect of Restatement	Restated
	----------	Rupees	----------
	For the year ended 30/06/2017	Increase/(Decrease)	For the year ended 30/06/2017
Statement of Income and Expenditure and Other Comprehensive Income			
Income			
Amortization of grants	-	10,288,554	10,288,554
Effect of discounting of interest free loan	-	542,020,800	542,020,800
Net Increase in Income and Expenditure		552,309,354	

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		Note	2018 Rupees	2017 Rupees
7	**Share capital**			
	Authorized share capital			
	15,000,000 (2017:15,000,000) ordinary shares of rupees 10 each		150,000,000	150,000,000
	Issued, subscribed and paid up capital			
	5,000,000 (2017:5,000,000) ordinary shares of rupees 10 each fully paid in cash		50,000,000	50,000,000
			50,000,000	50,000,000

		Note	2018 Rupees	2017 Rupees (Restated)
8	**Long term financing**			
	Loan from Government of Punjab I	8.1	935,000,500	935,000,500
	Loan from Government of Punjab II	8.2	151,000,000	151,000,000
	Loan from Government of Punjab III	8.3	100,000,000	100,000,000
	Loan from Government of Punjab IV	8.4	19,500,000	19,500,000
	Sub total	8.5	1,205,500,500	1,205,500,500
	Loan from Government of Punjab V- VI	8.6	250,000,000	250,000,000
	Loan from Government of Punjab VII - 1st Tranche	8.7	3,315,668,001	3,315,668,001
	Loan from Government of Punjab VII - 2nd Tranche	8.8	1,587,332,000	1,587,332,000
	Loan from Government of Punjab VIII - A	8.9	470,000,000	470,000,000
	Loan from Government of Punjab IX - A	8.10	1,650,000,000	1,650,000,000
	Sub total		8,478,500,501	8,478,500,501
	Less: Repayment of loan		(602,750,000)	(482,200,000)
	Less: Deferred credit	10	(2,254,954,917)	(2,254,954,917)
			5,620,795,584	5,741,345,584
	Opening balance of amortization		1,073,448,932	531,428,132
	Add: Amortization of deferred income during the year		500,532,835	542,020,800
		8.11 & 8.12	1,573,981,767	1,073,448,932
	Total Financing		7,194,777,351	6,814,794,516
	Less: Current portion of long term financing	8.13	(4,901,106,001)	(3,026,772,667)
			2,293,671,350	3,788,021,849

8.1 This represents loan from the Government of Punjab for development of infrastructure and ancillary facilities at Sundar Industrial Estate. For terms refer to Note 8.5.

8.2 This represents loan from the Government of Punjab for the establishment of Vehari Industrial Estate. For terms refer to Note 8.5.

8.3 This represents loan from the Government of Punjab for shifting of Hazardous Industries from city to Sundar Industrial Estate. For terms refer to Note 8.5.

8.4 This represents loan from Government of Punjab on behalf of Punjab Environmental Effluent Treatment Company ("PEETCO"), a related party, for combined effluent treatment plant at Sundar Industrial Estate. (For terms refer to Note 8.5).

8.5 Aggregate amount of loan of Rs.4,205.50 million is repayable in ten equal annual instalments commenced from 31 December 2013 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.6 This represents loan received from the Government of Punjab of Rs. 150 million for establishment of Vehari Industrial Estate and Rs. 100 million for shifting of Hazardous Industries from City to Sundar Industrial Estate. The loan is repayable in three equal annual instalments commencing from 30 June 2017 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.7 This represents loan received from the Government of Punjab for the establishment of Quaid-e-Azam Business Park Sheikhupura. The loan was received in the form of land having award value of Rs. 3,316 million with area measuring 1,562 acres during the year ended 30 June 2014. The loan is repayable in three equal annual instalments commencing from 30 June 2017 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.8 This represents loan received during 30 June 2015 from the Government of Punjab for the establishment of Quaid-e-Azam Business Park Sheikhupura. The loan is repayable in three equal annual instalments commencing from 30 June 2018 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

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8.9 This represent loan received last year from the Government of Punjab for the establishment of Chunian Industrial Estate. The loan is repayable in three equal annual instalments commencing from 30 June 2019 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.10 This represents loan received during 30 June 2017 from the Government of Punjab for the establishment of Quaid-e-Azam Apparel Park Sheikhupura. The loan is repayable in three equal annual instalments commencing from 30 June 2020 and carries mark-up at the rate at 0.25% per annum. Penalty on overdue payments is chargeable at the rate of 4% per annum.

8.11 This represents difference between amortized cost and face value of loan. Amortized cost has been determined using effective mark-up at 9.83% per annum.

8.12 The Company has recognised the present value effect of low interest beading loan from the Government of Punjab in statement of financial position as deferred credit.

8.13 This includes an overdue amount of Rs. 4,298 million (2017: Rs. 1,188.56 million) at year end.

	Note	2018 Rupees	2017 Rupees
9 Deferred income			
Opening balance		168,275,489	101,097,885
Receipt from customers during the year		52,562,969	85,874,870
Amortization during the year	39	(19,005,829)	(18,697,266)
Closing balance as at 30 June		201,832,629	168,275,489

	Note	2018 Rupees	2017 Rupees (Restated)
10 Deferred credit			
Opening balance		2,254,954,917	2,254,954,917
Less: accumulated amortization	8	(1,573,981,767)	(1,073,448,932)
Closing balance as at 30 June		680,973,150	1,181,505,985
11 Deferred grants			
Opening balance	11.1	218,052,828	228,341,382
Grants received during the year		-	-
		218,052,828	228,341,382
Grants amortized related to income		-	-
Grants amortized related to assets		(7,746,282)	(10,288,554)
Closing balance as at 30 June		210,306,546	218,052,828

11.1 This includes grant of Rs. 80 million from the Government of Punjab for setting up a pharmaceutical laboratory at Sundar Industrial Estate and Rs. 180 million received in cash for acquisition of land and development of new industrial estate in Gujrat. No development work has been started till 30 June 2018 in Gujrat Industrial Estate.

12 **Deferred liabilities**

The latest actuarial valuation of the Company's defined benefit gratuity scheme was conducted on 30 June 2018 using projected unit credit method. Details of obligation for defined benefit gratuity scheme is as follows:

	Note	2018 Rupees	2017 Rupees
12.1 Present value of defined benefit obligation		134,058,736	93,239,370
Fair value of plan assets		(101,027,092)	(74,694,028)
Liability as at 30 June		33,031,644	18,545,342

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	Note	2018 Rupees	2017 Rupees
12.2 Movement in liability for defined benefit obligation			
Present value of defined benefit obligation at beginning of the year		93,239,370	76,264,035
Current service cost for the year		30,929,630	20,623,025
Interest cost for the year		7,911,270	4,680,335
Benefits due but not paid		-	(5,505,646)
Benefits paid		(13,708,582)	(17,909,727)
Advance benefits paid		(1,715,668)	-
Experience adjustments actuarial loss		17,402,716	15,087,348
Present value of defined benefit obligation at end of year		134,058,736	93,239,370

12.3 Comparative amounts of five years

	Rupees
30 June 2016	76,264,035
30 June 2015	64,329,173
30 June 2014	48,338,703
30 June 2013	36,614,004
30 June 2012	21,258,445

	Note	2018 Rupees	2017 Rupees
12.4 Changes in fair value of plan assets			
Fair value of plan assets		74,694,028	67,712,848
Contributions		37,336,629	29,116,904
Interest income on plan assets		3,001,995	5,315,442
Benefits paid		(13,708,582)	(24,695,671)
Advance benefits paid		(1,715,668)	-
Experience adjustments on return on plan assets		(3,581,310)	(2,755,495)
Fair value of plan assets		101,027,092	74,694,028
12.5 Expenses to be charged to statement of income and expenditure			
Current service cost		30,929,630	20,623,025
Interest cost on defined benefit obligation		7,911,270	4,680,335
Interest income on plan assets		(8,001,995)	(5,315,442)
Expenses chargeable to statement of income and expenditure		30,838,905	19,987,918
12.6 Remeasurement chargeable in other comprehensive income			
Experience adjustments on plan obligations		17,402,716	15,087,348
Experience adjustments on return on plan assets		3,581,310	2,755,495
		20,984,026	17,842,843

	2018	2017
12.7 Significant actuarial assumptions		
Discount rate used for interest cost in statement of income and expenditure	8%	7%
Discount rate used for yearend obligation	7%	9%
Salary increase used for yearend obligations:		
Salary increase FY 2017	N/A	N/A
Salary increase FY 2018	7%	8%
Salary increase FY 2019	7%	8%
Salary increase FY 2020	7%	8%
Salary increase FY 2021	7%	8%
Salary increase FY 2022	7%	8%
Salary increase FY 2023 onward	7%	8%
Next salary is increased at	1/9/2018	01/09/2017
Mortality rates	SLIC 2001-05 Setback 1 Year	SLIC 2001-05 Setback 1 Year
Withdrawals rates	Age-based (per appendix)	Age-based (per appendix)
Retirement assumption	Age 60	Age 60

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		Note	2018 Rupees	2017 Rupees
12.8	**Expected expense for the next year**			
	Current service cost		32,561,620	25,443,635
	Interest cost on defined benefit obligation		14,209,348	7,835,267
	Interest income on plan assets		(10,456,333)	(7,466,480)
	Amount chargeable to statement of income and expenditure		36,314,635	25,812,422
12.9	**Year end sensitivity analysis on defined benefit obligation**			
	Discount rate increase by 100 bps		124,593,765	84,467,265
	Discount rate decrease by 100 bps		148,948,255	103,705,825
	Salary increase by 100 bps		148,091,432	104,482,457
	Salary decrease by 100 bps		121,378,746	83,629,724

		Note	2018 Rupees	2017 Rupees
13	**Loan from the Government of Punjab - *unsecured***			
	Loan VIII - B	13.1.1	103,203,387	103,203,387
	Loan IX - B	13.1.2	132,000,000	132,000,000
	Loan X	13.1.3	130,566,562	130,566,562
	Loan XI	13.1.4	1,064,085,000	1,064,085,000
			1,429,854,949	1,429,854,949

13.1.1 The represents land sold by the Government of Punjab (GoPb) to the Company for the establishment of Chunian Industrial Estate having award value of Rs. 105.20 million with area measuring 130.11 acres during the year ended 30 June 2014. In accordance with letter received from the GoPb sale price of such land will be converted into loan after finalization of specified terms and condition with the Finance Department. Since the terms and conditions are not finalized, accordingly this loan has been classified as short term loan.

13.1.2 The represents land sold by the Government of Punjab (GoPb) to the Company for the establishment of Vehari Industrial Estate having award value of Rs. 132 million with area measuring 200 acres during the year ended 30 June 2012. In accordance with letter received from the GoPb sale price of such land will be converted into loan after finalization of specified terms and condition with the Finance Department. Since the terms and conditions are not finalized, accordingly this loan has been classified as short term loan.

13.1.3 The represents land sold by the Government of Punjab (GoPb) to the Company for the establishment of Bhalwal Industrial Estate having award value of Rs. 127.33 million and Rs. 3.24 million with area measuring 385.84 acres and 4.91 acres during the year ended 30 June 2011 and 2012, respectively. In accordance with letter received from the GoPb sale price of such land will be converted into loan after finalization of specified terms and condition with the Finance Department. Since the terms and conditions are not finalized, accordingly this loan has been classified as short term loan.

13.1.4 The represents land sold by the Government of Punjab (GoPb) to the Company for the establishment of Bahawalpur Industrial Estate having award value of Rs. 1,064.09 million with area measuring 483.18 acres during the year ended 30 June 2017. In accordance with letter received from the GoPb sale price of such land will be converted into loan after finalization of specified terms and condition with the Finance Department. Since the terms and conditions are not finalized, accordingly this loan has been classified as short term loan.

		Note	2018 Rupees	2017 Rupees
14	**Trade and other payables**			
	Creditors		538,333,525	175,726,143
	Advances from customers		166,550,778	120,959,145
	Accrued liabilities		33,127,819	25,805,742
	Bills payable		258,188,366	86,029,182
	Retention money payable		331,624,164	324,779,841
	With holding tax payable		108,611,346	151,129,353
	Payable to tannery zone allottees		2,923,403	2,923,403
	Gratuity due but not paid		-	6,635,444
	Other payables	14.1	104,011,650	8,563,988
			1,543,371,050	902,552,240

14.1 This includes donation payable of Rs. 3,041,525 (2017: 3,041,525).

		Note	2018 Rupees	2017 Rupees
15	**Security Deposits**			
	Security deposits against electricity connection	15.1	404,394,657	368,337,222
	Security deposit against rent		3,917,250	3,917,250
			408,311,907	372,254,472

15.1 These represent security deposits received from customers in Sundar Industrial Estate against electricity connections given to their plots. These are not kept in separate bank account and are being utilized by the Company.

16 **Receipt against deposit works**

An agreement between the Company and Energy Department, the Government of Punjab (Energy Department) was entered on 06 March 2015 where under Energy Department has released Rs. 1,619.57 million to the Company in advance for Engineering, Construction & Procurement Services of all works mentioned in agreement and as per the approved development plan of the Quaid-e- Azam Solar Park, Bahawalpur. Out of Rs. 1,619.57 million transferred by Energy Department, the Company has incurred Rs. 1,245 million (2017: Rs. 1,077 million) for development of infrastructure of Quaid-e-Azam Solar Park Bahawalpur up to 30 June 2018. As per the understanding between the Company and Energy Department, all expenditure under this agreement are on cost reimbursement basis and accordingly the Company has adjusted the expenditures incurred of Rs. 1,245 million against the amount received of Rs 1,619.57 million and recorded remaining amount of Rs. 373 million as liability as at 30 June 2018 (2017: Rs. 541.61 million).

		Note	2018 Rupees	2017 Rupees
17	**Advances received for sale of plots**			
	Sundar Industrial Estate		2,106,328,401	2,237,181,908
	Multan Industrial Estate	17.1	2,039,792,497	1,922,674,216
	Rahim Yar Khan		646,884,544	630,012,644
	Bhalwal		466,545,451	374,308,298
	Vehari		138,376,598	69,487,494
			5,397,927,491	5,233,664,560

17.1 This includes advance received against sale of plots at MIE Phase I amounting to Rs 61.7 million (2017: Rs 35.5 million).

18 **Contingencies and Commitments**

Contingencies

18.1 The Company is distributing electricity in SIE without having a distribution license from National Electric Power Regulatory Authority (NEPRA). As per Section 20 of the Electric Power Project Act, 1997 no person can engage in distribution of electric power without having a distribution license issued by NEPRA under the Act. The Company by engaging in the distribution of electric power is acting in violation of the said section of the Act. Under Rule 3 of the National Electric Power Regulatory Authority (Fines) Rules, 2002 (the "Rules") NEPRA can impose fines as specified in the first schedule to the said Rules in case of such violation.

In this regard, the Company submitted an application to NEPRA on 9 October 2006 which was turned down on 17 October 2006. The Company again submitted an application to NEPRA which was admitted for consideration of grant of distribution license on 25 July 2011. In response to this Lahore Electric Supply Company submitted its comments on 25 August 2011. Consequently NEPRA sought the Company's view point vide its letter dated 29 August 2011. The Company, in this regard, submitted its reply to NEPRA on 28 February 2012 through its legal consultant hired for this purpose. After a long time, NEPRA asked the Company to submit another application for power supplier license vide its letter dated 15 October 2018 in view of amendments in NEPRA Act. The Company again submitted an application for electric power supplier license to NEPRA on 26 March 2019. The Company requested NEPRA for early issuance of Distribution License through its letter dated 30 May 2019 after meeting of Chairman PIEDMC with Chairman NEPRA on 6 May 2019. The Company has submitted its last letter on 2 January 2020.

The management is confident that distribution license will be granted to the Company and accordingly no adverse impact in the financial statements of the Company is expected.

18.2 There are 85 (2017: 113) cases pending in various courts relating to land at Sundar, Quaid-e-Azam, Multan, Rahim Yaar Khan Industrial Estates and Quaid-e-Azam Apparel Park. Because of the number of cases involved and their uncertain nature, it is not possible to quantify their financial effect at present. However, based on the opinion of legal advisors no adverse impact on the financial statements is expected to arise on settlement of theses cases.

18.3 Proceedings u/s 161 of the Income Tax Ordinance, 2001 ("Ordinance") were finalized by the Assessing Officer for the tax years 2012, 2013 and 2014 by raising an impugned demand u/s 235 of the Ordinance amounting to Rs. 82.33 million, Rs. 85.37 million and Rs. 133.41 million for the tax years 2012, 2013 and 2014 respectively. Appeal against the order for tax years 2012, 2013 and 2014 were filed before the Commissioner Inland Revenue – Appeals ("CIR-A") who did not pass speaking orders. Being aggrieved of the said action of CIR-A an appeal has been filed before the Appellate Tribunal Inland Revenue, which is pending for adjudication. The Company has paid Rs. 191.54 million out of the total demand raised amounting to Rs. 301.11 million for tax years from 2012 to 2014. However, the management and tax advisor is of view that the matter will be decided in favour of the Company, accordingly, no further impact has been account for in these financial statements.

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18.4 Certain petitioners of Civil Society filed a petition in the Honourable Lahore High Court on 23 October 2017 challenging incorporation of the Company along with other companies incorporated u/s 42 of the repealed Companies Ordinance, 1984 which are operating in Punjab. Currently, proceedings of the Courts are in process. Based on opinion of the legal advisor, the Company would be able to continue as going concern as such petition is most likely to be dismissed.

	2018 Rupees	2017 Rupees
Commitments		
Commitments in respect of development projects	2,114,667,710	2,091,668,050

	Note	2018 Rupees	2017 Rupees
19 Property, plant and equipment			
- Property, plant and equipment	19.1	489,593,739	422,612,875
Capital work in progress	19.4	86,420,403	82,755,077
		576,014,142	505,367,952

19.1

2018

Description	Cost as at July 1, 2017	Additions during the Year	Deletions during the Year	Cost as at June 30, 2018	Accumulated depreciation as at July 1, 2017	Depreciation for the Year	Depreciation on disposals	Accumulated depreciation as at June 30, 2018	Book value as at June 30, 2018	Annual rate of depreciation %
	(Rupees)									
Land	12,480,403	-	-	12,480,403	-	-	-	-	12,480,403	-
Building	154,014,304	3,242,093	-	157,256,397	52,313,353	10,446,408	-	62,759,758	94,496,639	10
Office equipments	28,026,680	10,753,663	-	38,779,743	15,316,291	3,593,671	-	18,909,962	19,869,781	20
Lab Equipments	65,154,343	1,673,410	-	66,827,753	38,622,741	8,396,721	-	47,219,462	19,608,291	34
Computers	32,393,211	20,564,592	1,479,402	51,483,401	25,168,713	5,212,329	1,182,648	29,198,197	24,287,204	36
Furniture and fixture	20,887,048	2,773,842	-	23,660,890	14,381,610	1,545,860	-	15,927,470	7,733,420	20
Electric installation	201,303,634	52,562,969	-	254,066,622	32,431,604	19,165,141	-	51,596,749	202,469,873	20
Machinery	27,357,736	2,406,272	-	29,764,008	19,367,296	2,140,021	-	19,507,317	10,256,691	20
Vehicles	142,975,478	43,842,496	7,786,028	178,134,942	68,478,363	20,677,838	6,433,698	82,742,504	98,389,438	20
	683,992,852	137,819,737	9,256,430	812,455,359	266,279,977	69,177,786	7,596,343	322,861,420	489,593,739	

2017

Description	Cost as at July 1, 2016	Additions during the Year	Deletions during the Year	Cost as at June 30, 2017	Accumulated depreciation as at July 1, 2016	Depreciation for the year	Depreciation on disposals	Accumulated depreciation as at June 30, 2017	Book value as at June 30, 2017	Annual rate of depreciation %
	(Rupees)									
Land	12,480,403	-	-	12,480,403	-	-	-	-	12,480,403	-
Building	133,215,206	20,799,098	-	154,014,304	42,996,232	9,317,121	-	52,313,353	101,700,951	10
Office equipment	24,836,674	3,335,002	-	28,171,676	12,320,353	2,996,038	-	15,316,291	12,855,385	20
Lab equipment	64,156,493	997,850	-	65,154,343	27,703,094	11,119,647	-	38,822,741	26,331,602	30
Computers	30,230,267	2,162,944	-	32,393,211	22,622,058	2,546,655	-	25,168,713	7,224,498	30
Furniture and fixtures	20,134,803	752,245	-	20,887,048	12,872,430	1,509,180	-	14,381,610	6,505,438	20
Electric installation	143,628,791	57,674,842	-	201,303,633	13,595,192	18,836,412	-	32,431,604	169,072,029	20
Machinery	27,289,736	68,000	145,000	27,212,736	14,893,617	2,473,679	-	17,367,296	9,845,440	20
Vehicles	116,077,206	30,132,018	4,133,750	142,075,474	82,463,771	15,858,095	2,623,502	65,478,364	76,597,110	20
	534,169,582	164,002,050	4,278,750	693,292,852	199,406,628	64,696,851	2,823,502	261,279,977	422,612,875	

19.2 Detail of disposal of property, plant and equipment

Assets Particulars	Cost	Carrying Amount	Sale Price	(Gain) / Loss on Disposal	Particulars of the Purchaser	Mode of Disposal	Relationship with the Purchaser
(Toyota Hiace Van LEA-4529)	2,291,762	282,603	1,328,896	(1,046,293)	Auction	Auction	N/A
(Suzuki Cultus LED-9478)	684,721	75,953	467,000	(391,947)	Auction	Auction	N/A
(Suzuki Cultus LEJ-1416)	987,100	269,656	627,100	(357,444)	Auction	Auction	N/A
(Suzuki Cultus LEJ-1417)	987,100	269,656	667,000	(397,344)	Auction	Auction	N/A
(Suzuki Bolan LEJ-1041)	723,900	184,495	503,000	(318,505)	Auction	Auction	N/A
(Hero CD-70 LEJ-1194)	45,015	11,853	11,000	853	Auction	Auction	N/A
(Suzuki Cultus LED-9486)	684,721	90,370	482,500	(392,130)	Auction	Auction	N/A
(Suzuki Cultus LEF-4699)	758,840	106,300	472,500	(366,200)	Auction	Auction	N/A
(Suzuki Pick up LEF-5879)	179,780	64,641	446,600	(381,959)	Auction	Auction	N/A
(Pak Hero LEW-9653)	40,465	4,451	6,688	(2,237)	Auction	Auction	N/A
(Pak Hero LZ-0258)	38,345	2,073		2,073	Auction	Auction	N/A
(Honda CD 70 LEX-5823)	65,049	13,179	15,400	(2,221)	Auction	Auction	N/A
	7,786,028	1,372,330	5,027,684	(3,655,354)			

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		Note	2018 Rupees	2017 Rupees
19.3	The depreciation charged for the year has been allocated as follows:			
	Operations and maintenance expenses	33 & 19.3.1	22,520,649	24,708,373
	Cost of electricity	34	2,305,875	10,289,887
	Administrative expenses	35	44,351,262	29,698,590
			69,177,786	64,696,850

19.3.1 It includes depreciation expense on laboratory equipment and building amounting to Rs. 7,746,282 (2017: Rs. 10,288,554) for which grant was provided by the Government of Punjab (related party).

		Note	2018 Rupees	2017 Rupees
19.4	Capital work in progress			
	Balance as at 1 July		82,755,077	70,886,644
	Additions during the year		29,798,652	47,522,740
	Transfers to operating fixed assets		(26,133,326)	(35,654,307)
	Balance as at 30 June	19.4.1	86,420,403	82,755,077
19.4.1	Capital Work in progress			
	Office building SIE		309,592	21,384,535
	Pharmaceutical laboratory - SIE		-	1,673,410
	Office building QIE		78,495,051	59,697,132
	Surveillance System		7,615,760	-
			86,420,403	82,755,077
20	Intangible assets			
	Cost			
	Opening balance		3,129,168	3,129,168
	Additions during the year		156,786	-
	Closing balance		3,285,954	3,129,168
	Amortization			
	Opening balance		2,807,306	2,646,398
	Amortization during the year		173,973	160,908
	Closing balance		2,981,279	2,807,306
	As at 30 June		304,675	321,862
21	Inventory (projects in progress)			
	Sunder Industrial Estate		1,885,736,912	2,167,134,434
	Multan Industrial Estate Phase II		1,018,286,591	1,012,635,853
	Bahlwal Industrial Estate		2,033,642,449	1,529,445,651
	Rahim Yar Khan Industrial Estate		2,107,529,619	1,971,702,914
	Bahawalpur Industrial Estates		1,214,672,633	1,068,210,000
	Vehari Industrial Estate		1,105,811,412	775,106,872
	Quaid-e-Azam Business Park		4,461,181,122	4,216,827,076
	Chunian Industrial Estate		408,214,966	383,764,062
	Quaid-e-Azam Industrial Estate		25,341,651	25,341,651
	P. D. Khan Industrial Estate		11,733,100	11,733,100
	Gujrat Industrial Estate		1,950,702	1,950,702
	Attock Industrial Estate		2,466,338	2,466,338
	Sialkot Industrial Estate		9,073,500	9,073,500
	Others		75,699,270	9,190,640
			14,361,340,265	13,184,582,793
	Less: NRV adjustment		(611,894,220)	(563,427,052)
		21.1	13,749,446,045	12,621,155,741

21.1 It includes land measuring area 200 acres in Vehari Industrial Estate, 152 acres in Chunian Industrial Estate, 390 acres in Bhalwal Industrial Estate, 667 acres in Multan Industrial Estate Phase II and 483 acres in Bahawalpur Industrial Estate, the title of which has not yet been transferred in the name of the Company.

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		Note	2018 Rupees	2017 Rupees
22	**Trade debts - *unsecured***			
	- Considered good		1,191,230,739	950,641,399
	- Considered doubtful		219,174,981	94,604,780
		22.1	1,410,405,720	1,045,246,179
	Less: Provision for doubtful debts	22.2	(219,174,981)	(94,604,780)
			1,191,230,739	950,641,399
22.1	**Trade debts - *unsecured***			
	Accrued billing		510,760,492	290,097,626
	Electricity bills receivables		40,312,845	89,058,809
	Operation and maintenance charges receivable		93,656,692	85,005,259
	Water charges receivable		27,979,139	23,850,681
	Aquifer Charges Receivable		4,589,082	5,124,523
	Sewerage charges receivable		21,510,150	14,867,051
	Lease rentals receivable		1,715,524	1,640,754
	Rent Receivables		3,354,205	3,360,205
	Annual recurring expenses receivable		961,029	975,143
	Sub letting fee receivable		4,919,928	4,518,847
	Receivables against fee and penalties		668,091,713	500,287,624
	Other		32,554,921	26,459,657
			1,410,405,720	1,045,246,179
22.2	**Provision for doubtful debts**			
	Opening balance		94,604,780	94,989,597
	Provision for the year		129,551,904	13,917,404
	Reversal of provision made during the year		(4,981,703)	(14,302,221)
	Closing balance		219,174,981	94,604,780
23	**Advances, deposits, prepayments and other receivables**			
	Advances to suppliers & contractors	23.1	1,010,637,027	216,239,939
	Advances to employees	23.2	36,584,796	53,654,867
	Prepayments		9,835,917	5,210,850
	Donation recoverable from plot owners - considered doubtful		186,034	313,200
	Sales tax recoverable		109,785,424	105,811,398
	Receivable from related party	23.3	19,500,000	19,500,000
	Others		8,503,080	9,117,684
			1,195,032,278	409,847,938
	Less: Provision for doubtful advances	23.4	(80,723,659)	(151,430,800)
			1,114,308,619	258,417,138
23.1	This includes advances:			
	Advances to contractors and suppliers - considered good		857,138,447	63,236,659
	Advance to LESCO - considered doubtful		80,292,859	151,000,000
	Advance to LESCO - considered good	23.1.1	70,707,141	-
	Other advances		2,498,580	2,003,280
			1,010,637,027	216,239,939
23.1.1	The ageing analysis of advance given to related party LESCO is as follows:			
	up to 1 year		-	-
	1 to 2 years		-	-
	2 to 3 years		-	-
	3 to 4 years		-	-
	5 years and more		151,000,000	151,000,000

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		Note	2018 Rupees	2017 Rupees
23.2	This includes:			
	Advances to employees against salary	23.2.1	7,301,426	7,442,471
	Advances to employees against expenses		29,283,370	46,212,396
			36,584,796	53,654,867

23.2.1 This include advance given to CEO against Salary of Rs. 10,000 (2017: Rs. 75,000) and advance given to directors against expenses of Rs. 353,916 (2017: Rs. 241,500)

23.3 The Company received a loan , on 19 August 2009, from Government of Punjab for Punjab Environmental Effluent Treatment Company ("PEETCO"), a related party, for combined effluent treatment plant at Sundar Industrial Estate. The funds were transferred to PEETCO on 10 September 2009. As the new loan agreement with the Government of Punjab includes this loan, it was recognized as a liability, as disclosed in note 8.4, with a corresponding receivable from PEETCO.

23.3.1 The maximum aggregate amount of receivables due from related parties at the end of any month during the year was Rs. 19,500,000 (2017: Rs 19,500,000).

23.3.2 The ageing analysis of receivable from related party PEETCO is as follows:

up to 1 year	-	-
1 to 2 years	-	-
2 to 3 years	-	-
3 to 4 years	-	-
5 years and more	19,500,000	19,500,000

23.4 **Provision for doubtful advances and other receivables**

Opening balance	(151,430,800)	(151,430,800)
Recoveries / Provision for the year	70,707,141	-
Write-off during the year	-	-
Closing balance	(80,723,659)	(151,430,800)

24 **Short term investments - loans and receivables**

Maturity within 3 months	1,920,000,000	2,120,000,000
Maturity over 3 months but not later than 1 year	290,000,000	290,000,000
	2,210,000,000	2,410,000,000

24.1 This represents investment in term deposit certificates of the Bank of Punjab carrying mark up ranging from 5.5% to 5.60% per annum (2017: 11.25% to 12.00% per annum).

		Note	2018 Rupees	2017 Rupees
25	**Cash and bank balances**			
	Cash in hand		938,700	659,478
	Current accounts		71,710,120	96,480,603
	Deposit accounts		779,214,413	2,232,309,851
			851,863,233	2,329,449,932

25.1 Cash and Bank include bank balances of Rs. 522.6 million (2017: Rs. 202.2 million) held in account not bearing title 'Punjab Industrial Estate Management and Development Company'.

25.2 The balances in deposit accounts carry mark up which ranges from 2.4% to 5.4% (2017: 4% to 6%) per annum.

		Note	2018 Rupees	2017 Rupees
26	Sale of plots			
	Sale of developed plots		473,594,589	399,780,700
			473,594,589	399,780,700
27	**Electricity billing**			
	Electricity billing	27.1	4,676,766,469	4,010,366,364
	Less: Sales tax		(626,172,519)	(539,144,830)
			4,050,593,950	3,471,221,534

27.1 This represents distribution of the electricity purchased from IESCO and distributed to industry holders in sunder industrial estate.

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		Note	2018 Rupees	2017 Rupees
28	**Fees**			
	Fees	28.1	391,983,243	618,791,393
			391,983,243	618,791,393

28.1 This includes non-utilization fee, transfer fee, map approval fee, water meter fees, bidding fees and possession fees etc.

		Note	2018 Rupees	2017 Rupees
29	**Operation, maintenance and allied service billing**			
	Operation & maintenance		115,070,223	111,894,162
	Water		67,183,702	56,928,750
	Aquifer		11,692,200	11,775,900
	Security services		9,328,400	8,692,500
	Solid waste management		6,069,500	5,717,750
			209,344,025	195,009,062

		Note	2018 Rupees	2017 Rupees (Restated)
30	**Other income**			
	Return on bank deposits and investments		229,416,445	204,516,239
	Gain on disposal of vehicles		3,655,354	2,393,963
	Rental income		12,030,722	17,540,804
	Mark up on outstanding dues		5,771,067	8,680,510
	Amortization of deferred credit - Transformer		19,005,829	18,697,266
	Effect of discounting of interest free loan		500,532,835	542,020,800
	Reversal of provision		75,688,844	9,213,993
	Miscellaneous income		18,409,456	13,317,090
			864,510,552	816,380,665

		Note	2018 Rupees	2017 Rupees
31	**Cost of plots sold**			
	Cost of Plots Sold	30.1	402,989,427	235,355,784
	Impact of NRV adjustment of inventory		48,467,168	41,478,083
			451,456,595	276,833,867

30.1	**Cost of plots sold**			
	Sundar Industrial Estate		329,853,546	220,531,824
	Multan Industrial Estate		21,724,713	14,823,960
	Rahim Yar Khan Industrial Estate		51,411,169	-
			402,989,427	235,355,784

32 This includes development expenditure incurred on Multan Industrial Estate Phase I and Quaid-e-Azam Industrial Estate for construction of service road and water supply system.

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		Note	2018 Rupees	2017 Rupees
33	**Operations and maintenance expenses**			
	Staff salaries & benefits		138,536,274	101,239,252
	Road, drain and sewerage cleaning		57,833,933	18,896,602
	Cost of Chemical Consumed		-	1,686,173
	Maintenance under ground electricity distribution system		-	2,923,638
	Security		4,571,824	3,591,968
	Maintenance disposal station		20,426,771	12,358,657
	Fuel and power		11,638,858	8,776,262
	Repair and maintenance		5,489,431	6,188,709
	Depreciation	19.3	22,520,649	24,708,373
	General maintenance		16,299,959	9,763,471
	Utilities		12,307,621	24,377,446
	Uniform and liveries		2,368,392	826,188
	Miscellaneous		1,407,870	652,246
			293,401,582	215,988,985
34	**Cost of electricity**			
	Electricity purchased		4,061,274,001	3,450,105,215
	Stores consumed		15,068,081	6,998,340
	Staff salaries & benefits		16,565,553	12,112,877
	Fuel		1,182,104	-
	Repair and maintenance		26,315,307	2,464,856
	Depreciation	19.3	2,305,875	10,289,887
	Others		912,249	625,491
			4,123,623,170	3,482,596,666
35	**Administrative expenses**			
	Staff salaries & benefits		215,121,937	185,479,231
	Rent, rates and taxes		2,090,447	1,954,491
	Repair and maintenance		12,477,861	7,574,033
	Fuel		18,848,038	13,584,541
	Insurance		7,575,889	8,150,358
	Travelling and conveyance		8,272,819	7,235,695
	Utilities		8,368,815	7,746,727
	Printing and stationery		6,516,351	3,375,928
	Network and website expenses		2,379,605	3,861,782
	Advertisement		2,000,615	4,407,893
	Security charges		88,680	800
	Entertainment		4,173,276	2,739,727
	Depreciation	19.3	44,351,262	29,698,590
	Amortization	20	173,973	160,908
	Postage		1,311,852	993,036
	Legal and professional charges		13,265,667	6,195,676
	Bad debts		530,366	3,594,221
	Provision for doubtful debtors	22.2	129,551,904	13,917,404
	Auditor's remuneration	35.1	950,000	950,000
	Books and periodicals		83,700	72,392
	Janitorial services		338,910	228,733
	Fees and subscription		1,043,592	399,860
	Miscellaneous		686,119	967,670
			480,201,678	303,289,696

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		Note	2018 Rupees	2017 Rupees
35.1	**Auditor's remuneration**			
	Audit fee		950,000	950,000
			950,000	950,000

		Note	2018 Rupees	2017 Rupees
36	**Selling expenses**			
	Image building & branding		9,866,422	1,170,894
	Foreign collaboration		3,999,256	1,714,085
	Marketing & promotion		15,622,230	4,181,906
	Advertisement		6,382,135	2,578,586
	Staff salaries & benefits		7,907,561	-
	Rent, rates and taxes		341,868	-
	Repair and maintenance		56,992	-
	Insurance		121,768	-
	Utilities		1,073,218	-
	Others		310,748	124,000
			45,682,198	9,769,471
37	**Finance cost**			
	Unwinding of discount on subsidised loans from sponsors	37.1	500,532,835	542,020,800
	Mark up on long term loan		1,606,188	2,208,942
	Bank charges		3,401,536	315,131
			505,540,559	544,544,873

37.1 This includes unwinding of discount on loans from Government of Punjab relating to Quaid-e-Azam Business Park amounting to Rs. 401 million (2017: Rs. 354.13) and Chunian Industrial Estate amounting to Rs. 32 million (2017: Rs. 29.50) as these projects are not in active development phase.

38 Taxation

38.1 No provision for income tax including deferred tax has been made in these financial statements as the Company being a non-profit organization under section 42 of the repealed Companies Ordinance, 1984 has obtained approval under section 2(36) of the Income Tax Ordinance, 2001. Further, tax credit equal to the tax payable including minimum tax and final tax payable is allowed under section 100C of the Income Tax Ordinance, 2001.

38.2 Numerical reconciliation between average effective tax rate and applicable tax rate is not required due to above mentioned fact.

		Note	2018 Rupees	2017 Rupees (Restated)
39	**Cash generated from operations**			
	Net surplus for the year		68,469,809	630,614,367
	Adjustment for non cash items:			
	Depreciation		61,431,504	54,408,307
	Amortization		173,973	160,908
	Finance cost		502,139,023	544,229,742
	Amortization of deferred credit		(519,538,664)	(560,718,066)
	Amortization of deferred grants		(7,746,282)	(10,288,554)
	Advance and other receivable written off		530,366	3,594,221
	Provision for doubtful debts		53,863,060	(384,817)
	Gain on sale of property, plant and equipment		(3,655,354)	(2,393,963)
	Rental income		(12,030,722)	(17,540,804)
	Return on bank deposit		(229,416,445)	(204,516,239)
	Staff gratuity		30,838,905	19,987,918
	Operating (deficit)/surplus before working capital changes		(54,940,827)	457,153,020
	Working capital changes	39.1	(1,533,175,300)	(1,317,715,221)
	Cash used in operations		(1,588,116,127)	(860,562,201)

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	Note	2018 Rupees	2017 Rupees
39.1	**Working capital changes**		
	(Increase) / decrease in current assets		
	Store, spares and loose tools	(18,339,127)	(2,960,940)
	Inventory	(1,128,290,304)	(501,853,593)
	Trade debts	(240,589,340)	(381,996,902)
	Advances, deposits, prepayments and other receivables	(812,025,405)	(73,613,943)
		(2,199,244,176)	(960,423,378)
	Increase / (decrease) in current liabilities		
	Trade and other payables	635,986,420	(235,220,901)
	Advance received for sale of plots	164,262,931	213,799,253
	Receipt against deposit WIP	(170,237,910)	(392,471,982)
	Deposits	36,057,435	56,601,787
		666,068,876	(357,291,843)
		(1,533,175,300)	(1,317,715,221)

40 Financial risk management

40.1 Financial risk factors

The Company's activities expose it to a variety of financial risks: market risk (including currency risk, other price risk and interest rate risk), credit risk and liquidity risk. It's overall risk management program focuses on the unpredictability of financial markets and seeks to minimize potential adverse effects on the financial performance.

(a) Market risk

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices. Market risk comprises of currency risk other price risk and interest rate risk.

(i) Currency risk

The Company is exposed to currency risk to the extent that there is a mismatch between the currencies in which sales and purchase are denominated and the respective functional currency of the Company. The functional currency of the Company is Pak rupee. The Company is not exposed to any currency risk as there are no financial instruments at the reporting date that are sensitive to currency fluctuations.

(ii) Other price risk

Other price risk represents the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices (other than those arising from interest rate risk or currency risk), whether those changes are caused by factors specific to the individual financial instrument or its issuer, or factors affecting all similar financial instruments traded in the market. The Company is not materially exposed to equity price risk since there are no investments in equity securities instruments traded in the market either classified as available-for-sale or at fair value through profit or loss at the reporting date. The Company is also not exposed to commodity price risk since it does not hold any financial instrument based on commodity prices.

(iii) Interest / mark-up rate risk

Interest / mark-up rate risk represents the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest / mark-up rates.

At the reporting date, the interest / mark-up rate profile of the Company's interest / mark-up bearing financial instruments was:

	2018 Rupees	2017 Rupees
Financial assets		
Variable rate instruments		
Deposit accounts	779,214,413	2,232,309,851
Fixed rate instruments		
Short term investments	2,210,000,000	2,410,000,000
Financial liabilities		
Fixed rate instruments		
Loan from Government of Punjab	9,305,605,450	9,426,155,450
Net exposure	(6,316,391,036)	(4,783,845,599)

Fair value sensitivity analysis for fixed and variable rate instruments

The Company does not account for any fixed rate financial assets and liabilities at fair value through profit or loss. Therefore, a change in interest rate at the balance sheet date would not affect profit or loss of the Company. Those financial instruments which are recognised as fair value through profit and loss, change in interest rate would be recognised in profit and loss.

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TARIQ IQBAL MAHER
Advocate High Court
Notary Public
ISLAMABAD

(b) Credit risk

Credit risk represents the accounting loss that would be recognized at the reporting date if counter-parties failed completely to perform as contracted. To manage credit risk the Company maintains procedures for monitoring of exposures against different parties. As part of these processes the financial viability of all counterparties is regularly monitored and assessed. To mitigate the risk, the Company has a system of monitoring outstanding balances of its trade receivables, advances and bank balances. Concentration of credit risk arises when a number of counterparties are engaged in similar business activities or have similar economic features that would cause their ability to meet contractual obligations to be similarly affected by changes in economic, political or other conditions. Concentration of credit risk indicates the relative sensitivity of the Company's performance to developments affecting a particular industry. Company is exposed to major concentration of credit risk as the Company is maintaining all of its bank accounts in Bank of Punjab.

Exposure to credit risk

The carrying amount of financial assets represents the maximum credit exposure. The maximum exposure to credit risk at the reporting date was:

	2018 Rupees	2017 Rupees
Long term deposits	170,159,193	150,085,703
Short term investments	2,210,000,000	2,410,000,000
Trade debts, unsecured - considered good	1,191,230,739	950,641,399
Accrued mark up	23,945,617	24,827,534
Advances, deposits and other receivables	8,503,080	31,863,611
Bank balances	779,214,413	2,232,309,851
	4,383,053,042	5,799,728,098

All debtors are in domestic currency and the aging of trade receivables before provisioning at the reporting date is:

Past due 0 - 365 days	784,570,062	915,230,500
Past due 366 - 720 days	438,393,511	30,322,671
Past due 721 & above	187,442,146	99,693,008
	1,410,405,720	1,045,246,179

The credit risk on liquid funds is limited because the counter parties are banks with reasonably high credit ratings. The Company believes that it is not exposed to major concentration of credit risk as its exposure is spread over a large number of counter parties.

The credit quality of Company's bank balances and term deposits can be assessed with reference to external credit ratings as follows:

	Rating		Rating Agency	2018 Rupees	2017 Rupees
	Long term	Short term			
Short term investments					
The Bank of Punjab - related party	AA	A-1+	PACRA	2,210,000,000	2,410,000,000
Bank balances					
The Bank of Punjab	AA	A-1+	PACRA	832,854,345	2,283,351,138
MIB Bank Limited	A	A-1	PACRA	1,306,964	29,046,183
Meezan Bank Limited	AA+	A-1+	JCR-VIS	648,485	1,081,925
United Bank Limited	AAA	A-1+	JCR-VIS	12,056,221	11,214,182
Silk Bank Limited	A-	A-2	JCR-VIS	4,058,518	4,097,026
				850,924,533	2,328,790,454

Due to the Company's long standing business relationships with these counterparties and after giving due consideration to their strong financial standing, management does not expect non-performance by these counter parties on their obligations to the Company. Accordingly, the credit risk is minimal.

(c) Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting the obligations associated with its financial liabilities that are settled by delivering cash or another financial asset, or that such obligations will have to be settled in a manner unfavourable to the Company. Prudent liquidity risk management implies maintaining sufficient cash and marketable securities and availability of adequate funds through committed credit facilities. The Company finances its operations through equity, borrowings and working capital with a view to maintaining an appropriate mix between various sources of finance to minimize risk. The management aims to maintain flexibility in funding by keeping regular committed credit lines.

The following are the contractual maturities of financial liabilities as at June 30:

Description	2018				
	Carrying amount	Contractual cash flows	One year or less	One to five years	More than five years
	Rupees				
Long term financing	7,494,777,351	9,870,633,334	4,901,106,001	4,969,527,333	-
Trade and other payables	1,376,820,272	1,376,820,272	1,376,820,272	-	-
Deposits	408,311,907	408,311,907	408,311,907	-	-
Accrued mark up	66,631,743	66,631,743	66,631,743	-	-
Loan from the Govt. of Punjab	1,429,854,949	1,429,854,949	1,429,854,949	-	-
	10,476,396,222	13,152,252,205	8,182,724,872	4,969,527,333	-

Description	2017				
	Carrying amount	Contractual cash flows	One year or less	One to five years	More than five years
	Rupees				
Long term financing	6,814,794,519	7,996,390,000	3,026,772,667	4,848,977,333	120,550,000
Trade and other payables	902,552,240	902,552,240	902,552,240	-	-
Deposits	372,254,472	372,254,472	372,254,472	-	-
Accrued mark up	45,326,685	45,326,685	45,326,685	-	-
Loan from the Govt. of Punjab	1,429,854,949	1,429,854,949	1,429,854,949	-	-
	9,564,782,865	10,746,288,346	5,776,761,013	4,848,977,333	120,550,000

40.2 Fair values of financial assets and liabilities

Fair value is the amount that would be received on sale of an asset or paid on transfer of a liability in an orderly transaction between market participants at the measurement date. Consequently, differences can arise between carrying values and fair value estimates. Underlying the definition of fair value is the presumption that the Company is a going concern without any intention requirement to curtail materially the scale of its operations or to undertake a transaction on adverse terms.

IFRS 13, 'Fair value Measurements' requires the Company to classify fair value measurements using fair value hierarchy that reflects the significance of the inputs used in making the measurements. The fair value hierarchy has the following levels:

Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities;

Level 2: inputs other than quoted prices included within Level 1 that are observable for the assets or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices); and

Level 3: inputs for the assets or liability that are not based on observable market data (unobservable inputs).

The following table show the carrying amounts and fair values of financial assets according to there respective category, including their levels in the fair value hierarchy for financial instruments measured at fair value. It does not include fair value information for financial assets not measured at fair value if the carrying amount is reasonable approximation of fair value:

Description	Carrying amount						Fair Value			
	Cash and cash equivalents	Loans and receivables	Available for sale instruments	Fair value through profit or loss	Other financial instruments	Total	Level 1	Level 2	Level 3	Total
June 30, 2018	(Rupees)	(Rupees)	(Rupees)	(Rupees)	(Rupees)	(Rupees)	(Rupees)	(Rupees)	(Rupees)	(Rupees)
Financial assets not measured at fair value										
Non-current assets										
long term deposits		170,159,193	-	-	-	170,159,193	-	-	-	-
Current assets						-				
Short term investment		2,210,000,000	-	-	-	2,210,000,000	-	-	-	-
Trade debt		1,191,230,739	-	-	-	1,191,230,739	-	-	-	-
Accrued mark up		23,945,617	-	-	-	23,945,617	-	-	-	-
Advances, deposits and other receivables		8,503,686	-	-	-	8,503,686	-	-	-	-
Cash and bank balances	851,863,233	-	-	-	-	851,863,233	-	-	-	-
	851,863,233	3,433,679,436	-	-	-	4,455,701,862	-	-	-	-

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Advocate High Court
Notary Public
ISLAMABAD

Financial liabilities not measured at fair value

Non-current liabilities										
Long term financing	-	-	-	-	7,194,777,361	7,194,777,361	-	-	-	-
Current liabilities										
Trade and other payables	-	-	-	-	1,376,820,272	1,376,820,272	-	-	-	-
Deposits	-	-	-	-	408,311,907	408,311,907	-	-	-	-
Accrued mark up	-	-	-	-	66,631,743	66,631,743	-	-	-	-
Loan from the Govt. of Punjab	-	-	-	-	1,429,854,949	1,429,854,949	-	-	-	-
	-	-	-	-	10,476,396,222	10,476,396,222	-	-	-	-

June 30, 2017

Financial assets not measured at fair value

Non-current assets										
Long term security deposits	-	130,085,703	-	-	-	130,085,703	-	-	-	-
Current assets										
Short term investment	-	2,410,000,000	-	-	-	2,410,000,000	-	-	-	-
Trade debts	-	950,641,399	-	-	-	950,641,399	-	-	-	-
Accrued mark up	-	24,827,534	-	-	-	24,827,534	-	-	-	-
Advances, deposits and other receivables	-	31,863,611	-	-	-	31,863,611	-	-	-	-
Cash and bank balances	2,329,449,932	-	-	-	-	2,329,449,932	-	-	-	-
	2,329,449,932	3,567,418,247	-	-	-	5,896,868,179	-	-	-	-

Financial liabilities not measured at fair value

Non-current liabilities										
Long term financing	-	-	-	-	6,814,794,316	6,814,794,316	-	-	-	-
Current liabilities										
Trade and other payables	-	-	-	-	630,863,742	630,863,742	-	-	-	-
Deposits	-	-	-	-	372,254,472	372,254,472	-	-	-	-
Trade debts	-	-	-	-	541,602,791	541,602,791	-	-	-	-
Accrued mark up	-	-	-	-	45,326,685	45,326,685	-	-	-	-
Loan from the Govt. of Punjab	-	-	-	-	1,429,854,949	1,429,854,949	-	-	-	-
	-	-	-	-	9,834,297,155	9,834,297,155	-	-	-	-

The Company has not disclosed the fair values of these financial assets and liabilities as these are for short term or repriced over short term. Therefore, these carrying amounts are reasonable approximation of their fair values.

40.3 Capital management

The Board's policy is to maintain an efficient capital base so as to maintain investor, creditor and market confidence and to sustain the future development of its business.

The Company's objectives when managing capital is to safeguard the entity's ability to continue as a going concern, so that it can continue to provide services for which it is established.

The Company manages the capital structure in the context of economic conditions and the risk characteristics of the underlying assets. In order to maintain or adjust the capital structure, the Company may, for example, obtain loan from the Government of Punjab, or sell inventory to reduce debt.

Neither were there any changes in the Company's approach to capital management during the year nor is the Company subject to externally imposed capital requirements.

41 Chief executive officer, directors and executives remuneration

Description	Chief Executive Officer		Directors		Executives	
	2018	2017	2018	2017	2018	2017
	Rupees					
Managerial remuneration	13,325,000	6,696,716	-	-	149,974,435	111,025,900
Reimbursement of expenses	714,950	438,409	-	-	22,639,716	16,887,638
Retirement benefits	1,027,186	314,482	-	-	20,362,184	13,439,160
	15,067,136	7,449,607	-	-	192,976,335	141,352,699
Number of persons	1	1	21	16	71	53

41.1 Retirement benefits include benefits provided under gratuity.

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Advocate High Court
Notary Public
ISLAMABAD

42 Transactions with related parties

The Company is a government sponsored entity, therefore all the government departments / agencies are the related parties of the Company. Other related parties comprise of directors, key management personnel and entities over which the directors are able to exercise influence. Balances and transactions with government departments relating to the Company are disclosed in respective notes to these financial statements. The remuneration to Chief Executive and Directors is disclosed in note 41 to the financial statements. Other significant and quantifiable transactions and balances with related parties are as follows:

Description	Relationship	Nature of transaction	2018 Rupees	2017 Rupees
Receivables from related parties				
Advance paid	Executives	Advance against salary and expenses	29,842,298	3,436,994
PSEFCO	Associated undertaking	Loan	19,500,000	19,500,000
Payable to related parties				
LESCO	Associated undertaking	Utility services	340,137,153	260,971,459
US Apparel Group	Common Directorship	Advance against sale of plot	93,369,750	93,369,750
FAS Tube Mills & Engineering Industries	Common Directorship	Advance against sale of plot	7,069,600	7,069,600

Description	Relationship	Nature of transaction	2018 Rupees	2017 Rupees
Pakistan Telecommunication Company Ltd. (PTCL)	Common Shareholding	Utility services	1,120,916	989,297
National Telecommunication Corporation (NTC)	Common Shareholding	Utility services	163,706	164,998
Lahore Electric Supply Company (LESCO)	Common Shareholding	Utility services	4,523,484,628	3,726,726,034
Multan Electric Power Company (MEPCO)	Common Shareholding	Utility services	65,936,987	45,931,756
Faisalabad Electric Supply Company (FESCO)	Common Shareholding	Utility services	222,146	20,783
Water and Sanitation Agency (WASA)	Common Shareholding	Utility services	1,888,860	1,888,860
National Insurance Company Limited (NICL)	Common Shareholding	Utility services	3,714,628	2,396,594
Sui Northern Gas Pipelines Limited (SNGPL)	Common Shareholding	Utility services	68,000	29,840
Lahore Waste Management Company (LWMC)	Common Shareholding	Utility services	4,485,714	3,633,835
Directorate General Public Relations (DGPR)	Common Shareholding	Utility services	35,126,470	25,170,743
COMSATS Internet Services	Common Shareholding	Utility services	494,616	711,830
Government of Punjab	Shareholder	Loan	122,358,250	1,772,650,625
Next Pharmaceutical Limited	Common Directorship	Utility services	7,518,129	8,007,651
Qadri Bomber Private Limited	Common Directorship	Utility services	37,568,238	25,496,357
Idrar Group of Companies	Common Directorship	Utility services	6,569,101	2,877,249
FAS Tube Mills & Engineering Industries	Common Directorship	Utility services	5,079,103	6,252,494
US Apparel Group	Common Directorship	Utility services	1,028,645	1,016,262
Mehtab Industries	Common Directorship	Utility services	109,800	114,900

43 Number of employees

The total and average number of employees of the Company during the current year and as at 30 June are as follows:

Total number of employees as at 30 June	654	565
Average number of employees during the year	610	534

44 Date of authorization

These financial statements were authorized for issue on 29 JUN 2021 by the Board of Directors of the Company.

45 General

- All financial information is presented in Pak rupee and has been rounded to the nearest Pak rupee.
- Corresponding figures have been rearranged or reclassified, wherever necessary, for the purposes of comparison, however, except for change in policy as disclosed in Note 6.21 and reclassification of advance income tax from advances, deposits, prepayment and other receivables to income tax refundable, no significant rearrangements / reclassifications have been made in these financial statements.

Chief Financial Officer | Chief Executive Officer | Chairman

ATTESTED
TARIQ IQBAL MAHER
Advocate High Court
Notary Public
ISLAMABAD

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY
A Company setup under Section 42 of the Companies Ordinance, 1984 (now Companies Act, 2017)

85 E

PIE/OGRA/CEO/0365
09th February 2022

To: Chairman
Oil & Gas Regulatory Authority (OGRA)
54-B, Fazal-e-Haq Road, Blue Area
Islamabad

Subject: **SUBMISSION OF PETITION FOR GRANT OF GAS DISTRIBUTION AND SALES LICENSE FOR QUAID-E-AZAM BUSINESS PARK (QABP) SHEIKHUPURA**

Dear Sir:

Punjab Industrial Estates Development and Management Company (PIEDMC) is the largest developer and operator of industrial estates in Pakistan. PIEDMC has been establishment u/s 42 of the Companies Ordinance 1984 (now Company Act 2017) and is fully owned by Government of the Punjab.

The industrial estates of PIEDMC are located in nine districts of the Punjab. Quaid-e-Azam Business Park (QABP), located in Sheikhupura, is also one of our project. QABP, spanning over 1536 acres, is one of the landmark project of the Government with the potential to provide enormous social and economic benefits. QABP has been formally notified as "Special Economic Zone" (SEZ) by Government of Pakistan, vide BOI's notification no. SRO (I)/2020, dated 07-12-202 (copy attached).

PIEDMC is committed to provide best services to its industrialists including supplying gas through one-stop shop/ one window concept.

To achieve the above objective, we hereby submt an application for grant of 'gas distribution and sales license' (with all annexures) for Quaid-e-Azam Business Park project as per Natural Gas Regulatory Authority (Licensing) Rules, 2002.

You are requested to please process and approve our application.

Thanking you.

LI MUAZZAM SYED)
ef Executive Officer

Copy to:
- PS to Minister Industries, Punjab
- PS to Secretary, ICI & SD Department
- PS to Secretary, Board of Investment (BOI), Islamabad

TO BE PUBLISHED IN THE NEXT ISSUE OF THE WEEKLY GAZETTE OF PAKISTAN PART-I

Prime Minister's Office
Board of Investment
4th Floor Evacuee Trust Complex, F-5/1
*****

Islamabad, the 7th December, 2020

NOTIFICATION

S.R.O. (I)/2020.- In exercise of the powers conferred by clause (n) of section 3 read with section 6(j) of the Special Economic Zones Act, 2012 (XX of 2012), and rule 9(8) of the Special Economic Zones Rules, 2013, the Board of Approvals in its 6th meeting, held on 7th October 2020, is pleased to accept the proposals received from SEZ Authority Punjab to allow change in the authorized commercial activities as defined under rule 2(1)(d) and renotify the "Quaid-e-Azam Apparel Park (QAAP)" as per details given below, namely; –

Sr. No.	Name	Type	Location	Total Area (Acres)
1.	Quaid-e-Azam Business Park	Public	Sheikhupura, Punjab	1536

2. The Quaid-e-Azam Business Park shall abide by the following terms and conditions, namely: –

(a) construction of the Zone shall commence within six months from the date of this notification and each Developer shall share with respective SEZ Authority and the Secretariat of Approvals Committee and Board of Approvals the development progress of its respective Zone as per the submitted Master Plan and Execution Plan developed in Primavera or MS Project, as the case may be, on quarterly basis;
(b) no change shall be made in the contents of the approved zone application without prior approval of the Board of Approvals;
(c) development and operations of the Zone shall be as per Master Plan submitted with the approved zone application;
(d) till the approval of the Development Agreement or constitution of the SEZ Committees (as the case may), no Zone Developer shall be entitled to sell or lease any industrial or commercial plot, or sign or intend to sign an MOU or agreement or any such instrument conditionally or unconditionally to sell or lease any such plot to any investor or enterprise or any other party;
(e) Zone Enterprises shall only be admitted into the Zone, after the approval of the respective SEZ Committee as provided under section 23 of the Special Economic Zones Act, 2012 (XX of 2012);
(f) at the time of consideration of a Zone Enterprise entry application by the SEZ Committee, the respective Developer shall undertake to ensure provision of utilities to that Zone Enterprise, if admitted in the Special Economic Zone, as per the requirement and timeframe stated in its Zone Enterprise entry application;
(g) Zone Developers shall at all time keep a clear title of the land or leasehold rights, that should be free from all encumbrances;
(h) Zone Developers shall unconditionally comply with all the instructions or regulations or SOPs or Circulars or clarification etc., issued by the respective SEZ Authority, Board of Investment, being secretariat of the Approvals Committee and Board of Approvals, as and when required to advance the objectives of the Special Economic Zones Act, 2012 (XX of 2012);
(i) the cost of utilities if any, for the private zones, till zero point, shall be borne by the respective Zone Developers;

(j) all conditions mentioned in the Environmental Protection Agency certificate provided with the zone application or other requirements mentioned from time to time by the respective Environmental Protection Agency shall be adhered by the Zone Developer in letter and spirit;

(k) Board of Investment, being secretariat of the Approvals Committee and Board of Approvals, or respective SEZ Authority may, at any time, by notice in writing require any director, officer and member of the Developer or respective Zone Enterprise, in general or in particular to furnish bi-annual reports containing any information relating to their project within the time specified therein or such further time as the Board of Investment or respective SEZ Authority may allow, with any statement or information and without prejudice to the generality of the foregoing power, may call for information, at such intervals as the Board of Investment or respective SEZ Authority may deem necessary;

(l) amount of processing fee, if any, for zone enterprises entry applications shall be charged from prospective Zone Enterprises only after approval from the Board of Approvals;

(m) developers and enterprises housed in the zone after the date of notification of the Special Economic Zone, regardless of claiming and expiry of incentives available under the Special Economic Zones Act, 2012 (XX of 2012), shall be bound to adhere all the provisions of the above said Act, Special Economic Zones Rules 2013 or rules, regulations, clarifications, directives etc., issued by the SEZ Secretariat from time to time; and,

(n) Processing or other fee, if any, levied by Board of Investment with the Approval of Board of Approvals shall be payable with immediate effect by the respective Developer under rule 62(1)(b) of Special Economic Zone Rules 2013.

3. Unless otherwise provided in the Special Economic Zones Act, 2012 (XX of 2012), Special Economic Zones Rules 2013 or rules, regulations, clarifications, directives etc. issued thereunder or specifically approved by the Board of Approvals as empowered under section 6(a) and 6(j) of the Special Economic Zones Act 2012, this notification shall not absolve the Zone Developer or any of its zone enterprise, from the responsibility of taking any other certification, permit, license or any other instrument or from complying with any other statutory requirements as provided under any applicable law.

4. Any violation of the aforementioned terms and conditions may entail withdrawal of SEZ status under the relevant provisions of Special Economic Zones Act, 2012 (XX of 2012) and Rules framed thereunder.

(Fareena Mazhar)
Secretary BOI / BOA

No. 1(57)-2016-SEZ

Manager,
Printing Corporation of Pakistan Press,
Stadium Road,
Karachi.

Distribution:

1. Secretary to Prime Minister, Prime Minister's Office, Islamabad.
2. All Members of the Board of Approvals.
3. Respective Zone Developer.

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY
A Company setup under Section 42 of the Companies Ordinance, 1984 (now Companies Act, 2017)

SUBJECT: **Submission of Petition before OGRA for Grant of Gas Distribution and Sales License for Quaid-e-Azam Business Park, M-2, Motorway, District Sheikhupura**

(Details of Rule No. 4 and Sub Rule 'g')

Punjab Industrial Estates Development and Management Company (PIEDMC) is largest company for developing and managing industrial estates throughout the province of Punjab. PIEDMC has been establishment in 2003 u/s 42 of the Companies Ordinance 1984 (now Company Act 2017) and is fully owned by Government of the Punjab.

PIEDMC immediately taken over two old industrial estates namely, Multan Industrial Estate, Phase-I, Multan and Quaid-e-Azam Industrial Estate, Kot Lakhpat, Lahore and completely rehabilitated their infrastructure. In parallel, PIEDMC so far developed five new industrial estates in different districts of Punjab according to modern standards as under:

1. Sundar Industrial Estate, Lahore (2,000 Acres)
2. Multan Industrial Estate, Phase-II, Multan (667 Acres)
3. Rahim Yar Khan Industrial Estate, Rahim Yar Khan (456 Acres)
4. Bhalwal Industrial Estate, Bhalwal (427 Acres)
5. Vehari Industrial Estate, Vehari (250 Acres)

Currently, PIEDMC developing five industrial estates as under:

1. Quaid-e-Azam Business Park (1536 Acres)
2. Bahawalpur Industrial Estate (483 Acres)
3. Chunian Aqua Business Park (321 Acres)
4. Muzaffargarh Industrial Estate (400 Acres)
5. Sialkot Industrial Esatte (500 Acres)

PIEDMC will fully adhere all regulated activities as per standards of Authority. In this regard, PIEDMC completely, acquired the land of QABP (formerly known as QAAP) as per Land Acquisition Act-1894 and has complete in possession by PIEDMC. (Land Record documents are dully signed by local authorities such as AC-Shekihupura, DC-Sheikhupura, Commissioner Lahore etc. are attached herewith for reference).

Further, PIEDMC has already completed EIA report from M/s Nespak and obtained NOC from Environment Protection Agency (EPA). Copies of EIA report and NOC-EPA attached herewith for reference.

Furthermore, PIEDMC will enter O & M agreement with SNGPL as EPC contractor (already licensee of OGRA) for carrying out all regulated activities related to gas network. Whereas, other activities like road network, sewerage and drainage network, electrical distribution network, etc. will operate and managed by the PIEDMC own teams. Further, M/s Nespak (PIEDMC consultant) already designed the complete project and also supervising all activities which are under construction at QABP. Consent of SNGPL is attached for ready reference.

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY

EXTRA ORDINARY ISSUE REGISTERED No. L-7532

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The Punjab Gazette

PUBLISHED BY AUTHORITY

LAHORE TUESDAY MARCH 11, 2014

OFFICE OF THE COMMISSIONER LAHORE DIVISION, LAHORE

NOTIFICATION

Under Section 17(4) & 6 of the Land Acquisition Act, 1894

No. SR/938 dated 11 / 03 /2014

Whereas, it appears to the Commissioner, Lahore Division, Lahore that the land notified U/S 4 of the Land Acquisition Act, 1894 vide Notification bearing No. DRA/ 1665 dated 26.11.2013 and published in the Punjab Gazette on 26.11.2013 is required to be taken by the Government for industrial Estates Development and Management Company (PIEDMC), Lahore.

2. And whereas, the Commissioner, Lahore Division, Lahore is satisfied that the land specified below is urgently required on the demand of PIEDMC on account GSP+Status has been awarded to Pakistan by the EU on 12 December, 2013 as a significant incentive for speedy development of the Garment sector. The Land acquisition process is expedited by invoking emergency provision of the Land Acquisition Act, 1894 due to which provisions of sub-Section (i) of Section 17 of the Land Acquisition Act, 1894 are applicable to the aforesaid land.

3. Now therefore, in exercise of the powers sub-Section (4) of Section 17 of the said act, the Commissioner, Lahore Division, Lahore is further pleased to direct that provisions of Section 5 and 5-A of the said act, shall not be applicable in the case of land and that the Land Acquisition Collector / Assistant Commissioner, Sheikhupura, should take action accordingly.

4. A declaration is also made under the provision of Section 6 of the Land Acquisition Act, 1894 to all whom it may concern and under the provision of Section 7 of the said act, the Land Acquisition Collector / Assistant Commissioner, Sheikhupura is hereby directed to take orders for acquisition of land.

5. The plan of land may be inspected in the office of the Land Acquisition Collector / Assistant Commissioner, Sheikhupura.

NOTE:-

The land upon which any religious place of worship, shrine, tomb, graveyard or any immovable property attached to any institution and the boundaries of which contiguous with the site of the same has been excluded from the said land. Similarly, Waqf, evacuee and state lands have also been excluded.

Aamir

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District	Tehsil	Locality	Square No.	Killa No.	Area	
					Kanal	Marla
Sheikhupura	Sheikhupura	Sahoki Mallian	29	07	08	00
				08	08	00
				09	08	00
				10	08	00
				11	08	00
				12	08	00
				13	08	00
				14	08	00
				15	08	00
				16	08	00
				17	08	00
				18	08	00
				19	08	00
				20	08	00
				21	08	00
				22	08	00
				23	08	00
				24	08	00
				25	08	00
			37	01	06	00
				02	08	00
				03	08	00
				04	08	00
				05	08	00
				06	08	00
				07	08	00
				08	08	00
				09	08	00
				10	04	04
				11	03	14
				12	08	00
				13	08	00
				14	08	00
				15	08	00
			38	01	08	00
				02	08	00
				03	08	00
				04	08	00
				05	08	00
				06	08	00
				07	08	00
				08	08	00
				09	08	00
				10	08	00
				11	08	00
				12	08	00
				13	08	00
				14	08	00
				15	08	00
			39	01	08	00
				02	08	00
				03	08	00
				04	08	00
				05	08	00
				06	08	00
				07	08	00

District	Tehsil	Locality	Square No.	Killa No.	Area	
					Kanal	Marla
Sheikhupura	Sheikhupura	Sahoki Mallian	43	04	08	00
				05	08	00
				06	08	00
				07	08	00
				08	08	00
				09	08	00
				10	08	00
				11	08	00
				12	08	00
				13	08	00
				14	08	00
				15	08	00
			44	01	08	00
				02	08	00
				03	08	00
				04	08	00
				05	08	00
				06	08	00
				07	08	00
				08	08	00
				09	08	00
				10	08	00
				11	08	00
				12	08	00
				13	08	00
				14	08	00
				15	08	00
			45	01	08	00
				02	08	00
				03	08	00
				04	05	00
				06	06	00
				07	08	00
				08	08	00
				09	08	00
				10	08	00
				11	08	00
				12	08	00
				13	08	00
				14	08	00
				15	08	00
			46	11	05	13
				19	07	06
				20	08	02
		Total			**1499**	**08**
		Chak Sathien	05	03	09	09
				09	04	18
				12	07	10
		Total			**21**	**17**
		Bamb	03	19	05	13
				20	08	00
				21	08	00
				22	08	00
			04	11	07	00
				12	07	09
				13/2	04	13

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District	Tehsil	Locality	Square No.	Killa No.	Area	
					Kanal	Marla
Sheikhupura	Sheikhupura	Bamb	09	18	08	00
				19	08	00
				20	07	00
				21	07	00
				22	08	00
				23	08	00
				24	08	00
				25	07	08
				26	02	00
			10	01	08	00
				02	08	00
				09	08	00
				10	08	00
				11	08	00
				12	08	00
				19	08	00
				20	08	00
				21	08	00
				22	08	00
			13	01	07	07
				02	07	07
				09	08	00
				10	08	00
				11	08	00
				12	08	00
				19	08	00
				20	08	00
				21	08	00
				22	08	00
			14	01	06	16
				02	07	07
				03	07	07
				04	07	00
				05	07	01
				06	08	00
				07	08	00
				08	08	00
				09	08	00
				10	07	12
				11	07	12
				12	08	00
				13	08	00
				14	08	00
				15	08	00
				16	08	00
				17	08	00
				18	08	00
				19	08	00
				20	08	00
				21	08	00
				22	08	00
				23	08	00
				24	08	00
				25	08	00
			15	01	07	13
				02	07	11

District	Tehsil	Locality	Square No.	Killa No.	Area	
					Kanal	Marla
Sheikhupura	Sheikhupura	Bamb	20	13	08	00
				14	08	00
				15	07	12
				16	08	00
				17	08	00
				18	08	00
				19	07	08
				20	08	00
				21	08	00
				22	07	06
				23	08	00
				24	08	00
				25	08	00
			21	01	08	00
				02	08	00
				03	08	00
				04	08	00
				05	08	00
				06	08	00
				07	08	00
				08	08	00
				09	08	00
				10	08	00
				11	08	00
				12	08	00
				13	08	00
				14	08	00
				15	08	00
				16	08	00
				17	08	00
				18	08	00
				19	08	00
				20	08	00
				21	08	00
				22	08	00
				23	08	00
				24	08	00
				25	08	00
			27	05	07	17
				06	02	13
			26	01	08	00
				02	08	00
				03	08	00
				04	08	00
				05	08	00
				06	08	00
				07	08	00
				08	08	00
				09	08	00
				10	08	00
				11	01	17
				12	07	16
				13	08	00
				14	08	00
				15	08	00
			25	01	08	00

OFFICE OF THE ASSISTANT COMMISSIONER, / LAND ACQUISITION COLLECTOR, SHEIKHUPURA

AWARD UNDER SECTION 11 OF THE LAND ACQUISITION ACT, 1894 ANNOUNCED BY MR. RASHID IRSHAD HUSSAIN ASSISTANT COMMISSIONER / LAND ACQUISITION COLLECTOR, IN RESPECT OF LAND ACQUIRED FOR THE ESTABLISHMENT OF GARMENT CLUSTER / INDUSTRIAL ZONE TEHSIL AND DISTRICT SHEIKHUPURA.

The Deputy Secretary (Commerce), Government of the Punjab, Industries, Commerce and Investment Department Lahore vide Letter No. SO C (IC & I) 1-26/2013 dated 11th October, 2013, conveyed the approval of Chief Minster, Punjab for setting up of Garment Industry Zone. It was requested that the District Coordination Officer / District Collector Sheikhupura may initiate proceedings for the acquisition of land for setting up Garment Industrial Zone at Sheikhupura as follows:

i. Earmarking of 200 Acres of land for the Local Garment Industry provided the Industry signs MoU with PIEDMC to express its firm commitment towards setting up of Garment Industry at the site.

ii. Earmarking of 800 Acres for establishment of Chinese Garment city.

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2. The District Collector, Sheikhupura then issued notification under section 4 of the Land Acquisition Act 1894 bearing No. LAC/555 dated 24-10-2013 for the acquisition of land measuring **8845-Kanal 12-Marlas** situated in four Mauzas namely Mauza Khokhar ki Mallian (1910 Kanals), Mouza Bamb (490-Kanal 9-Marlas), Mouza Qayam Pur (1963-Kanal 14-Marlas) and Mouza Sahoki Mallian (4481-Kanal 9-Marlas) Tehsil and District Sheikhupura. The said notification was published in the Punjab Gazette on 28-10-2013. The process was underway when the Chief Executive Officer, Punjab Industrial Estate Development and Management Company **(PIEDMC)** Lahore intimated to the Secretary Industry Government of the Punjab Lahore stating that GSP + Status have been awarded to

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Pakistan by the European Union (EU) on 12 December 2013 as a significant incentive for speedy Development of the Garment Sector and it was also requested that the land was urgently required.Moreover, it was also requested that emergency provisions of the Land Acquisition Act 1894 may be invoked. The Commissioner Lahore Division Lahore on being satisfied issued notification bearing No.SR/8782 dated 23.12.2013 under section 17 (4) & 6 of the Land Acquisition Act 1894 and the said notification was published in the Punjab Gazette on 26.12.2013.

3. Public Notices under Section 9 (1) of Land Acquisition Act 1894 were given to the land owners / interested persons and the same were pasted at conspicuous places in Mauzas concerned requiring the interested persons to prefer their claims of compensation to the Collector.

4. None of the interested persons preferred claims of compensation, rather instead of appearing before the undersigned, they filed writ petition No. 33471 / 2013 titled "Anjumane Garment City M-2 Vs Government of the Punjab before the High Court Lahore, but the writ petition was dismissed on 16.01.2014. Another writ petition No. 13/2014 titled as Haji Nisar Ahmad Virk etc (15 Land owners) Vs Government of the Punjab etc was filed in the Honorable Lahore High Court, Lahore which was disposed of as being infructuous on 15.01.2014.

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5. Anjum Mutasreene Garment City filed I.C.A No.84/14 in the Honorable Lahore High Court, Lahore against the orders dated 16.01.2014 passed in writ petition No.33471/13 and also filed another writ petition No.10/2014. Both aforementioned cases were dismissed by a Division Bench of Honorable Lahore High Court, Lahore on 18.02.2014.

6. All legal formalities and procedures were adopted as prescribed under the Land Acquisition Act 1894. The Board of Revenue Punjab vide letter No. 1239-2013/ 1138-S.IV dated 8.11.2013 approved the estimated cost of acquisition of the Land in question. Mouza wise detail of the land and respective approved price was as under:-

Name of Mouza	Area		Rate Per Acre	Cost of Land
	K	M		
Khokhar Ki Mallian	1910	0	Rs. 1,300,000/-	Rs. 310,372,000/-
Bamb	490	9	Rs. 1,300,000/-	Rs. 079,697,125/-
Qayyam Pur	1963	14	Rs. 1,300,000/-	Rs. 319,099,750/-
Sahoki Mallian	4481	9	Rs. 1,300,000/-	Rs. 728,235,125/-
	8845	12		**Rs. 1,437,404,000/-**
25 % Compulsory Land Acquisition Charges				Rs. 0,359,351,000/-
Grand Total				**Rs. 1,796,755,000/-**
Rupees One Arab, Seventy Nine Crore, Sixty Seven Lac and Fifty Five Thousand only **(Rs One Billion seven ninety six million and seven fifty five thousand only)**				

7. Subsequently, keeping in view the request of the land owners and recommendations of District Collector, Sheikhupura and the Commissioner, Lahore Divison, Lahore regarding enhancement in compensation amount, the competent authority i.e Board of Revenue, Punjab vide letter No.323-2014/61-S.IV dated 26.02.2014 approved the following estimated cost of land:-

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Name of Mouza	Area		Rate Per Acre	Cost of Land
	K	M		
Khokhar Ki Mallian	1910	0	Rs. 1,600,000/-	Rs. 382,000,000/-
Bamb	490	9	Rs. 1,600,000/-	Rs. 98,090,000/-
Qayyam Pur	1963	14	Rs. 1,600,000/-	Rs. 392,740,000/-
Sahoki Mallian	4481	9	Rs. 1,600,000/-	Rs. 896,290,000/-
	8845	12		**Rs. 1,769,120,000/-**
25 % Compulsory Land Acquisition Charges				Rs. 442,280,000/-
Grand Total				**Rs. 2,211,400,000/-**
Rupees Two Arab, Twenty One Crore and Fourteen Lac only **(Rs Two Billion two eleven Million and four hundred thousand only)**				

8. Now in the light of assessment approved by the compentent authority, I hereby make the "AWARD" under section 11 of Land Acquisition Act, 1894 that the area measuring 8845-Kanal and 12-Malas as specified in the Notification No.SR/8782 dated

23.12.2013 published in Punjab Gazette shall stand acquired with immediate effect. Therefore, I "AWARD" the compensation of land according to the assessment approved by competent authority i.e Board of Reveneu Punjab vide letter No.323-2014/61 S.IV dated 26.02.2014. Mouza wise detail of acquired land is as under:-

Village	Square No.	Killa No.	Area	
			Kanal	Marla
Khokar Ki Mallian	24	11	04	0
		12	01	0
		16	03	0
		17	07	0
		18/1	01	12
		18/2	04	0
		19	08	0
		20	08	0
		21	07	04
		22/1	01	13
		22/2	03	16
		23	07	16
		24	08	0
		25	08	0
	23	21	07	05
		22	05	10
		23	03	00
		24	01	05
	25	08	01	00
		09	05	00
		10	00	03
		12	02	03
		13	07	16
		14	04	0
		15/1	03	03
		15/3	03	00
		16/1	04	02
		16/2	03	18
		17	06	15
		18	01	12
		24	00	05
		25/1	01	07
		25/2	00	05
		25/3	03	02
		26	00	14

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Sr. No	Village	Square No.	Khasra Killah No.	Area K	Area M	Crop	Value (Rs.)
1186			11	8	0	Wheat	48,000
1187			12	8	0	Wheat	48,000
1188			13	8	0	Wheat	48,000
1189			14	8	0	Wheat	48,000
1190			16	8	0	Wheat	48,000
1191			17	8	0	Wheat	48,000
1192			18	8	0	Wheat	48,000
1193			19	8	0	Barseem	40,000
1194			20	8	0	Barseem	40,000
1195			21	7	16	Wheat	46,400
1196			22	8	0	Wheat	48,000
1197			23	8	0	Wheat	48,000
1198			24	8	0	Wheat	48,000
1199			25	8	0	Wheat	48,000
			Total	**4481**	**9**		**25,367,100**
1	Khokar Ki Mallian		**Total**	**1910**	**0**		**10,341,025**
2	Bomb		**Total**	**490**	**9**		**2,813,000**
3	Qayampur		**Total**	**1963**	**14**		**11,717,276**
4	Sahoki Mallian		**Total**	**4481**	**9**		**25,367,100**
			G.Total	**8845**	**12**		**50,238,401**

ABSTRACT:

Sr.No	Type of Compensation	Amount (in Rs.)
1	Compensation of Land:	2,211,400,000
2	Compensation of Structure:	121,310,131
3	Compensation of Tubewells:	8,311,800
4	Compensation of Tubewell Rooms:	2,141,287
5	Compensation of Trees:	5,136,684
6	Compensation of Fish Forms:	3,755,000
7	Compensation of Crops:	50,238,401
Grand Total		**Rs.2,402,293,303**
Total Amount Payable		**Rs.2,402,293,303**
Total Amount of Award is:		**Rs.2,402,293,303**

APPORTIONMENT:-

1. The compensation money would be apportioned among all the co-sharers according to their shares recorded in the last Register Haqdaran-e-Zamin provided that, if any of the owners has already transferred his land after the entries of Last Register Haqdaran-e-Zamin, the compensation would be paid to the last vendee.
2. In the event of land would not free from all encumbrances, the compensation money will be paid after examining each such case separately on the touch stone of law.
3. If the persons interested do not consent to receive compensation, or if there be no person competent to alienate the land, or if there be any dispute as to the title to receive the compensation or as to the apportionment of it, the Collector would deposit the amount of compensation in the Court to which a reference under section 18 would be submitted as required under section 31(2) of the Act.
4. Compensation in respect of mortgaged land should be apportioned between the mortgager and the mortgagee keeping in view the mortgage amount.
5. If there found some other dispute on the entitlement of the land the compensation would be payable after conducting inquiries
6. No compensation would be allowed to a person in adverse possession whose period of adverse possession was less than period of 12 years on the date when Judgment / Order of the Shariat Appellant Bench of the Supreme Court of Pakistan Under Article 203-D of the Constitution (1973) concerning adverse possession took effect.

Note: Any error or omission is subject to rectification with the approval of the Competent Authority.

Announced
26.02.2014

Rashid.

ASSISTANT COMMISSIONER/
LAND ACQUISITION COLLECTOR,
SHEIKHUPURA 26/02/14

Endst No; AC/LAC/HC/605 Dated: 26/02/2014

A copy is forwarded for information to:-

1. The Commissioner, Lahore Division, Lahore.
2. The DCO / District Collector, Sheikhupura
3. The Additional District Collector, Sheikhupura
4. The Chief Executive, Punjab Industrial Estates Development and Management Company, Raiwind Road Lahore.
5. The Tehsildar / Revenue Officer Concerned

Rashid.

ASSISTANT COMMISSIONER/
LAND ACQUISITION COLLECTOR,
SHEIKHUPURA 26/02/14

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OFFICE OF THE ASSISTANT COMMISSIONER, / LAND ACQUISITION COLLECTOR, SHEIKHUPURA

AWARD UNDER SECTION 11 OF THE LAND ACQUISITION ACT, 1894 ANNOUNCED BY MR. RASHID IRSHAD HUSSAIN ASSISTANT COMMISSIONER / LAND ACQUISITION COLLECTOR, IN RESPECT OF LAND ACQUIRED FOR THE ESTABLISHMENT OF GARMENT CLUSTER / INDUSTRIAL ZONE TEHSIL AND DISTRICT SHEIKHUPURA.

The Deputy Secretary (Commerce), Government of the Punjab, Industries, Commerce and Investment Department Lahore vide Letter No. SO C (IC & I) 1-26/2013 dated 11th October, 2013, conveyed the approval of Chief Minster, Punjab for setting up of Garment Industry Zone. It was requested that the District Coordination Officer / District Collector Sheikhupura may initiate proceedings for the acquisition of land for setting up Garment Industrial Zone at Sheikhupura as follows:

25/11

i. Earmarking of 200 Acres of land for the Local Garment Industry provided the Industry signs MoU with PIEDMC to express its firm commitment towards setting up of Garment Industry at the site.

ii. Earmarking of 800 Acres for establishment of Chinese Garment city.

2. The District Collector, Sheikhupura issued notification under section 4 of the Land Acquisition Act 1894 bearing No. LAC/555 dated 24-10-2013 for the acquisition of land measuring **8845-Kanal 12-Marlas** situated in four Mauzas namely Mauza Khokhar ki Mallian (1910 Kanals), Mouza Bamb (490-Kanal 9-Marlas), Mouza Qayam Pur (1963-Kanal 14-Marlas) and Mouza Sahoki Mallian (4481-Kanal 9-Marlas) Tehsil and District Sheikhupura. The said notification was published in the Punjab Gazette on 28-10-2013.

3. Meanwhile, in a meeting chaired by Secretary Industries, Commerce & Investment Department, Government of Punjab dated 23rd Novemeber, 2013 it was decided to acquire additional land in addition to already notified 1105 acres land by the

DCO Sheikupura on 28.10.2013. In this regard a letter was received from Punjab Industrial Estate Development and Management Company (**PIEDMC**) dated 25.11.2013 requesting that Gazette Notification may be published for the additional land falling in Mauza Sahooki Maliyan, Mandiala, Chak Satthian and Bamb.

4. Therefore, District Collector, Sheikhupura issued Second Notification under Section 4 of the Land Acquisition Act 1894 bearing No. DRA/1665 dated 26.11.2013 for the acquisition of land measuring **3653-Kanals 07-Marlas** situated in four mouzas namely Mouza Mandiala (68K-19 M), Sahoki Mallian (1619 K-8 M), Chak Sethian (21 K-17 M) & Bamb (1943 K-6M), Tehsil & District Sheikupura.The said Notification was published in the Punjab Gazette dated 26.11.2013.

5. The process was underway when the Chief Executive Officer, Punjab Industrial Estate Development and Management Company (**PIEDMC**) Lahore intimated to the Secretary Industry Government of the Punjab Lahore that GSP + Status have been awarded to Pakistan by the European Union (**EU**) on 12 December 2013 as a significant incentive for speedy Development of the Garment Sector and it was also requested that the land was urgently required. Moreover, it was also requested that emergency provisions of the Land Acquisition Act 1894 may be invoked.

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6. The Commissioner Lahore Division Lahore on being satisfied issued Notification bearing No.SR/938 dated 11.03.2014 under section 17 (4) & 6 of the Land Acquisition Act 1894 and the said notification was published in the Punjab Gazette on 11.03.2014.

7. During scrutiny regarding preparation of notification U/S 17 (4) & 6 of the Land Acquisition Act 1894, it was found that the actual land to be acquired in second phase measured to be 3523 K-7 M as the area of Square No.17 Killa No.14 situated in Mouza Mandiala, Tehsil & District Sheikupura was mentioned as 17 K-7 M whereas the actual area of the said khasra is 7K-7M. Furthermore, it was pointed out that the area of 120 K comprising Squre No.40 Killa No. 1 to 15 of Mouza Sahoki Mallian Tehsil Sheikupura was repeated in the Notification U/S 4 of the Land Acquisition Act. These above mentioned errors were rectified in the notification U/S 17 (4) & 6 of the Land Acquisition Act 1894 with the approval of Commissioner, Lahore Division the competent authority for issuancs of notification U/S 17(4) & 6 of the Land Acquisition

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Act 1894 vide letter No. DRA(A)/452 dated 8-3-14.Thus the actual area of the Second notification U/S 4 of the Land Acquisition Act 1894 was 3523 K-7M and same was mentioned in notification U/S 17 (4) & 6 of the Land Acquisition Act 1894.

8. Public Notices under Section 9 (1) of Land Acquisition Act 1894 were given to the land owners / interested persons and the same were pasted at conspicuous places in Mauzas concerned requiring the interested persons to prefer their claims of compensation to the Collector. Advertisements regarding notice U/S 9 of the Land Acquisition Act 1894 for acquistion of land measuring 3523 K-7 M for Garment Industrial Zone were published in major Daily newspapers (The Daily Jang , dated 21.03.2014 & Daily Khabrain dated 21.03.2014) vide letter NO.HC/AC/LA/623 dated 17.03.2014 addressed to DGPR, Lahore. All the interested persons were informed to state nature of their respective interests in the land and amount and particulars of their claim to compensation for such interests and their objections if any regarding measurements made under S-8 of the Land Acquisition Act 1894 to AC Sheikupura/ LAC Sheikupura till 10.04.2014. It was also notified that in case of absence of interested persons at time and date specified, ex-parte proceeding would be initiated and no complaint would be entertained afterwards and the award shall be announced since land is required urgently.

9. In response to the Notices, No objection was received in the office of Assistant Commissioner /Land Acquisition Collector, Sheikupura till 10.4.2014.

10. All legal formalities and procedures were adopted as prescribed under the Land Acquisition Act 1894. The Board of Revenue Punjab vide letter No. 1408-2013/ 1284-S.IV dated 10.12.2013 approved the estimated cost of acquisition of the Land in question. Mouza wise detail of the land and respective approved price was as under:-

Name of Mouza	Area		Rate Per Acre.	Cost of Land
	K	M		
Chak Sethian	21	17	Rs. 1,300,000/-	Rs. 35,40,625
Bamb	1943	06	Rs. 1,300,000/-	Rs.31,57,86,250
Mandiala	68	19	Rs. 1,300,000/-	Rs. 1,11,80,000
Sahoki Mallian	1619	08	Rs. 1,300,000/-	Rs.26,31,52,500
	3653	07		**Rs. 59,36,59,375**
25 % Compulsory Land Acquisition Charges				Rs. 14,84,14,843
Grand Total				**Rs. 74,20,74,218**
Rupees Seventy Four Crore, Twenty Lac , Seventy Four Thousand, Two Hundred and Eighteen only				

11. However, the land owners agitated against the price approved and complained that District Price Assessment Committee, while assessing the price of land has not duly considered all the factors. The District Collector, Sheikupura alongwith Land Acquisition Collector, Sheikupura visited the site in question several times and held meeting with the affected land owners and recommended that factors referred at Section 23 of the Land Acquisition Act, 1894 may be incorporated in price over and above price assessed by District Price Assessment Committee while keeping the DPAC assessed price as baseline/bench mark. Based upon the above mentioned factors and analysis of prevailing situation District Collector Sheikupura recommended price of **Rs.1,600,000** per acre vide letter No.PS/DCO/SKP/153 dated 25-02-14. In addition to **Rs.1,600,000** per acre, **Rs.400,000** shall be **25%** compulsory acquisition charges. This makes a total of **Rs.2,000,000** per acre. Subsequently, keeping in view the request of the land owners and recommendations of District Collector, Sheikhupura and the Commissioner, Lahore Divison, Lahore regarding enhancement in compensation amount, the competent authority i.e Board of Revenue, Punjab vide letter No.592-2014/295-S.IV dated 10.04.2014 approved the following estimated cost of land:-

Name of Mouza	Area		Rate Per Acre (Rupees)	Cost of Land (Rupees)
	K	M		
Chak Sethian	21	17	1,600,000	4,370,000
Bamb	1943	06	1,600,000	388,660,000
Mandiala	58	16	1,600,000	11,760,000
Sahoki Mallian	1499	08	1,600,000	299,880,000
	3523	07		**704,670,000**
25 % Compulsory Land Acquisition Charges				176,167,500
Grand Total				**880,837,500**
Rupees Eighty Eight Crore, Eight Lac , Thirty Seven Thousands, and Five Hundred only				

12. An Award comprises description of land, its associated price, structures / interests associated with a particular parcel of land. Assesment of building structures, tubewells, tubewell structures, crops, trees, fish farms etc is a technical matter and Land Acquisition Collector is assisted by other Government functioneries in order to determine a fair compensation. The instant Award does incoprate all above refered areas. However,

on account of presence of settlement of Abadi namely Mouza Bamb, and keeping in view scale of assessment of building structures, the exercise requires more detailed work. Accordingly, the instant award does not include assessment of land of Abadi Bamb having building structures **(Total Area 125 Kanal 08-Marlas)**. The same shall be determinded separately through a suplementary Award.

13. Now in the light of assessment approved by the compentent authority, I hereby make the "AWARD" under section 11 of Land Acquisition Act, 1894 that the area measuring 3397 Kanal and 15 Marlas as specified in the Notification No.SR/938 dated 11.03.2014 **(excluding 125 Kanal 8 Marlas to be separately awarded through a supplementary Award as the area is under Abadi of Mauza Bamb and whose assessment requires detailed calculations)** published in Punjab Gazette shall stand acquired with immediate effect. Therefore, I "AWARD" the compensation of land according to the assessment approved by competent authority i.e Board of Revenue Punjab vide letter No 592-2014/295-S.IV dated 10.04.2014. Mouza wise detail of acquired land is as under:

25/4

Locality	Square No.	Killa No.	Area	
			Kanal	Marla
Mandiala	16	1	1	18
		9	3	10
		12	8	18
		13	3	11
		18	9	13
		24	4	4
	17	4	7	14
		7	7	18
		14	7	7
		24	4	3
MANDIALA (SUB-TOTAL)			58	16
Sahoki Mallian	27	11/1	1	16
		11/2	3	7
		19	4	8
		20	8	0
		21	8	0
		22	8	0

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ABSTRACT OF CROPS:

Sr. No	Mouza	Total Value of Crops (In Rs.)
1	Mandiala Virkan	352,800
2	Saho Ki Malian	7,744,900
3	Bumb	131,100
4	Chak Sethian	11,009,375
	GRAND TOTAL	19,238,175

MAJOR ABSTRACT:

Sr. No.	Type of Compensation	Amount (in Rs.)
1	Compensation of Land	849,437,500
2	Compensation of Tubewells	7,008,900
3	Compensation of Tubewell Rooms	567,000
4	Compensation of Trees	1,663,736
5	Compensation of Fish Forms	0
6	Compensation of Crops	19,238,175
Grand Total		877,915,311
Total Amount Payable		877,915,311
Total Amount of Award is:		877,915,311

APPORTIONMENT:-

1. The compensation money would be apportioned among all the co-shares according to their shares recorded in the last Register Haqdaran-e-Zamin provided that, if any of the owners has already transferred his land after the entries of Last Register Haqdaran-e-Zamin, the compensation would be paid to the last vendee.
2. In the event of land would not free from all encumbrances, the compensation money will be paid after examining each such case separately on the touch stone of law.
3. If the persons interested do not consent to receive compensation, or if there be no person competent to Alienate the land, or if there be any dispute as to the title to receive the compensation or as to the apportionment of it, the Collector would deposit the amount of compensation in the Court to which a reference under section 18 would be submitted as required under section 31(2) of the Act.
4. Compensation in respect of mortgaged land should be apportioned between the mortgager and the mortgagee keeping in view the mortgage amount.
5. If there found some other dispute on the entitlement of the land the compensation would be payable after conducting inquiries
6. No compensation would be allowed to a person in adverse possession whose period of adverse possession was less than period of 12 years on the date when Judgment / Order of the Shariat Appellant Bench of the Supreme Court of Pakistan Under Article 203-D of the Constitution (1973) concerning adverse possession took effect.

Note: Any error or omission is subject to rectification with the approval of the Competent Authority.

Announced
25.04.2014

Rashid.

(RASHID IRSHAD HUSSAIN)
ASSISTANT COMMISSIONER/
LAND ACQUISITION COLLECTOR,
SHEIKHUPURA

Endst No; AC/LAC/663 Dated: 25/04/2014

A copy is forwarded for information to:-

1. The Commissioner, Lahore Division, Lahore.
2. The DCO / District Collector, Sheikhupura
3. The Additional District Collector, Sheikhupura
4. The Chief Executive, Punjab Industrial Estates Development and Management Company, Raiwind Road Lahore.
5. The Tehsildar / Revenue Officer Concerned

Rashid.

(RASHID IRSHAD HUSSAIN)
ASSISTANT COMMISSIONER/
LAND ACQUISITION COLLECTOR,
SHEIKHUPURA 25/4/14

OFFICE OF THE ASSISTANT COMMISSIONER, / LAND ACQUISITION COLLECTOR, SHEIKHUPURA

AWARD NO.2/2015

SUPPLEMENTARY AWARD

SUPPLEMENTARY AWARD ANNOUNCED BY MST. SIDRA SALEEM, ASSISTANT COMMISSIONER / LAND ACQUISITION COLLECTOR, IN RESPECT OF LAND ACQUIRED FOR THE ESTABLISHMENT OF QUAID-E-AZAM APPAREL PARK FORMERLY GARMENT CLUSTER / INDUSTRIAL ZONE TEHSIL AND DISTRICT SHEIKHUPURA.

1. Supplementary Award in respect of Tubewells, Trees, Structures, Land and other infrastructure situated in Mouza Bomb, Sahoki Mallian, Kokhar Ki Mallian etc Tehsil & District Sheikhupura standing on the land acquired for Quaid-e-Azam Apparel Park (QAAP) be taken as part of Award No.1 and Award No.2, in spirit of section 12-A of Land Acquistion Act, 1894 as mentioned in Award No. 1 announced on 26.02.2014 and Award No.2 announced on 26.04.2014.
2. The concise history of the case is that, the Deputy Secretary (Commerce), Government of the Punjab, Industries, Commerce and Investment Department Lahore vide Letter No. SO C (IC & I) 1-26/2013 dated 11th October, 2013, conveyed the approval of Chief Minster, Punjab for setting up of Garment Industry Zone. It was requested that the District Coordination Officer / District Collector Sheikhupura may initiate proceedings for the acquisition of land for setting up Garment Industrial Zone at Sheikhupura as follows:

i. **Earmarking of 200 Acres of land for the Local Garment Industry provided the industry signs MoU with PIEDMC to express its firm commitment towards setting up of Garment Industry at the site.**

ii. **Earmarking of 800 Acres for establishment of Chinese Garment city.**

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3. The District Collector, Sheikhupura issued notification under section 4 of the Land Acquisition Act 1894 bearing No. LAC/555 dated 24-10-2013 for the acquisition of land measuring **8845-Kanal 12-Marlas** situated in four Mauzas namely Mauza Khokhar ki Mallian (1910 Kanals), Mouza Bamb (490-Kanal 9-Marlas), Mouza Qayam Pur (1963-Kanal 14-Marlas) and Mouza Sahoki Mallian (4481-Kanal 9-Marlas) Tehsil and District Sheikhupura. The said notification was published in the Punjab Gazette on 28-10-2013.
4. Meanwhile, in a meeting chaired by Secretary Industries, Commerce & Investment Department, Government of Punjab dated 23rd Novemeber, 2013 it was decided to acquire additional land in addition to already notified 1105 acres land by the DCO Sheikupura on 28.10.2013. In this regard a letter was received from Punjab Industrial Estate Development and Management Company **(PIEDMC)** dated 25.11.2013 requesting that Gazette Notification may be published for the additional land falling in Mauza Sahooki Maliyan, Mandiala, Chak Satthian and Bamb.
5. Therefore, District Collector, Sheikhupura issued Second Notification under Section 4 of the Land Acquisition Act 1894 bearing No. DRA/1665 dated 26.11.2013 for the acquisition of land measuring **3653-Kanals 07-Marlas** situated in four mouzas namely Mouza Mandiala (68K-19 M), Sahoki Mallian (1619 K-8 M), Chak Sethian (21 K-17 M) & Bamb (1943 K-6M), Tehsil & District Sheikupura.The said Notification was published in the Punjab Gazette dated 26.11.2013.
6. The Commissioner Lahore Division Lahore on satisfication, issued Notification bearing No.SR/938 dated 11.03.2014 under section 17 (4) & 6 of the Land Acquisition Act 1894 and the said notification was published in the Punjab Gazette on 11.03.2014.
7. During scrutiny regarding preparation of notification U/S 17 (4) & 6 of the Land Acquisition Act 1894, it was found that the actual land to be acquired in second phase measured to be 3523 K-7 M as the area of Square No.17 Killa No.14 situated in Mouza Mandiala, Tehsil & District Sheikupura was mentioned as 17 K-7 M whereas the actual area of the said khasra is 7K-7M. Furthermore, it was pointed out that the area of 120 K comprising Squre No.40 Killa No. 1 to 15 of Mouza Sahoki Mallian Tehsil Sheikupura was repeated in the Notification U/S 4 of the Land Acquisition Act. These above mentioned errors were rectified in the notification U/S 17 (4) & 6 of the Land

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Acquisition Act 1894 with the approval of Commissioner,Lahore Division the competent authority for issuances of notification U/S 17(4) & 6 of the Land Acquisition Act 1894 vide letter No. DRA(A)/452 dated 8-3-14.Thus the actual area of the Second notification U/S 4 of the Land Acquisition Act 1894 was 3523 K-7M and same was mentioned in notification U/S 17 (4) & 6 of the Land Acquisition Act 1894.

8. Public Notices under Section 9 (1) of Land Acquisition Act 1894 were given to the land owners / interested persons and the same were pasted at conspicuous places in Mauzas concerned requiring the interested persons to prefer their claims of compensation to the Collector. Advertisements regarding notice U/S 9 of the Land Acquisition Act 1894 for acquistion of land measuring 3523 K-7 M for Garment Industrial Zone were published in major Daily newspapers (The Daily Jang , dated 21.03.2014 & Daily Khabrain dated 21.03.2014) vide letter NO.HC/AC/LA/623 dated 17.03.2014 addressed to DGPR, Lahore. All the interested persons were informed to state nature of their respective interests in the land and amount and particulars of their claim to compensation for such interests and their objections if any regarding measurements made under S-8 of the Land Acquisition Act 1894 to AC Sheikupura/ LAC Sheikupura till 10.04.2014. It was also notified that in case of absence of interested persons at time and date specified, ex-parte proceeding would be initiated and no complaint would be entertained afterwards and the award shall be announced since land is required urgently.

14/9/15

9. In response to the Notices, No objection was received in the office of Assistant Commissioner /Land Acquisition Collector, Sheikupura till 10.4.2014.
10. The then Assistant Commissioner / Land Acquistion Collector announced *First Award* for **Rs. 2,402,293,303** vide order dated 26.02.2014. Abstract of which is as under:

Sr.No	Type of Compensation	Amount (in Rs.)
1	Compensation of Land:	**2,211,400,000**
2	Compensation of Structure:	**121,310,131**
3	Compensation of Tubewells:	**8,311,800**
4	Compensation of Tubewell Rooms:	**2,141,287**
5	Compensation of Trees:	**5,136,684**
6	Compensation of Fish Forms:	**3,755,000**
7	Compensation of Crops:	**50,238,401**
Grand Total		**2,402,293,303**

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11. Lateron, on 26.04.2014 the then Land Acquisition Collector / AC, Sheikhupura announced the *Second Award* for **Rs. 1,113,000,031** vide order dated 26.04.2014. Abstract of which is as under:

Sr No	Type of Compensation	Amount (in Rs)
1	Compensation of Land	849,437,500
2	Compensation of Tubewells	7,008,900
3	Compensation of Tubewell Rooms	567,000
4	Compensation of Trees	1,663,736
5	Compensation of Fish Forms	0
6	Compensation of Crops	19,238,175
Grand Total		877,915,311

12. During the course of compensation, a number of land owners submitted additional claims in respect of land acquired for land for Quaid-e-Azam Apparel Park. All the claims after compiling were forwarded to the *Tehsil Security Committee* Tehsil Sheikhupura for verification of claims. The detail of claims with recommendation of security committee dated 17.02.2015 is as under:

14/9/15

Sr. No	Name & Address of Claimer	Claim	Recommendation of Technical Department	Recommendation of Securtiny Committee
1.	Khizer Hayat S/o Ahmad Ali R/o Sahoki Mallian	Payment of Tubewell installed at Khewat No.19(min), khatooni No.45 has not been made.	As per Sr.No.13 of 1st Award at page No.38, brother of claimant namely Mushtaq Ahmad S/o Asghar Ali has received payment of tubewell.	Application of claimant **be filed.**
2.	Mujtaba S/o Noor Muhammad R/o Ghang Road Dera Ahmad Din.	Payment of Tubewell installed at Khewat No.248 has not been made.	Assistant Engineer (Tube Well) re-assessed the value of tubewell installed at Killa No.2 as Rs.98000/- vide No.288/DEV.	Supplementary Awad
3.	Khalid Mehmood S/o Atta Ullah R/o Sahoki Mallian	The amount of compensation of Khewat No.22 Sahoki Mallian in the name of Mumtaz Bibi etc bearing Square No.1, Killa No.25 land measuring 3K-10M, Square No.2, Killa No.21 land measureing 1-Marla, Square No.3, killa No.21, land measuring 8-Marla, Square No.4,killa No.1/1 land measuring 8-Marla, Killa No.1/2 land measuring 4K-14M, killa No.9 land measuring 7K-4M, killa No.10/2 land measuring 6K-3M, Total land measuring 22K-08M has not been included in award. Posession has been taken by acquiring agency.		Notification U/S 4 be issued and award be announced.

directions of District Collector. The District Collector convened a meeting on 26.08.2015 of all concerned departments. The following participated in the meeting.

1.	Kiran Khushid, District Coordination Officer, Sheikhupura.
2.	Assistant Commissioner / LAC, Sheikhupura.
3.	District Officer (Buildings), Sheikhupura.
4.	Assad Imran, Project Director, QAAP/PIEDMC.
5.	Ch.Waseem Ismail, Advocate on behalf of Fiaz Ahmed etc, Petitoners.

20. After detail deliberation and discussion in the meeting, the chairperson observed that the acquiring department is ready to accept payment of compesnaiton that was carried out prior to **50%** deduction. The petitioners are ready to receive the compensation as per formulation accepted by the acquiring department. At this stage, when the acquiring department is ready to pay the amount at a specific formulation and the building owners are ready to accept the submission, there remains no issue to resolve. The chairperson directed the Assistnat Commissioner / LAC, Sheikhupura to pay the compensation to the ex-land owners on urgent basis and same directions were issued through mintues of meeting circulated vide No.HVC/6591 dated 28.08.2015. Hence, the undersigned deems it fit to award the previous rates prior to **50%** deduction as already assessed / approved by the Building Department Sheikhupura. The detail is as under:-

Sr. No	Name of Claimants	Address	Square / Killa No.	Nature of Structure	Reference Number	Value of Structure
1.	Alla Ditta S/o Ghulam qadir	Sahoki Mallian	**29**/,10	Dera	Letter No.4000/C dated 04.07.15	**2,750,500**
2.	Sabir Husain S/o M. Rafiq	Khokhar ki Mallian	**43**/ 6,7,819,12, 13,14	House	Letter No.3555/D dated 24.07.15	**695,850**
3.	Sajid Ali, Amir Husain, Rashid Ali, Sons of M. Ashiq	Sakna Saho ki Maiyan	**27**/,11/2	Al-Madina Dairy Farm	Letter No.2407/C dated 31.05.14	**4,971,450**
4.	Tajamal Husain Bhatti S/o M. Alam	Sahoki Maiyan	**28**/,23	Godown	Letter No.4505 dated 16.09.14	**374,400**
5.	Malak Saiful Malooq S/o M. Ayub	Johar Town Lahore.	**40,39**/,11,15	Deras	Letter No.3513/C dated 23.07.14	**1,068,325**

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Sr. No.	Name of Claimants	Address	Square / Killa No.	Nature of Structure	Referene Number	Value of Structure
6.	M. Sadeeq S/o Ghulam Muhammad	Bamb	25/,5	Haveli	Letter No.4505 dated 16.09.14	637,100
7.	Fayaz Ahmad S/o Sana Ullah	Bomb	19/,15	School	Letter No.786 Dated 10.09.15	3,212,800
8.	M. Ilyas S/o M. Sadeeq	Khokhar ki Malian	-	-	Letter No.4000 Dated 04.07.15	320,000
	TOTAL				*	14,030,425

ABSTRACT:

Sr.No	Type of Compensation	Amount (in Rs.)
1	Compensation of Tubewells:	326,000
2	Compensation of Trees:	1040,000
3	Compensation of Structure:	14,030,425
	Grand Total	15,396,425
	Total Amount Payable Under Supplementary Award	15,396,425
	Total Amount of Supplementary Award:	15,396,425

14/9/15

CONCLUSION

I have gone through the acquisition files and previous first and second award and after detailed discussion and deliberation with the Tehsil Secrutiny Committee and Acquring Agency, the matter is considered for supplementary award. Therefore, in light of reports of Revenue staff, Technical secruntiny committee, acquiring agency and minutes of meeting dated 25.08.2015, I Sidra Saleem Assistant Commissioner, Sheikhupura/Land Acquisition Collector, Sheikhupura announced the Supplementary Award amounting **Rs.15,396,425**. Therefore, acquiring agency vide letter No.PIE/QAAP/101 dated 05.08.2015 reqeusted that the acquisition proceedings be completed since sufficient funds are available to pay the compensation.

POSSESSION

The possession of above mentioned claims has already been taken by the acquiring agency i.e Punjab Industerial Estate Development Management Compnay **(PIEDMC)** subsequent to award and same was accepted and agreed by acquiring

agency during the meeting held under convenership of District Coordination Officer, Sheikhupura on 25.08.2015.

APPORTIONMENT:-

1. The compensation will be apportioned to land owners according to the entries of latest Register Haqdaran Zameen and Mutation sanctioned thereafter. The payment of compensation of land under litigation will be paid after final disposal of cases by the courts of competent jurisdiction.
2. In the event of land would not free from all encumbrances, the compensation money will be paid after examining each such case separately on the touch stone of law.
3. If the persons interested do not consent to receive compensation, or if there be no person competent to Alienate the land, or if there be any dispute as to the title to receive the compensation or as to the apportionment of it, the Collector would deposit the amount of compensation in the Court to which a reference under section 18 would be submitted as required under section 31(2) of the Act.
4. Compensation in respect of mortgaged land should be apportioned between the mortgager and the mortgagee keeping in view the mortgage amount.
5. If there found some other dispute on the entitlement of the land the compensation would be payable after conducting inquiries
6. No compensation would be allowed to a person in adverse possession whose period of adverse possession was less than period of 12 years on the date when Judgment / Order of the Shariat Appeliant Bench of the Supreme Court of Pakistan Under Article 203-D of the Constitution (1973) concerning adverse possession took effect.

Note: Any inadverntly / clerical or numerical mitake in the award arising from any accidental slip or omission or on the pointation of any of the affectees shall be rectified by the undersigned as provided under section 12(A) of the Land Acquistion Act, 1894.

Announced
14.09.2015

14/9/15

(SIDRA SALEEM)
ASSISTANT COMMISSIONER/
LAND ACQUISITION COLLECTOR,
SHEIKHUPURA

OFFICE OF THE ASSISTANT COMMISSIONER, / LAND ACQUISITION COLLECTOR, SHEIKHUPURA

AWARD ANNOUNCED BY MR. SHABBEER HUSSAIN BUTT, ASSISTANT COMMISSIONER / LAND ACQUISITION COLLECTOR, IN RESPECT OF LAND ACQUIRED FOR CONSTRUCTION / RE-ALIGNMENT OF DRAIN FOR QUAID-E-AZAM APPAREL PARK TEHSIL AND DISTRICT SHEIKHUPURA.

BREIF

1. The concise history of the case is that the Deputy Secretary (Commerce), Government of the Punjab, Industries, Commerce and Investment Department Lahore vide Letter No. SO C (IC & I) 1-26/2013 dated 11th October, 2013, conveyed the approval of Chief Minster, Punjab for setting up of Garment Industry Zone. In this context, the land acquired for Quaid-e Azam Apparel Park (QAAP) under Land Acquisition Act, 1894 through Award No. 1 announced on 26.02.2014 and Award No.2 announced on 26.04.2014 and subsequently through other awards as part of these main awards.
2. The Punjab Industrial Estates Development Management Company has requested for acquisition of land measuring 77-Kanal, 11-Marla in mouza Qayampur Tehsil & District Sheikhupura for re-alignment of Drain. In this regard, the District Collector Sheikhupura issued notification under section 4 of Land Acquisition Act 1894 bearing No.DRA(A)/1013 dated 04.07.2016 for acquisition of land measuring 77-Kanal, 11-Marla. The said notification was published in the Punjab Gazettee on 28.07.2016. After publication of the notification u/s 4 of Land Acquisition Act 1894, the District Price Assessment Committee (DPAC), Sheikhupura assessed price of the land measuring 77-K, 11-M amounting to Rs.2,90,81,250/- including 25% compulsory acquisition charges. The acquiring agency deposited the said amount accordingly.

28/4/17

3. The Commissioner Lahore Division, Lahore vide letter No.DRA(A)/1582 dated 16.11.2016 has requested to invoke the urgency provision of section 7(4) & 6 of Land Acquisition Act,1894. Moreover, the draft agreement u/s 41&42 of

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the Land Acquisition Act, 1894 regarding acquisition of land measuring 77-K,11-M was submitted in response of letter No.SR/7656 dated 28.11.2016.

4. The Commissioner Lahore Division, Lahore vide letter No.SR/7492 dated 21.11.2016 granted permission to invoke special power U/s 17(4)&6 of the Land Acquisition Act, 1894. Agreement U/s 41 & 42 of the Land Acquisition Act, 1894 was published in the Punjab Gazettee on 05.12.2016 and the Notification U/S 17(4)&6 of the Land Acquisition Act, 1894 was published in the Punjab Gazettee on 08.12.2016 for acquisition of above said land.
5. The case for approval of assessed price of the land in question was submitted to Commissioner Lahore Division, Lahore vide letter No.DRA(A)/1693 dated 10.12.2016. Subsequently, the Board of Revenue Punjab, Lahore vide letter No.1628-2016/1013-S-IV dated 28.12.2016 approved the price as under:-

Name of Mouza	Area		DPAC Price Per Kanal	Cost of Land
	Kanal	Marla		
Qayampur	77	11	Rs.3,00,000/-	Rs.2,32,65,000/-
25% compulsory Land Acquisition Charges.				Rs.58,16,250/-
			Total	Rs.2,90,81,250/-
Rupees: Two Crore, Ninety Lac, Eighty-One Thousand, Two Hundred and fifty Only				

6. Later on, public notices under section 9 of Land Acquisition Act 1894 were given to the land owners / interested persons and the same were displayed / pasted at conspicuous places in concerned Mouza requiring the interested persons to prefer their claims of compensation to the Collector. All the interested persons were informed to state nature of their respective interests in the land and amount and particulars of their claim to compensation for such interests and their objection if any regarding measurements made U/S 8 of the Land Acquisition Act 1894 to AC Sheikhupura / LAC Sheikhupura.
7. In response to the notices, No Objection was received in the office of Assistant Commissioner / Land Acquisition Collector, Sheikhupura.
8. Now in the light of assessment approved by the competent authority, I Shabbir Hussain Butt, Assistant Commissioner / Land Acquisition Collector, Sheikhupura is hereby make the "AWARD" for land measuring 77-Kanal, 11-Marla as specified in the Notification No.SR/7922 dated 07.12.2016 published in Punjab Gazette on 08.12.2016 shall stand acquired with immediate effect. Therefore, I "AWARD" the compensation of land according to the assessment approved by competent authority i.e Board of Revenue Punjab,

Assistant Commissioner Sheikhupura

28/4/17

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Lahore vide letter No.1628-2016/1013-S-IV dated 28.12.2016. Mouza vwise detail of acquired land is as under:-

Mouza	Square No.	Killa No.	Area	
			Kanal	Marla
Qayampur	42	6	8	18
		15	8	18
		16	8	18
		25	8	18
	51	5	8	18
		6	8	18
		15	8	18
		16	8	18
		25/1	6	1
		25/2	0	6
		Total	77	11

9. As per report of relevant agencies and revenue field staff there is no structure, trees, tubewell or any other infrastructure for which assessment is required from various departments. Hence there is no assessment of structure, trees and tubewell. However, the Deputy Director, Agriculture (Extension), Sheikhupura vide letter No.397/3-2M/Dev dated 06.02.2017 assessed price of standing crops in the above said land. Since it is a technical matter therefore, I agree with the assessment made by Deputy Director Agriculture (Extension), Sheikhupura, which is as under:-

Sr. No	Mouza	Sqr. No.	Killa No	Area		Name of Crops	Value
1.	Qayampur.	42	6	8	18	Wheat	57850
2.			15	8	18	Wheat	57850
3.			16	8	18	Wheat	57850
4.			25	8	18	Wheat	57850
5.		51	5	8	18	Wheat	57850
6.			6	8	18	Wheat	57850
7.			15	8	18	Wheat	57850
8.			16	8	18	Wheat	57850
9.			251	6	1	Wheat	39325
10.			25/2	0	6	Wheat	1950
11.			Total	77	11		504075

Assistant Commissioner
Sheikhupura.
28/4/17

ABSTRACT:

Sr. No	Type of Compensation	Amount (in Rs.)
1.	Compensation of Land	2,90,81,250
2.	Compensation of Structure.	0
3.	Compensation of Tubewells:	0
4.	Compensation of Trees	0
5.	Compensation of Fish Forms	0
6.	Compensation of Crops	504075
	Grand Total	2,95,85,325
	Total Amount Payable Under Award	2,95,85,325
	Total Amount of Award:	2,95,85,325

POSSESSION

The possession of above mentioned claims has already been taken by the acquiring agency i.e Punjab Industerial Estate Development Management Compnay (PIEDMC) subsequent to award and same was accepted and agreed by acquiring agency during the meeting held under convenership of District Coordination Officer, Sheikhupura on 25.08.2015.

APPORTIONMENT:-

1. The compensation will be apportioned to land owners according to the entries of latest Register Haqdaran Zameen and Mutation sanctioned thereafter. The payment of compensation of land under litigation will be paid after final disposal of cases by the courts of competent jurisdiction.
2. In the event of land would not free from all encumbrances, the compensation money will be paid after examining each such case separately on the touch stone of law.
3. If the persons interested do not consent to receive compensation, or if there be no person competent to Alienate the land, or if there be any dispute as to the title to receive the compensation or as to the apportionment of it, the Collector would deposit the amount of compensation in the Court to which a reference under section 18 would be submitted as required under section 31(2) of the Act.
4. Compensation in respect of mortgaged land should be apportioned between the mortgager and the mortgagee keeping in view the mortgage amount.
5. If there found some other dispute on the entitlement of the land the compensation would be payable after conducting inquiries
6. No compensation would be allowed to a person in adverse possession whose period of adverse possession was less than period of 12 years on

28/4/17

the date when Judgment / Order of the Shariat Appellant Bench of the Supreme Court of Pakistan Under Article 203-D of the Constitution (1973) concerning adverse possession took effect.

Note: Any inadvertently / clerical or numerical mistake in the award arising from any accidental slip or omission or on the pontation of any of the affectees shall be rectified by the undersigned as provided under section 12(A) of the Land Acquisition Act, 1894.

Announced
28-4-17

(SHABBEER HUSSAIN BUTT)
ASSISTANT COMMISSIONER/
LAND ACQUISITION COLLECTOR,
SHEIKHUPURA
Assistant Commissioner/LAC
Sheikhupura.

It is certified that instant Award consist of 05 pages and each page has been dictated, corrected and signed by me.

(SHABBEER HUSSAIN BUTT)
ASSISTANT COMMISSIONER/
LAND ACQUISITION COLLECTOR,
SHEIKHUPURA
Asstt. Commissioner/LAC
Sheikhupura.

Endst No:- 127 Dated: 28/04/2017

A copy is forwarded for information to:-

1. The Secretary, Govt. of the Punjab (IC&I) Department, Lahore.
2. The Commissioner, Lahore Division, Lahore.
3. The Economic Advisor, (IC&I) Department, Govt. of Punjab, Lahore.
4. The Deputy Commissioner / District Collector, Sheikhupura
5. The Additional Deputy Commissioner (Revenue), Sheikhupura.
6. The Chief Executive, Punjab Industrial Estates Development and Management Company, Raiwind Road Lahore.
7. The Project Director, PIEDMC, Lahore.
8. The Tehsildar / Revenue Officer Concerned.
9. ADLR for 01/9

(SHABBEER HUSSAIN BUTT)
ASSISTANT COMMISSIONER/
LAND ACQUISITION COLLECTOR,
SHEIKHUPURA
Assistant Commissioner/LAC
Sheikhupura.

	10	3/1	07	11	Wheat	22650
		4/2	04	07	Wheat	13050
	08	16/2/2	02	10	Wheat	7500
		17/2	06	07	Wheat	19050
		18/2	06	09	Wheat	19350
		19/2	06	05	Wheat	18750
		20/2	06	12	Wheat	19800
		21/2	00	01	Wheat	150
		22/2	00	09	Wheat	1350
		23/2	00	04	Wheat	600
		1/2	01	02	Wheat	3300
	09	10/2	05	12	Wheat	16800
		11/1	00	01	Wheat	150
		8/2	00	09	Shaftal	1350
		13/2	06	07	Shaftal	19050
		14/2	04	00	Shaftal	12000
		15/2	01	02	Wheat	3300
		16/1	05	13	Wheat	16950
		17/1	02	18	Shaftal	8700
		18/1	00	03	Shaftal	450
		9/2	04	06	Wheat	10200
		12/1	02	14	Wheat	8100
	10	5/2	05	08	Wheat	16200
		6/2	06	10	Wheat	19500
	Total					330900
	41	16	08	00	Wheat	24000
		17/1	07	11	Wheat	22650
		18/1	06	14	Wheat	20100
		19/1	05	06	Wheat	15900
		20/1	00	08	Wheat	1200
		23/1	01	06	Wheat	3900
		24/1	00	09	Wheat	1350
	42	20	05	14	Wheat	17100
	Total					106200
	Grand Total					437100

Leel

L A C

ABSTRACT:

Compensation of Land+15%	Rs. 64137500/-
Compensation of Structures	Nill
Compensation of Tube Well	Rs. 56373/-
Compensation of Crops	Rs. 437100/-
Compensation of Trees	Rs. 116867.4/-

Total Award Amount is Rs. 6, 47, 47,840 /-

APPORTIONMENT:

1. The compensation money would be apportioned among the co-sharers according to the entries of ownership of last Register Haqdaran Zamin. If the owners unanimously agree to its payment on Hissadari Qabiza basis, it would be done accordingly.
2. If it has been ascertained from the owners of the Deh and Patwari that Tapeeni Khangi of the Deh has been incorporated it would be my discretion to pay compensation to the occupants (Qabiz).
3. If any of the owner transacts his land after the entries of last Register Haqdaran Zamine the compensation would be paid to the last vendee on Conditions that the exists no terms and conditions between the vendors and vendees at the time of sanction of mutation.
4. Compensation for the mortgaged land would be paid to the mortgage unless the mortgage agrees to its payment to the mortgages.
5. If the land would not free from all encumbrances I would pay the compensation money on my own discretion.
6. If there found some other dispute on the entitlement of the land the Compensation would be payable conducting inquires.
7. The compensation for the land under adverse possession would be paid to the actual owner after conducting inquiry.

Note:

Any error/omission will be rectified as per law.

Announced
12-05-2017

ASSISTANT COMMISSIONER /
LAND ACQUISITION COLLECTOR
MURIDKE

It is certified that this Award consist of Eight Pages which has prepared read, corrected and signed by me.

No.HC/AC/MDK/ 300 Dated 20-06-2017.

A copy is forwarded to:-

1. The Commissioner, Lahore Division, Lahore.
2. The Deputy Commissioner, Sheikhupura.
3. The Chief Executive Officer, PIEDMC, Lahore
4. The Tehsildar, Muridke with the direction to prepare "Bachh)" according to record in the light of award for compensation to the land owners.

ASSISTANT COMMISSIONER /
LAND ACQUISITION COLLECTOR
MURIDKE

OFFICE OF THE ASSISTANT COMMISSIONER, / LAND ACQUISITION COLLECTOR, SHEIKHUPURA

AWARD ANNOUNCED BY MR. SHABBEER HUSSAIN BUTT, ASSISTANT COMMISSIONER / LAND ACQUISITION COLLECTOR, IN RESPECT OF LAND ACQUIRED FOR CONSTRUCTION OF MONOSARANWALA INTERCHANGE FOR QUAID-E-AZAM APPAREL PARK TEHSIL AND DISTRICT SHEIKHUPURA.

BREIF

1. The concise history of the case is that the Deputy Secretary (Commerce), Government of the Punjab, Industries, Commerce and Investment Department Lahore vide Letter No. SO C (IC & I) 1-26/2013 dated 11th October, 2013, conveyed the approval of Chief Minister, Punjab for setting up of Garment Industry Zone. In this context, the land acquired for Quaid-e-Azam Apparel Park (QAAP) under Land Acquisition Act, 1894 through Award No. 1 announced on 26.02.2014 and Award No.2 announced on 28.04.2014 and subsequently through other awards as part of these main awards.
2. The Punjab Industrial Estates Development Management Company has requested for acquisition of land measuring 803-Kanal, 09-Marla in Mouza Majoki Mallian, Ladhed Mallian, Samb Tehsil Sheikhupura and Mouza Dooki Mallian, Leel in Tehsil Muridke out of total land measuring 2979 Kanal, 14-Marla. In this regard, the District Collector Sheikhupura issued notification under section 4 of Land Acquisition Act 1894 bearing No.DRA(A)/385 dated 22.03.2016 for total land measuring 2979-Kanal, 14-Marla. The said notification was published in the Punjab Gazette on 22.03.2016.
3. The draft agreement u/s 41&42 of the Land Acquisition Act, 1894 regarding acquisition of land measuring 803-K,19-M in respect of District Sheikhupura was submitted, which was published in the Punjab Gazette on 26.09.2016 vide No.SR/6001 dated 23.09.2016. Out of this, land measuring 657-Kanal, 07 Marla located in revenue estate of Tehsil Sheikhupura

Assistant Commissioner/L.A.C.
Sheikhupura.

4. The Notification U/S 17(4)&6 of the Land Acquisition Act, 1894 was issued vide letter No.Sr.6736 dated 21.10.2016, which was published in the Punjab Gazette on 24.10.2016.

5. The case for approval of price assessment was discussed in the meeting held on 02.04.2016 and case for approve of price of the land in question was submitted to Commissioner Lahore Division, Lahore vide letter No ADRA(A)/1014 dated 04.07.2017. Subsequently, the Board of Revenue Punjab, Lahore vide letter No.1543-2016/1012-S.IV dated 28.12.2016 approved the price as under:-

Name of Mouza	Area		DPAC Price Per Kanal	Cost of Land
	Kanal	Marla		
Mojaki Mallian	550	19	Rs.28,00,000/-	Rs.192832,500
Ladheyke Mallian.	38	12	Rs.28,00,000/-	Rs.135,10,000
Bomb	67	16	Rs.28,00,000/-	Rs.23,730,000
Total	657	07	-	Rs.230,072,500/-
25% compulsory Land Acquisition Charges.				Rs.5,75,18,125/-
			Total	Rs.287590625/-
Rupees: Twenty Eight Crore, Seventy Five Lac, Ninety Thousand, Six Hundred and Twenty Five Only.				

6. Later on, public notices under section 9 of Land Acquisition Act 1894 were given to the land owners / interested persons and the same were displayed / posted at conspicuous places in concerned Mouzas requiring the interested persons to prefer their claims of compensation to the Collector. All the interested persons were informed to state nature of their respective interests in the land and amount and particulars of their claim to compensation for such interests and their objection if any regarding measurements made U/S 8 of the Land Acquisition Act 1894 to AC Sheikhupura / AC Sheikhupura.

7. In response to the notices, No Objection was received in the office of Assistant Commissioner / Land Acquisition Collector, Sheikhupura.

8. Now in the light of assessment approved by the competent authority, I Shabbir Hussain Butt, Assistant Commissioner / Land Acquisition Collector, Sheikhupura is hereby make the "AWARD" for land measuring 657-Kanal, 07-Marla as specified in the Notification No.SR/6736 dated 21.10.2016 published Punjab Gazette on 24.10.2016 shall stand acquired with immediate effect. Therefore I "AWARD" the compensation at and according to the assessment approved by competent authority i.e Board of Revenue Punjab.

Assistant Commissioner/LAC
Sheikhupura.

growing need of Industry, Privately fully owned companies were set up under the umbrella of concerned administrative Departmnet. Punjab Industrial Development and Managemant Company one the such Company Fully owned and controlled by the Govement Promotion of Industrial activities and employment generation remains one of the Prime Funtions of the state. At Provincial level a separate Acminstrative department namely industries, Commerce and Investement department has been established we achieved this objective the nainidate of the Industries Department is development, Regulation and implementation of policies for the Industrial Sector The growth of our economy depends upon growth in our trade volume in general and international trade in particulars. Sustainable exports are used to finance vital imports such as petroleum products, defence products, industrial machinery technology etc. Textile and Garments secior remain the most significant contribution to the exports of Pakistan. Realizing the need for boosting exports of the garmants Sector, the industry department Government of Punjab has envisaged the establishment of garment city, where the leading exports and manufacturer would be able to establish their production Units/Lines for export purpose. The government has constituted different working groups to plan and implement various components of the garment city. The Working group mandated to identify/finalyezed suitable land for garment city District Sheikhupura for the selection of site. Marking Group identified the sites for establishment for Labour Colony to easy access and availibilty of canal/fresh water high transmission lines etc.

MAJOR ABSTRACTS

Sr.NO	Type of Compensation	Amount
1	Compensation of Land	4,10,81,2500/-
2	Compensation of Tube Well	8,97,788/-
3	Compensation of Bulidings	30,77,000/-
4	Compensation of Crops	35,36,750/-
5	Compensation of trees	3,54,225/-
	Grand Total	41,86,68,263/-
	Total Amout Payable	41,86,68,263/-
	Total Amout of Award is.	41,86,68,263/-

(6-6)

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OFFICE OF THE
ASSISTANT COMMISSIONER / LAND ACQUISITION COLLECTOR, TEHSIL MURIDKE

Award 2016

Award under section 11 of the Land Acquisition Act, 1894 in respect of land measuring 938-Kanals 02-Marlas, situated in Mauza Daokey MallianTehsil Muridke District Sheikhupura for company purpose namely *Establishment of Labour colony for QAAP By* Punjab Industrial Estates, Development and Management Company.

PRELIMINARY.

The Punjab Industrial Estates, Development and Management Company, having their head office Commercial Area (North) Sundar Industrial Estate Raiwind Road, Lahore requested the District Collector, Sheikhupura vide his letter No. PIE/QAAP/78 dated 20.06.2015 for acquisition of land measuring 938-Kanals 02-Marlas, situated in Mauza Daoke Mallian Tehsil Muridke District Sheikhupura for "***Establishment of Labour Colony for QAAP***".Private negotiation were made with the land owners by the undersigned and Tehsildar, Muridke at the site but the demand of the land owners regarding price of the land was on higher side as compared with the valuation table & prevailing market rate. Therefore, efforts acquire the land through private negotiation became unsuccessful. Accordingly, proceedings to acquire the land in question through compulsory acquisition were started and a **preliminary Notification U/S 4** of the Land Acquisition Act, 1894 was issued by the District Collector, Sheikhupura vide No. **DRA(A)/576** dated 17.03.2015, which was published in the Punjab Gazette Extra Ordinary Issue on 18.03.2015. The affected land owners were also informed by issuance of Notices u/s 4(i) of the Act 1894 as well as by displaying it at the conspicuous places in the locality / vicinity of the proposed land. A wide publicity was also given at the site about the proposed acquisition of land by beat of drum through revenue field staff.

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NOTIFICATION U/S 5 OF THE LAND ACQUISITION ACT, 1894.

The Punjab Industrial Estates, Development and Management Company, having their head office Commercial Area (North) Sundar Industrial Estate Raiwind Road, Lahore submitted draft Notification u/s 05 of the Land Acquisition Act, 1894 for its approval and publication in the Punjab Gazette Extra Ordinary Issue. The acquisition proceedings were initiated on normal track as the land is required for company purpose. Subsequently Notification U/S 5 of the Land Acquisition Act, 1894 was also issued by the Commissioner Lahore, Division Lahore, vide No.SR/6753 dated 24-11-2015 duly published in the Punjab Gazette on 27-11-2015.

PROCEEDINGS U/S 5-A OF THE LAND ACQUISITION ACT, 1894

In pursuance of the Notification U/S 5 of the Land Acquisition Act, 1894 notices were issued to the affected landowners for the date of 26.12.2015 to file their objections before the undersigned with regard to acquisition of land for "***Establishment of Labour Colony for QAAP***". A notice was also issued to the acquiring agency i.e. M/s Punjab Industrial Estates, Development and Management Company to participate in the acquisition proceedings. On 26.12.2015 landowners as well as representative of the acquiring agency appeared and an inquiry report U/S 5-A of the Land Acquisition Act, 1894 was sent to the Commissioner, Lahore Division, Lahore. The Commissioner, Lahore Division, Lahore vide letter bearing No. SR/7210 dated 18.12.2015 intimated to undersigned that in consideration of the report made under Section 5-A Sub-Section (ii) of the Land Acquisition Act, 1894, the land is needed by M/S Punjab Industrial Estates, Development and Management Company for "***Establishment of Labour Colony for QAAP***". It is further directed to proceed further strictly in accordance with law

(Summary)

Sr. No.	Category	Name of Village	Area	
			K	M
01	Labour Colony	Daoke Millian,	938	02
		Total	938	02

ASSESSMENT OF THE PRICE OF ACQUIRED LAND.

In the light of decision of the District Price Assessment Committee Sheikhupura vide meeting held on 25.04.2015, the estimated cost of acquired land worked out by the Collector, District Sheikhupura, as per detail given below -

Project	Category of land	Area		Complete Description of Land as per Notification u/s 6	Price Approved by DPAC Per Kanal	Total Price of the Land
		K	M			
Labour Colony, Daoke Mallian, Tehsil Muridke	--	938	02	Whole Land	3,50,000/-	Rs. 32,86,50,000/-
25% Compulsory Acquisition Charges						Rs. 82,16,2500/-
Grand Total						Rs. 410,81,2500/-

COMPULSORY ACQUISITION CHARGES

The land owners are also entitled to get 25% compulsory acquisition charges in addition to the cost of land, as required under section 23(2) of the Land Acquisition Act, 1894.

ASSESSMENT OF COST OF STRUCTURE AROUND TUBEWELL

The District Officer (Buildings), Ferozewala/Muridke assessed the cost of structure around Tube Wells, which is NIL.

growing need of Industrial Community Italy state owned companies were set up under the umbrella of concerned administrative Departmnet. Punjab Industrial Development and Managemant Company one the such Company Fully owned and controlled by the Governemt Promotion of Industrial activities and employment generation remains one of the Prime Funtions of the state. At Provincial level a separate Adminstrative department namely industries, Commerce and Investement deparument has been establishes we achieved this objective the naimdate of the Industries Department is development, Regulation and implementation of policies for the Industrial Sector The growth of our economy depends upon growth in our trade volume in general and international trade in particulars. Sustainable exports are used to finance vital imports such as petroleum products, defence products, industrial machinery technology etc. Textile and Garments sector remain the most significant contribution to the exports of Pakistan. Realizing the need for boosting exports of the garmants Sector, the industry department Government of Punjab has envisaged the establishment of garment city, where the leading exports and manufacturer would be able to establish their production Units/Lines for export purpose. The government has constituted different working groups to plan and implement various components of the garment city. The working group mandated to identify/finalyezed suitalie land for garment city District Sheikhupura for the selection of site. Marking Group identified the sites for establishment for Labour Colony to easy access and availibilty of canal/fresh water high transmission lines etc.

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	Grand Total	41,86,68,263/-
	Total Amout Payable	41,86,68,263/-
	Total Amout of Award is.	41,86,68,263/-

SUI NORTHERN GAS PIPELINES LIMITED
GAS HOUSE 21 KASHMIR ROAD, P.O. BOX 56, LAHORE (PAKISTAN)

Ref. No. P&D/02(16282)

Date: 04.02.2022

General Manager (Technical),
Punjab Industrial Estate,
Development and Management Company,
Commercial Area (North), Sunder Industrial Estate,
Sunder-Raiwind Road Lahore.

Subject: **ESTABLISHMENT OF QUAID-E-AZAM BUSINESS PARK (QABP)**

Dear Sir,

Please refer to M/s PIEDMC's letter ref. Nos. PIEDMC/HO/SNGPL/0131 dated 14.01.2022 and PIEDMC/HO/SNGPL/0189 dated 20.01.2022 regarding the subject matter.

In this regard, we are willing to carry out Operation & Maintenance activities of internal distribution gas network of QABP being executed by SNGPL on EPC basis as contractor, for which, draft Operation & Maintenance Agreement will be shared shortly. However, feasibility study/system design report of internal distribution gas network of QABP is being enclosed for your perusal and review please.

Furthermore, please note that SNGPL is also willing to design, fabricate/construct and install industrial CMS's for your consumers located in QABP but it will be dealt separately on EPC basis, subject to issuance of license of distribution & sale to QABP as per regulations of OGRA.

Yours faithfully,
Sui Northern Gas Pipelines Limited

(Farrukh Majeed)
General Manager (P&D)
For Managing Director

Encl: As Above.

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ENVIRONMENT PROTECTION DEPARTMENT

Government of the Punjab

National Hockey Stadium, Ferozepur Road, Lahore

No. DD(EIA)/EPA/F-50(EIA)/3110/2014/ 176
Dated: 17 / 11 / 2014

To

The Chief Executive,
Punjab Industrial Estate Development &
Management Company (PIEDMC),
Commercial Area (North),
Sundar Industrial Estate, Raiwind Road,
Lahore.

Subject: **DECISION OF EPA PUNJAB FOR THE ENVIRONMENTAL APPROVAL OF CONSTRUCTION PHASE OF QUAID-E-AZAM APPAREL PARK (QAAP) AT 38-KM OFF LAHORE – ISLAMABAD MOTORWAY (M-2), DISTRICT SHEIKHUPURA**
(Under Section 12 of PEPA-1997 read with IEE & EIA Regulations, 2000)

1. Description of Project: Construction of Quaid-e-Azam Apparel Park over an area of 1,565 Acres for the establishment of Garment Industries including woven garment, knit garment, embroided garment, leather garment, tailoring / ready made garments, accessories and service units having 11 plots (20 – 25 acres) for A-Category, 01 plot (06 acres), B-Category, 199 plots (02 acres), C-Category, 202 plots (01 acre), D-Category, 155 plots (0.5 acre), E-Category, Export Processing Zone, Residential area / Hostels etc. with the main objective to develop an Integrated Industrial Apparel Park to create a plate form for Apparel Industries and to best utilize the resources to boost the country's economy.

2. Location of Project: The site is located at 38-Km of Lahore – Islamabad Motorway (M-2), Tehsil and District Sheikhupura.

3. Date of submission 22.07.2014.

4. After review of Environmental Impact Assessment (EIA) Report, Site Inspection Report from DOE and other relevant record, the Environmental Protection Agency, Punjab has decided to accord its approval for the construction of above mentioned project to safeguard the environmental issues subject to the following conditions:

(i) The proponent shall ensure compliance of National Environmental Quality Standards (NEQS).

(ii) The proponent shall install combined effluent treatment plant in compatible with National Environmental Quality Standards.

(iii) The proponent shall not discharge untreated waste water into surface or sub surface water body and shall obtain approval from the controlling authority of surface water body.

(iv) The proponent shall also bound every unit to install effective emission control systems and primary waste water treatment plants in their units and all proponents of the units be directed to ensure compliance of Section 12 of Punjab Environmental Protection Act, 1997 (amended 2012) read with IEE / EIA Regulations, 2000.

(v) Mitigation measures reflected / suggested in EIA Report and Environmental Management & Monitoring Plan (EMMP) shall be strictly observed to minimize any negative impacts on soil, ground water, air and biological resources. The proponent shall depute staff to monitor compliance of EMMP.

(vi) Monitoring shall be carried out during the entire period of the project activities and the proponent shall furnish monitoring reports on monthly basis, consolidated report on quarterly basis and comprehensive report on annually basis to this office under intimation to District Officer (Environment).

(vii) The proponent shall be responsible for adopting appropriate mitigation measures

(ix) The proponent shall ensure that strict and efficient health and safety measures are in place for protection of workers backed by a comprehensive emergency response system.

(x) The proponent shall plant at least 30000 trees of minimum height 6 to 7 feet especially of indigenous species in the area in consultation with District Officer (Environment) before commencement of operational phase. The proponent shall also appoint sufficient staff to look after the plants and green area.

(xi) The proponent shall do proper landscaping inside and outside the Apparel Park after completion of the project.

(xii) The proponent shall convey the name of the Environmental Manager (having at least qualification of MS Environmental Sciences / Environmental Engineering) of the project along with his complete Mailing Address and Phone Numbers.

(xiii) The proponent shall construct sanitary landfill site for proper disposal of solid waste in a proper scientific way.

(xiv) The proponent shall obtain NOC / clearance of all other concerned departments.

(xv) The proponent shall obtain separate approval from Climate Change Division Islamabad in case of import of any material.

(xvi) The proponent shall establish an environmental laboratory for the monitoring of environmental standards on daily basis.

(xvii) The proponent shall also construct a camp office for the staff of EPA for regular monitoring.

(xviii) The proponent shall ensure effective fire fighting arrangements in the Apparel Park.

(xix) The proponent shall ensure construction of environment friendly and energy efficient buildings of the industrial units.

(xx) Compensation shall be provided to the inhabitants in case of loss of property, shops, business etc. in accordance with the rates that are agreed upon. All conflicting issues regarding compensation etc. should be settled amicably before or during the project activities.

(xxi) The proponent will approach the District Administration for decleration of buffer zone around the Apparel Park for the stoppage of residential activity.

5. The proponent shall be responsible for correctness and validity of information supplied by the Environmental Consultant.

6. The proponent shall be liable for compliance of Sections 13, 14, 17 and 18 of IEE/EIA Regulations, 2000, regarding approval, confirmation of compliance, entry, inspections and monitoring.

7. This approval is accorded only for the installation / construction phase of the project. The proponent will obtain approval for commissioning of the unit in accordance with Section 13(2)(b) and Section 18 of the IEE/EIA Regulations, 2000.

8. Any change in the approved project shall be communicated to EPA, Punjab and shall be commenced after obtaining the approval.

9. This approval does not absolve the proponent of the duty / liability to obtain any other approval or consent that is required under any law in forced for the time being. The approval shall be treated as null and void if all or any of the conditions mentioned above is/are not complied with and if there is an order of the court of competent jurisdiction to the contrary.

10. This approval can be withdrawn at anytime without any prior notice if deem necessary in the public / national interest.

(AMEN HANIF)
ASSISTANT DIRECTOR (EIA)
for Director General, EPA, Punjab
Ph.#.042-99232228

NO. & DATE EVEN.

A copy is forwarded for information to:

1. The District Officer (Environment), Sheikhupura w.r.t. his letter No. 2818/DOE/SKP dated 11-10-2014. He is directed to ensure compliance of the above conditions under intimation to this office.

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Punjab Industrial Estates
Development and Management Company
Owned by the Government of The Punjab

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF QUAID-E-AZAM APPAREL PARK (QAAP), PUNJAB AT M-2 DISTRICT SHEIKHUPURA

EIA REPORT

MAY 2014

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LIMITED
ENVIRONMENTAL AND PUBLIC HEALTH ENGINEERING DIVISION
1-C, BLOCK-N, MODEL TOWN EXTENSION LAHORE, PAKISTAN

SUI NORTHERN GAS PIPELINES LIMITED
GAS HOUSE, 21 KASHMIR ROAD, P.O. BOX 56, LAHORE (PAKISTAN)

Ref: GMS: 938 (LNG)

November 05, 2020

Mr. Ali Muazzam Syed,
Chief Operating Officer,
Punjab Industrial Estate Development and Management Company,
Commercial Area North, Sundar Industrial Estate,
Sundar Raiwind Road, **LAHORE**
Fax # 042 - 35297207

ESTABLISHMENT OF QUAID-E-AZAM BUSINESS PARK (QABP) ON M-2 MOTORWAY, SHEIKHUPURA
GAS SALES AGREEMENT

Dear Sir,

Reference your letter No. PIEDMC/QABP/1522 dated 12.10.2020, on the subject cited above.

In this context, we are enclosing herewith the Agreement for supply of RLNG to Quaid-e-Azam Business Park (QABP), on firm basis. You are requested to please sign and return the Agreement, enabling us to proceed further in the matter.

Meantime, we assure you of our best cooperation at all times.

Yours faithfully,
SUI NORTHERN GAS PIPELINES LIMITED

MAJID HUSSAIN
General Manager (BD Corporate)
for **MANAGING DIRECTOR**

Copy to:

- Director General (Gas), Ministry of Energy (Petroleum Division), Islamabad

16/11/2020

Manager Tech, QABP

AM(T)

17/11

PIEDMC	
CEO	
COO	
CFO / CS	
GM (Admin & HR)	
GM (P&C)	
GM (BD)	
GM (Technical)	
GM (Coord)	
GM (SP)	
PD (QABP)	
Diary No. 9459 Init	
Date 13-11-2020	

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PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY

PIEDMC/QABP/1539
01st March 2021

Mr. Majid Hussain
General Manager (BD)
Sui Northern Gas Pipelines Limited
Gas House, Kashmir Road Lahore

SUBJECT: **PROVISION OF NATURAL GAS/RLNG FOR ESABLISHMENMENT QUAID-E-AZAM BUSINESS PARK (QABP) ON MOTORWAY M-2, DISTRICT SHEIKHUPURA**

(RLNG SALES AGREEMENT)

Reference: Your letter no. GMS 938 (LNG), dated 05-11-2020 and PIEDMC letter no. PIEDMC/QABP/1535, dated 18-02-2021.

Dear Sir,

This is with reference to above letters and meeting with yourse f dated 25-02-2021, regarding the gas sales agreement for above cited project.

Please find enclosed RLNG agreement duly signed by the undersigned and further necessary action at your end, please.

(Ali Muazzam Syed)
Chief Executive Officer

Cc: Chairman-PIEDMC
Mr. Imran Yousaf (SGM-P& D)-SNGPL

RLNG SUPPLY AGREEMENT

THIS RLNG SUPPLY AGREEMENT is made at Lahore, Pakistan on ____, _____, 2021

BETWEEN

SUI NORTHERN GAS PIPELINES LIMITED, a Public Limited Company incorporated under the laws of Pakistan, with its registered office at 21 Kashmir Road, Lahore (hereinafter referred to as the "**Seller**" or "**SNGPL**", which expression shall, where the context so permits, include its permitted successors and assigns);

AND

PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY, with its registered office at Commercial North, Sundar Industrial Estate, Raiwind Road Lahore, a Company incorporated under the laws of Pakistan and having its registered office at _____ (hereinafter referred to as the "**Buyer**" or the "**Company**"), which expression shall, where the context so permits, include its permitted successors and assigns).

The Seller and the Buyer are hereinafter collectively referred to as the "**Parties**" and individually as a "**Party**".

WHEREAS:

A. Whereas the Seller owns and operates high pressure transmission and distribution gas pipeline and engages in the business of transmission and distribution of indigenous gas ("System Gas") and regasified liquefied natural gas ("RLNG") in its franchise area.

B. Whereas the GOP is developing Special Economic Zone (SEZ), namely Quaid-e-Azam Business Park (QABP) under China Pakistan Economic Corridor (CPEC) through the Buyer.

C. Whereas the Buyer has been established by the Government of Punjab with the main objective of developing a chain of new industrial estates alongwith upgrading the existing ones and has identified requirement of 65 MMSCFD of RLNG for QABP, SEZ.

D. Whereas pursuant to Special Economic Zones Act, 2012, gas supply is to be provided to a SEZ at the door step of the zone (zero point) as identified by the SEZ.

E. Whereas due to shortage / unavailability of System Gas in the country to meet the demand of downstream sectors, the Buyer has agreed to purchase and the Seller has committed to provide RLNG supply to the Buyer on take or pay basis on the terms and conditions set out in the Agreement.

NOW, THEREFORE, in consideration of the mutual benefits to be derived and the representations and warranties, conditions and promises herein contained, and intending to be legally bound, SNGPL and the Company hereby agree as follows:

ARTICLE I

DEFINITIONS; EFFECTIVE DATE

1.1 Definitions. Unless the context otherwise requires, capitalized terms used in this Agreement shall have the respective meanings given to them below:

"ADP" - As defined in Section 7.3.

"QABP, SEZ" – Quaid-e-Azam Business Park, Special Economic Zone.

"Agreement Year" - A period of twelve consecutive calendar months during the Term of this Agreement, commencing on 1st January and ending on 31st December in the same calendar year, except for the first Agreement Year, which shall commence on the Effective Date and end on 31st December in the same calendar year.

"Atmospheric Pressure" -An absolute pressure of fourteen decimal point sixty-five hundredths pounds force per square inch (14.65lbs/in^2).

"Billing Cycle" - As defined in Section 3.1(a).

"BTU" -The British Thermal Unit, or the amount of heat required to raise the temperature of one avoirdupois pound of distilled water from 59 degrees Fahrenheit to 60 degrees Fahrenheit at Atmospheric Pressure.

"Business Day" - Any Day that banks in Lahore, Pakistan are legally permitted to be open for business. For the avoidance of doubt, Saturday shall be considered to be a Business Day for the purposes of this Agreement.

"Company Allocation" – Maximum quantity of Gas allocated to the Company by GOP being 65 MMSCFD.

"Company Event of Default" - As defined in Section 13.1.

"GOP" - The Government of the Islamic Republic of Pakistan.

"Gross Calorific Value" -The number of BTUs produced by the complete combustion at Atmospheric Pressure of one (1) Standard Cubic Foot of Gas at sixty degrees Fahrenheit (60°F), with excess air at the same temperature and pressure as the Gas and when the products of combustion are cooled to sixty degrees Fahrenheit (60°F) and when the water formed by combustion is condensed to the liquid state and when the products of combustion contain the same total mass of water vapour as the Gas and air before combustion.

"Guaranteed Delivery" – The quantity of Gas as set forth in the relevant ADP.

"Guaranteed Delivery Period" – As defined in Section 2.1(b).

"LNG Supply Agreements" – Upstream agreement(s) that SNGPL has entered into for purchase of LNG/RLNG by SNGPL from the upstream suppliers.

"Loss" -Any and all loss, damage, liability, payment and obligation (excluding any indirect or consequential loss, damage, liability, payment or obligation), and all related expenses (including reasonable legal fees).

"Measurement and Recording Equipment" - As defined in Section 7.2(a).

"MMSCF" - One million cubic feet at Standard Conditions.

"MMSCFD" – One million cubic feet (at Standard Conditions) per Day.

"Month" -A period beginning at midnight (12:00 hours) PST of the first Day of any calendar month and ending at midnight (12:00 hours) PST on the first Day of the next succeeding calendar month and "Monthly" shall be construed accordingly.

"Monthly Take-or-Pay Quantity" - As defined in Section 2.2(b).

"OGRA" - The Oil and Gas Regulatory Authority established pursuant to the Oil and Gas Regulatory Authority Ordinance, 2002 (XVII of 2002).

"Parties" - Both SNGPL and the Company.

"Party" - Either SNGPL or the Company.

"Person" - An individual, corporation, partnership, joint venture, trust, unincorporated

"Competent Authority" – OGRA or the authority or entity duly authorized under the laws of Pakistan to notify, issue, determine or approve the Gas Price or any part thereof.

"Day" - Each twenty-four (24) hour period beginning and ending at 12:00 midnight PST, and "Daily" shall be construed accordingly.

"Delayed Payment Rate" - One month KIBOR plus two percent (2%) per annum, calculated for the actual number of Days which the relevant amount remains unpaid on the basis of a three hundred sixty five (365) Day Year.

"Delivery Point" –The designated zero point of QABP, SEZ.

"Due Date" - As defined in Section 6.3.

"Dispute" - Any dispute, difference or disagreement of any kind whatsoever between SNGPL and the Company in connection with or arising out of this Agreement.

"Effective Date" – The date on which this Agreement comes into force and effect pursuant to Section 1.2.

"Equipment" - The Meter Stations, the Pipeline, the Measurement and Recording Equipment and all associated equipment all owned, installed, operated and maintained by SNGPL as per the terms of this Agreement.

"Force Majeure Event" – As defined in Section 12.1.

"Gas" - Any hydrocarbons or mixture of hydrocarbons and other gases which, at sixty degrees Fahrenheit (60°F) and at Atmospheric Pressure, are predominantly in a gaseous state including without limitation swapped gas/ RLNG from SSGC/LNG terminals, and residue resulting from the processing of gas, together with any other substances produced with such hydrocarbons and any amounts of additives as remain after transmission and processing.

"Gas Payments" - As defined in Section 3.1(a).

"Gas Price" – The price of swapped gas / RLNG applicable to the Company for delivery of Gas to the Buyer, as notified, from time to time, by the Competent Authority. For the avoidance of doubt, it is clarified that the price of swapped gas shall be the RLNG price notified by the Competent Authority.

organization, government or governmental authority or agency, or any other legal entity.

"Pipeline" - The pipelines owned by SNGPL and used to deliver Gas at the Delivery Point.

"Prudent Gas Pipeline Industry Practices" – The internationally accepted good gas industry practices as well as standards, procedures and practices as adopted by American Gas Association and similar organizations such as American Petroleum Institute (API), American Society of Mechanical Engineers (ASME), American Society for Testing and Materials (ASTM) and Gas Processors Association (GPA).

"Psia" - Pounds per square inch, absolute pressure.

"PST"- Pakistan Standard time.

"RLNG"– Regasified LNG.

"Security" -The Security for Guaranteed Deliveries contemplated by Section 5 hereof.

"Site" – means the site of QABP, SEZ.

"SSGC" – Sui Southern Gas Company Limited.

"Standard Conditions" – [Standard Conditions of pressure (14.65 Psia) and temperature (60 deg. F)].

"Term" -As defined in Section 11.

"Year" -Each twelve (12) Month period commencing on January 1.

1.2 Effectiveness of the Agreement

This Agreement shall be effective on the date (the **"Effective Date"**) when all the following conditions have been satisfied:

(a) This Agreement has been duly approved by the Competent Authority.

(b) The internal distribution network in QABP, SEZ has been laid by the Buyer at its own cost and expense and the same is operational.

(c) Commissioning of spur pipeline of 16" dia x 17 kilometers alongwith construction of Meter Stations [SMS (sales metering station) cum CMS (consumer metering station)]

having capacity of 65 MMSCFD has been completed by the Seller at the cost and expense of the Buyer.

SNGPL shall notify the Company in writing of the Effective Date.

ARTICLE II

SCOPE AND QUANTITY; GUARANTEED DELIVERY AND TAKE OR PAY

2.1 Scope and Quantity

(a) The Seller agrees to sell and deliver, and the Buyer agrees to purchase Gas at the Delivery Point in the quantities and at the prices and in accordance with the other terms and conditions of this Agreement. The Seller may swap RLNG with natural gas with SSGC, at Zamzama, Dadu, Sui, Sawan or any other RLNG swap gas delivery point under the swap arrangement and natural gas supplied to the Buyer under this Agreement shall be in lieu of supply of RLNG.

(b) The Guaranteed Delivery Period shall commence on the Day immediately following the Effective Date of this Agreement. SNGPL shall notify the Company in writing regarding the commencement of the Guaranteed Delivery Period. The Guaranteed Delivery Period shall continue until the expiry or termination of this Agreement.

(c) Subject to sub-clauses (d) and (e) below and to the remaining terms of this Agreement, the Gas to be delivered hereunder during the Guaranteed Delivery Period shall be the Guaranteed Delivery. The Buyer agrees that it shall take and, if not taken, pay for at least 66% of the Guaranteed Delivery in accordance with Section 2.2(b) hereunder.

(d) For the avoidance of doubt it is clarified that the sale and delivery obligation of SNGPL under this Agreement during the Guaranteed Delivery Period is contingent upon the required quantity of RLNG being made available to SNGPL in its system under the relevant LNG Supply Agreement(s) pursuant to which SNGPL is supplying RLNG to the Company and if for any reason such supply is not made or is reduced then there will be no obligation on SNGPL to supply hereunder in the event of a total failure of supply or a reduced obligation to supply to be calculated in accordance with the policy of the GOP/SNGPL in case of reduction in supply. The Seller shall designate the LNG Supply Agreement(s) pursuant to which it is supplying RLNG to the Buyer. For the purposes of this Agreement RLNG shall be regarded as being made available to or received by SNGPL in its system if it is received by SNGPL in a Pipeline owned, operated and controlled by SNGPL. SNGPL shall have no obligation to accept or receive RLNG in its

system under any LNG Supply Agreement unless it meets the quality and specification requirements of SNGPL.

2.2 Take-or-Pay and Related Provisions

(a) In order to reflect the back to back nature of the LNG supply chain, the provisions set forth in the designated LNG Supply Agreement(s) pursuant to which SNGPL will be supplying RLNG to the Buyer which impose any obligation on SNGPL (excluding take or pay obligations, payment terms for Gas supplied and Security which are separately dealt with below) shall mutatis mutandis apply to the Buyer.

(b) The Take or Pay Quantity during the Guaranteed Delivery Period is based on sale and purchase of at least 66% of the Guaranteed Delivery in the manner and subject to the terms hereinafter set forth. The Buyer shall take this quantity and if not taken shall be obliged to pay for it. During a Month in the Guaranteed Delivery Period, the Buyer shall take and if not taken pay for at least 66% of the Guaranteed Delivery for that Month (as contained in the ADP) divided by the number of Days in that Month multiplied by the difference between the number of Days in that Month and (i) the number of Days (or fractions thereof) of Force Majeure Events declared by the Seller or Buyer; (ii) the number of Days (or fractions thereof) of non-delivery of Gas by the Seller that Month for any reason, including a breach or default by the Seller or scheduled maintenance undertaken by the Seller (in relation to maintenance, to the extent not already catered for in the ADP).

2.3 No Liability of Seller

For the avoidance of doubt it is clarified that the Gas to be made available to the Buyer under the terms hereof is based on the assumption that RLNG is being made available to the Seller under the designated LNG Supply Agreement(s) pursuant to which it is supplying RLNG to the Buyer or is based on commitment of supply under such LNG Supply Agreement(s). The Seller shall have no liability to deliver Gas under the terms hereof if and to the extent that it fails to receive Gas in its system under the designated LNG Supply Agreement(s) pursuant to which it is supplying RLNG to the Buyer. Moreover, Seller's obligation to deliver Gas may get affected even if it is receiving Gas under the designated LNG Supply Agreement(s) due to operational constraints of SNGPL System e.g. due to failure of any of the major gas fields supplying gas to the Seller's network which results in pressure constraints or reduction in line pack beyond minimum operating limits. In such circumstances, Seller shall not be responsible for non supply of Gas to the Buyer and these events will constitute Force Majeure.

In case the Seller has received Gas in its system under the designated LNG Supply Agreement(s) pursuant to which it is supplying Gas to the Buyer and fails to deliver Gas to the Buyer in unexcused breach of the terms of this Agreement, the liability of the Seller to the Buyer shall under no circumstances whatsoever exceed the cost of the quantity of RLNG that has not been supplied in breach of the terms of this Agreement.

2.4 Title and Risk of Loss

Title to, and property in and the risk of Loss to all quantities of Gas delivered hereunder shall pass from SNGPL to the Company at the Delivery Point.

ARTICLE III

PRICE

3.1 Gas Price

(a) The price to be charged for Gas delivered hereunder shall be the Gas Price which as per the current Applicable Law is to be determined by OGRA. In addition, the Buyer shall be liable to pay by the due date stipulated in the relevant invoice all taxes and other impositions that are included by SNGPL in any invoice. Subject to subsection 3.1(b) below and the other terms and conditions of this Agreement, the Buyer shall pay to the Seller the Gas Price multiplied by the quantity of Gas actually delivered to the Buyer at the Point of Delivery pursuant to the Gas Orders (the "**Gas Payments**"). Bills shall be generated on weekly basis (i.e. after every seven (7) or eight (8) Days period so as to cover the entire calendar Month) (the "**Billing Cycle**"). The Gas Payments shall be paid as set forth in Article VI, provided, however that during the Guaranteed Delivery Period the Seller after close of calendar Month will raise an invoice in respect of Monthly Take or Pay Quantity less the quantities already invoiced on weekly basis in that calendar Month at RLNG price notified by the Competent Authority, if the actual quantity purchased by the Buyer during the immediate preceding Month is less than the Monthly Take-or-Pay Quantity. This invoice will be paid by the Buyer in accordance with Article VI.

(b) The Gas Price for all Gas delivered under this Agreement shall be the price in United States Dollars notified by the Competent Authority from time to time under the applicable law subject to Section 3.2. Any change in the Gas Price shall be effective from the date the revised price is effective as per the notification by the Competent Authority. As long as the Gas Price is notified by the Competent Authority in United States Dollars, the Seller, in order to prepare the invoice in Rupees, shall use the

weighted average selling exchange rate issued by State Bank of Pakistan in respect of the last day of the Billing Cycle and if that day is not a Business Day then the rate of the preceding Business Day shall be used.

3.2 Decontrolled Prices

If the Competent Authority ceases to or does not notify prices for Gas (or ceases to or does not notify prices for Gas that would be applicable to sales of Gas under this Agreement) then any provisional gas price determined by the GOP shall be applicable. If a provisional gas price has not been provided by the GOP, the Buyer and the Seller shall meet to agree on an appropriate Gas Price or methodology or formula for determining the Gas Price for future deliveries of Gas, taking into account the prevailing circumstances at such time. Until such agreement is reached, the Buyer agrees to pay to Seller the amount paid or to be paid by the Seller under the designated LNG Supply Agreement(s) for RLNG provided that if mutual agreement on a new Gas Price is not reached within 60 Days, the Seller may suspend supplies to Buyer hereunder.

ARTICLE IV

REPRESENTATIONS, WARRANTIES AND COVENANTS

4.1 Representations, Warranties and Covenants of the Company

(a) Representations and Warranties.

The Company hereby represents and warrants to SNGPL that:

i) it (A) is a company, duly incorporated and existing under the laws of Pakistan and (B) has, so far as is material to SNGPL, complied fully with all requirements of all applicable laws of Pakistan;

ii) it has all requisite power and authority to conduct its business, to own its properties and to execute, to deliver and to perform its obligations under this Agreement;

iii) this Agreement has been duly authorized, executed and delivered by it and constitutes the legal, valid and binding obligation of the Company including but not limited to the take or pay obligation contained in Section 2.2.

(b) Covenants.

The Company hereby covenants to SNGPL that:

i) it shall so far as is material to SNGPL's rights and obligations under this Agreement at all times comply with all applicable laws of Pakistan;

ii) it shall at its sole cost and expense (A) give all required notices and procure and maintain all licenses, consents and permissions necessary for the performance of its obligations under this Agreement and (B) pay all prescribed fees in connection therewith;

iii) it shall bear all costs and expenses in respect of construction and commissioning by the Seller of spur pipeline of 16" dia x 17 kilometers alongwith all costs and expenses in connection with construction of Metering Stations [SMS (sales metering station) cum CMS (consumer metering station)] having capacity of 65 MMSCFD;

iv) it shall provide land measuring 175' x 275' for the construction of Metering Stations [SMS cum CMS]by the Seller at the Delivery Point, free of cost;

iv) it shall render, at the sole expense of SNGPL subject to the terms of this Agreement, all assistance requested by SNGPL as is reasonable under the circumstances and is within its power to enable SNGPL to obtain all such consents required from time to time under the laws of Pakistan to enable SNGPL to discharge its obligations to the Company hereunder.

4.2 Representations and Warranties of SNGPL

SNGPL hereby represents and warrants to the Company that:

i) it is duly incorporated and existing under the laws of Pakistan and has, so far as is material to the Company, complied fully with all applicable laws of Pakistan and has all requisite power and authority to conduct its business, to own its properties (including the Equipment) and to execute, to deliver and to perform its obligations under this Agreement; and

ii) this Agreement has been duly authorized, executed and delivered by it and constitutes the legal, valid and binding obligation of it.

ARTICLE V

SECURITY

5.1 Security

(a) Prior to the Effective Date, the Company shall provide to SNGPL and maintain at all times standby letters of credit ("**Security**") in an amount equivalent to at least Thirty (30) Days of RLNG deliveries based on the current ADP prevailing at the relevant time. Such Security shall be furnished in such form as required by SNGPL and from such bank as required by SNGPL.

(b) The Security shall (i) be maintained during the Guaranteed Delivery Period; (ii) be adjusted accordingly in case the Gas Price is changed by the Competent Authority; and (iii) returned to the Buyer within thirty (30) Days after expiration or termination of this Agreement, net of any amounts lawfully due to the Seller.

(c) No supply of Gas hereunder will be made in the absence of the Buyer providing and maintaining the Security contemplated by this Section 5.1.

(d) In the event that the Buyer fails to pay any amount payable to the Seller when due, the Seller shall be entitled to draw or collect such amounts from the Security.

(e) In the event that the Security is not replaced, replenished or renewed to the satisfaction of the Seller at least ten (10) days prior to the date on which it is scheduled to expire or the Security is not adjusted accordingly (following encashment or in the event that the Gas Price is changed by the Competent Authority to account for such change within the period prescribed by the Seller), then without prejudice to any other rights or remedies available to the Seller under this Agreement, the Seller shall be entitled to suspend deliveries of Gas.

ARTICLE VI

INVOICING AND PAYMENT

6.1 Billing

The Seller's bills for the supply of Gas during a Billing Cycle, including any adjustments under Section 6.7, shall be furnished to Buyer on or after the first Business Day following each Billing Cycle. Invoices for Monthly Take-or-Pay Quantity shall be billed Monthly in arrears.

6.2 Delivery of Bills

All bills duly sent by the Seller in accordance with the notices provision hereof shall be considered prima facie evidence of delivery of bills to the Buyer by the Seller.

6.3 Posting and Payment

The Buyer shall pay all bills pertaining to Gas consumption and Monthly Take-or-Pay Quantity delivered in terms of Section 6.1 within three (3) Business Days from the day of issuance of the bill (the "**Due Date**"). For the avoidance of doubt, it is clarified that there shall be no right of set off of whatsoever nature available to the Buyer in any circumstances.

6 .4 Method of Payment

Payment shall be made to the Seller in Lahore, Pakistan at the Seller's designated bank in the designated account of the Seller, on or before the Due Date; provided that, in the event that payment in the manner identified above is not possible, delivery by the Buyer of a cheque or a bank draft drawn on a scheduled bank in favour of the Seller at a designated office of the Seller shall be deemed to be an acceptable form of payment, subject to its realization within due date. In the event that the cheque is not realized within the Due Date, the Delayed Payment Rate will be levied on the Buyer accordingly. The name of the bank and the account number of the Seller shall be provided by the Seller along with the Seller's first bill and shall be considered standing instruction until changed in writing by the Seller.

6.5 Late Payment Surcharge

If payment of any bill rendered by the Seller to the Buyer is not made by the Due

Date, a late payment surcharge calculated at the Delayed Payment Rate shall be applicable on any outstanding amount.

6.6 Suspension of Deliveries

If the Buyer fails to make the bill payment by the Due Date, then the Seller shall in addition to its other rights and remedies, be entitled to (a) make drawdown on the Security equivalent to the amount shown in the invoice along with the late payment surcharge at the Delayed Payment Rate, or (b) suspend the supply of Gas by giving three (3) Days written notice of suspension to the Buyer, which notice shall specify the amount which has not been paid; provided that the Seller shall not suspend the supply of Gas if the requested amount is paid within three (3) Days, and provided further that if the Seller suspends the supply of Gas, the Seller shall resume the supply of Gas within twenty four (24) hours of receiving payment of such unpaid amount, together with late payment surcharge thereon and security shortfall, if any, plus the Seller's prevailing reconnection charges.

6.7 Estimated Billing

In case the meter installed in the Measuring Station cannot be read due to any reason other than availability of the Seller's personnel, the Seller shall submit provisional bills based on the ADP for the period the meter could not be read. The Seller shall adjust provisional bills based on estimated consumption against actual meter reading obtained subsequently but in no event later than the next scheduled Billing Cycle and give credit/debit, as the case may be, to the Buyer of the difference, if any. The Buyer shall pay such bills within the Due Date mentioned herein and the Seller shall adjust any refund against future charges for Gas supplied.

6.8 Billing Errors

After the bills have been furnished and/or paid, if the Seller or the Buyer within one (1) Year after posting of any bill discovers any manifest error, omissions or discrepancies in any such bills due to any reason whatsoever, the Seller or the Buyer shall bring such discrepancies to the notice of the other and the Parties shall agree to adjust the bills accordingly. Any mistake in the bills or meter reading (unless accepted by the Seller) shall not entitle the Buyer to withhold payment of the bills by the Due Date.

ARTICLE VII

DELIVERY, MEASUREMENT AND ADP

7.1 Commencement of Deliveries

Subject to delivery and maintenance of the Security contemplated by the terms hereof, supplies shall commence on the Day following the Effective Date.

7.2 Gas Measurement and Recording

(a) SNGPL shall own, install, operate and maintain, upstream of the Delivery Point, such measurement and recording facilities as may be reasonably required to measure and record Gas delivered by SNGPL at the Delivery Point (the **"Measurement and Recording Equipment"**).

(b) For the purposes of measuring and recording the Gas quantities delivered at the Delivery Point and its specifications, the standards, methods and procedures outlined in Schedule D shall be applicable and binding throughout the Term of this Agreement.

7.3 ADP. The Parties agree that there shall be an annual delivery programme ("ADP") which shall be an annual plan agreed between the Parties for delivery of Gas to the Site for the relevant Agreement Year. The ADP quantity for each Agreement Year shall be nominated by the Buyer provided that the quantity cannot under any circumstances exceed the Company Allocation. The ADP shall, in addition to other requirements of this Agreement, be prepared taking account of outages and maintenance requirements including outages and maintenance requirements pertaining to the LNG regasification terminal and SNGPL Pipeline/Equipment.

The Buyer shall provide the draft ADP, for the subsequent Agreement Year, to the Seller at least one hundred and eighty (180) Days prior to the commencement of the relevant Agreement Year. Provided that the ADP for the first Agreement Year shall be provided at such time before the Effective Date as the Parties may mutually agree. In case the Seller is agreeable to the ADP, it shall provide confirmation to the draft ADP to the Buyer in writing within thirty (30) Days of submission of draft ADP by Buyer. For the avoidance of doubt, it is clarified that the ADP shall be broken into daily, monthly and weekly delivery schedules. In case the Buyer does not submit draft ADP in a timely manner, it shall be deemed that the ADP quantity for the next Agreement Year shall be equal to the ADP quantity for the previous Agreement Year.

ARTICLE XI

DISPUTE RESOLUTION

11.1 Resolution by Parties: Discussion Periods. In the event that a Dispute arises between the Parties, representatives of each of the Parties having full authority to settle the Dispute shall attempt in good faith to settle such Dispute by mutual discussions within a period of thirty (30) Days after the date that the disputing Party gives written notice of the Dispute to the other Party. If such Dispute cannot be resolved within such time period, either Party may refer the same to arbitration under the terms of Section 11.2.

11.2 Arbitration. (a) Any dispute arising out of or in connection with this Agreement or relating to its validity or enforceability that has not been resolved following the procedures set forth in Section 11.1 shall be finally settled by arbitration under the Arbitration Act, 1940. The arbitration shall, unless otherwise agreed by the Parties, be conducted in Lahore, Pakistan and the reference will be to a sole arbitrator.

(b) Binding Effect. Each Party hereby agrees to be bound by any final decision or award of any arbitrator duly appointed under this Section 11.2.

(c) Language of Arbitration. The language of any arbitration under this Agreement shall be English.

ARTICLE XII

FORCE MAJEURE

12.1 Definition of Force Majeure Event. A "Force Majeure Event" shall mean any event or circumstance or combination of events or circumstances that is beyond the reasonable control of a Party and that on or after the date of this Agreement materially and adversely affects the performance by such affected Party of its obligations under or pursuant to this Agreement; provided, however, that such event or circumstance or combination of events or circumstances shall not constitute a "Force Majeure Event" hereunder to the extent that it or such material and adverse effect could have been prevented, overcome or remedied in whole or in part by the affected Party through the exercise of diligence and reasonable care, is being understood and agreed that reasonable care includes acts and activities in performance by the Parties of their respective obligations under this Agreement, which acts or activities are reasonable in light of the likelihood of such event, the probable effect of such event if it should occur and the likely efficacy of such protection measures. Without limiting the generality of the foregoing, "Force Majeure Events" hereunder shall include each of the following events and circumstances, but only to the extent that each satisfies the above requirements:

(a) any act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, revolution, riot, insurrection, civil commotion, act or campaign of terrorism, kidnapping or sabotage;

(b) revocation of Company Allocation by GOP;

(c) radioactive contamination or ionizing radiation originating from a source in Pakistan or resulting from another Force Majeure Event;

(d) any strikes, works to rule or go-slows that extend beyond the Site, and are widespread or nationwide;

(e) uncontrollable events including:

(A) lighting, earthquake, tsunami, drought, flood, torrential rain, storm, cyclone, typhoon, or tornado;

(B) fire, explosion or chemical contamination;

(C) epidemic or plague;

(f) rupture of pipeline for any reason.

12.2 Exclusion. Notwithstanding anything contained herein and in Section 12.1, it is agreed between the Parties that for no reason whatsoever will inadequacy of funds for either Party be considered as a Force Majeure Event.

12.3 Notification Obligations. (a) Occurrence Etc. If by reason of a Force Majeure Event a Party is wholly or partially unable to carry out its obligations under this Agreement, the affected Party shall (i) give the other Party notice of the Force Majeure Event as soon as practicable, but in any event, not later than the later of forty-eight (48) hours after the affected Party becomes aware of the occurrence of the Force Majeure Event or six (6) hours after the resumption of any means of providing notice between the Company and SNGPL, and (ii) give the other Party a second notice, describing the Force Majeure Event in reasonable detail and, to the extent that can be reasonably determined at the time of the second notice, providing a preliminary evaluation of the obligations affected, a preliminary estimate of the period of time that the affected Party will be unable to perform such obligations and other relevant matters as soon as practicable, but in any event not later than seven (7) Days after the initial notice of the occurrence of the Force Majeure Event and its cause(s) and providing or updating information relating to the efforts of the affected Party to avoid and/or to mitigate the effect(s) thereof and estimates, to the extent practicable, of the time that the affected Party reasonably expects it will be unable to carry out any of its affected obligations due to the Force Majeure Event.

(b) Cessation. The affected Party shall provide notice to the other Party of (i) the cessation of the Force Majeure Event, and (ii) its ability to recommence performance of its obligations under this Agreement, in each case as soon as possible and in any event not later than seven (7) Days after the occurrence of (i) and (ii) above.

(c) Failure to Give Notices. Failure by the affected Party to give written notice of a Force Majeure Event to the other Party within the forty-eight (48) hour period or six hour period required by Section 12.3(a) shall not prevent the affected Party from giving such notice at a later time; provided, however, that in such case the affected Party shall not be excused pursuant to Section 12.5 for any failure or delay in complying with its obligations under or pursuant to this Agreement under the notice required by Section 12.3(a) has been given. If said notice is given within the forty-eight (48) hour period or six hour period required by Section 12.3(a), the affected Party shall be excused for such failure or delay pursuant to Section 12.4 from the date of commencement of the relevant Force Majeure Event.

12.4 Duty to Mitigate. The affected Party shall use all reasonable efforts to mitigate the effects of a Force Majeure Event, including the payment of all reasonable sums of money by or not behalf of the affected Party in light of the likely efficiency of the mitigation measures.

12.5 Delay caused by Force Majeure and Termination. (a) Excused Obligations. So long as the affected Party has at all times since the occurrence of the Force Majeure Event complied with the obligations of Section 12.4 and continues to so comply, then (i) the affected Party shall not be liable for any failure or delay in performance its affected obligations (other than an obligation to make a payment), it being understood that in no event shall inadequacy of funds be considered a Force Majeure Event under his Agreement) under or pursuant to this Agreement during the existence of a Force Majeure Event ; provided, however, that no relief shall be granted to the affected Party pursuant to this Section 12.5 to the extent that such failure or delay would have nevertheless been experienced by the affected Party had the Force Majeure Event not occurred.

(b) Termination. Where the effects of a Force Majeure Event exist for a period of two hundred and seventy (270) Days or more, then either Party may terminate this Agreement by issuing a Termination Notice.

12.6. For the avoidance of doubt, a Force Majeure Event preventing or restricting the Buyer from taking or using Gas or excusing any other obligation of the Buyer hereunder shall not excuse the Buyer from paying for the Monthly Take-or-Pay Quantity.

ARTICLE XIII

DEFAULT AND TERMINATION

13.1 Company Events of Default – Termination by SNGPL. Each of the following events (each, a "**Company Event of Default**"), if not cured within the time permitted (if any), shall give rise to the right on the part of SNGPL to terminate this Agreement forthwith by notice to the Company:

(a) Misrepresentations. Any statement, representation or warranty made by the Company herein shall prove to have been incorrect, in any material respect, when made or when deemed to have been made or repeated, and such incorrect statement, representation or warranty shall have a material adverse affect on the Company's ability to perform its obligations under this Agreement.

(b) Material Breach. Any breach by the Company of this Agreement (other than a breach of its payment obligations), which breach shall not have been remedied within thirty (30) Days after notice from the SNGPL stating that a material breach of the Agreement has occurred that could result in the termination of such Agreement, identifying the material breach in reasonable detail, and demanding remedy thereof.

(c) Failure to Post or Renew the Security. Failure of the Company to post, maintain, renew or replenish any Security contemplated by the terms hereof within forty five (45) Days of the date required.

(d) Payment Default(s). Absolutely without prejudice to any other right or remedies available to SNGPL under this Agreement, any default(s) by the Company in the making of any payment(s) required to be made by it hereunder within forty five (45) Days from the stipulated due date.

13.2 Remedies Cumulative. The exercise of the right of a Party to terminate this Agreement does not preclude such Party from exercising other remedies, which are provided herein, or are available at law. Remedies are cumulative and the exercise, or failure or exercise, one or more of them, by a Party shall not limit or preclude the exercise of, or constitute a waiver of other remedies by such Party.

ARTICLE XIV

MISCELLANEOUS PROVISIONS

14. 1 Amendment. This Agreement may not be amended except in writing, signed by duly

authorized representatives of each of the Parties.

14.2 Entire Agreement. This Agreement constitutes the entire agreement between the Parties hereto with respect to the subject matter hereof. All prior written or oral understandings, offers or other communications of every kind pertaining to the subject matter hereof are hereby abrogated and withdrawn.

14.3 Governing Law, Language; This Agreement and the rights and obligations hereunder shall be interpreted, construed and governed by the laws of Pakistan. The language for the purpose of interpreting and administering this Agreement shall be English.

14.4 Notices. (a) Address and Addresses. Except as otherwise expressly provided in this Agreement, all notices or other communications to be given or made hereunder shall be in writing, shall be addressed for the attention of the persons indicated below and shall either be delivered personally or sent by reputable courier, registered or certified mail or by e mail and facsimile. The addresses for service of the Parties and their respective facsimile numbers, e mail addresses shall be:

If to the Company:

_____
_____
_____
Attn: _____
Telephone: _____
Facsimile: _____

If to Sui Northern Gas Pipeline Limited
21 Kashmir Road P.O. Box 56 Lahore 54000 Pakistan
Attn: Managing Director
Telephone: _____
Facsimile: _____

14.5 No Waiver.

(a) No waiver by either Party of any default or defaults by the other Party in the performance of any of the provisions of this Agreement:

(i) shall operate or be construed as a waiver of any other or further default

or defaults whether of a like or different character; or

(ii) shall be effective unless in writing duly executed by a duly authorized representative of such Party.

(b) Neither the failure by a Party to insist on any occasion upon the performance of any term, condition or provision of this Agreement nor any delay or other indulgence granted by one Party to the other shall act as a waiver of such breach or acceptance of any variation or the relinquishment of any such right or any other right hereunder.

14.6 Survival. Expiration or termination of this Agreement shall not relieve either Party of any obligation that by its nature should survive such expiration or termination, including promises of indemnity and confidentiality.

14.7 Assignment. No assignment or transfer (including the grant or creation of any security interest or lien) by a Party of this Agreement or such Party's rights or obligations hereunder shall be effective without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed.

14.8 Successors and Assigns. This Agreement shall be binding upon, and inure to the benefit of the Parties hereto and their respective successors and permitted assigns.

14.9 Confidentiality. (a) Confidential Materials. Each Party and its contractors, consultants, and agents shall hold in confidence all documents and other information, whether technical or commercial, supplied to it by or on behalf of the other Party. Neither Party nor any contractor, consultant, or agent of either Party, shall, except as required by law or appropriate regulatory authorities, publish or otherwise disclose any documents or information or use any documents or information for its own purposes other than as may be required to perform a Party's obligations under this Agreement. A Party seeking confidential treatment for a document shall so indicate by marking the document "confidential."

(b) Exceptions. This Section 14.9 shall not apply to:

(i) information in the public domain otherwise than by breach of this Agreement;

(ii) information already lawfully in the possession of the receiving Party prior to receipt of the information from the other Party; and

(iii) information lawfully obtained from a third Person who is free to divulge the information to any other Person, which was not obtained under any obligation

(ii) information already lawfully in the possession of the receiving Party prior to receipt of the information from the other Party; and

(iii) information lawfully obtained from a third Person who is free to divulge the information to any other Person, which was not obtained under any obligation of confidentiality to such third Person.

14.10 Counterparts. This Agreement may be executed in two or more counter parts, all of which shall be considered one and the same Agreement and each of, which shall be deemed as original.

IN WITNESS WHEREOF, the Parties have entered into this Agreement as of the date first above written.

SUI NORTHERN GAS PIPELINES LIMITED

By: _____

Title: Managing Director

PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

By: Ali Muazzam Syed

Title: Chief Executive Officer-PIEM

Punjab Industrial Estates Development and Management Co. (Govt. of Pakistan) PIEDMC CEO

Witness: _____

Name: _____

CNIC: _____

Witness: _____

Name: _____

CNIC: _____

List of Schedules

A – Gas Allocation Letter
B – Delivery Point
C – Format of Security
D – Standards, Methods, Procedures etc., for measuring and recording Gas

G
319

SUBJECT: **Submission of Petition before OGRA for Grant of Gas Distribution and Sales License for Quaid-e-Azam Business Park, M-2, Motorway, District Sheikhupura**

(Details of Rule No. 4 and Sub Rule 'h')

PIEDMC has resources for carrying out technical, admin and financial expertise as under:

- Engineering Department headed by the General Manager (Technical) having rich experience in technical side.
- Finance Department headed by CFO having rich experience in finance and accounts.
- Admin and HR Department headed by the General Manager (Admin & HR) having rich experience in administrative and HR matters.
- Customer Service Department headed by the General Manager (Business Development) having rich experience in marketing field.
- IT Department, headed by the Sr. Manger (IT) having rich experience in IT field.

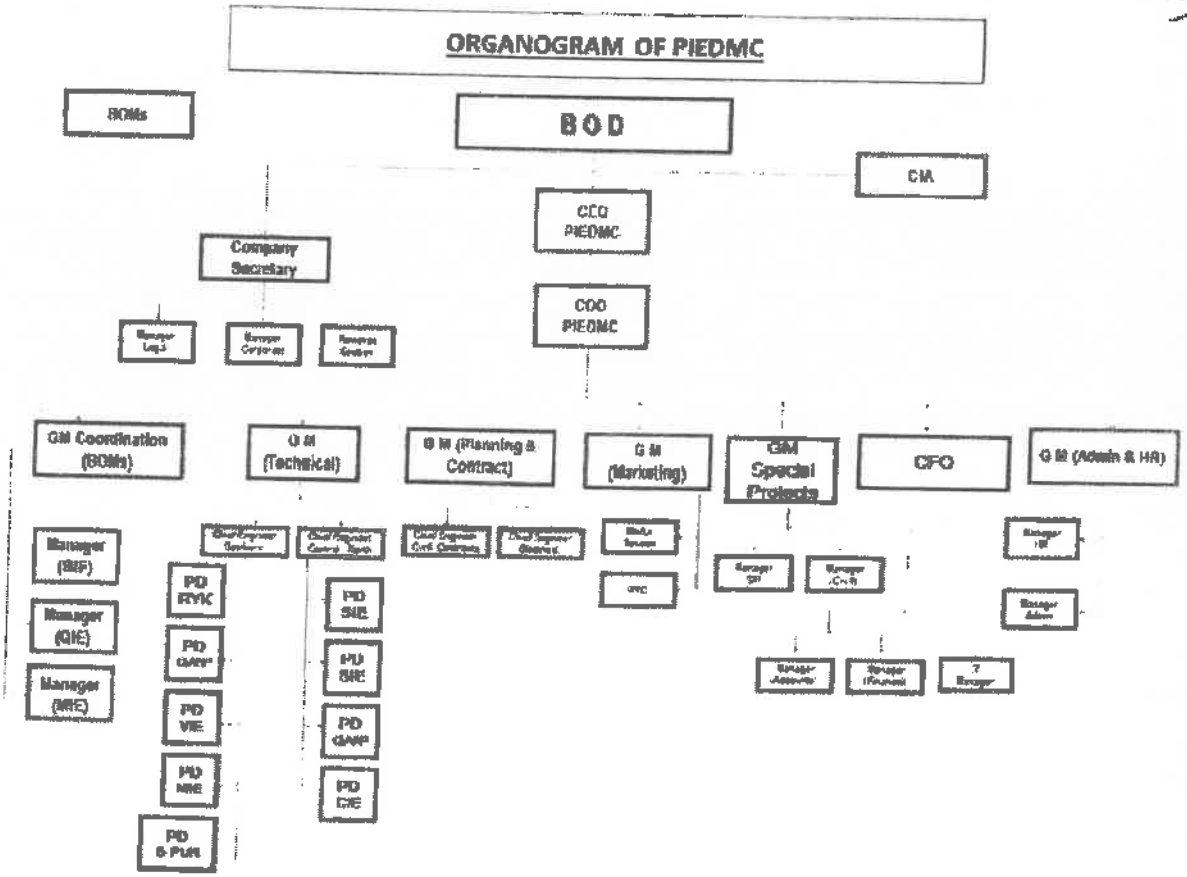
PIEDMC established Project Director Offices in all developing estates, fully equipped by technical and administrative manpower. Similarly, at QBAP, complete team including Project Director-QABP, Material Engineer, Site Engineers, Quantity Surveyor (QS), Land Surveyor, etc. are available at QABP site. Further, Nespak resident supervision team is also at site including Chief Resident Engineer, Resident Engineer, Inspectors, Material Engineers, QS etc. are available at site.

Further, PIEDMC engaged SNGPL as EPC contractor and paid Rs. 686 million to SNGPL and completed external transmission line up to zero point of QABP. (Agreement with SNGPL and related consent letters are attached for reference). PIEDMC also engaged SNGPL for design and laying of internal gas distribution network at QABP and paid Rs. 425 million to SNGPL. (SNGPL system design report along with letter is attached for ready reference)

320 C

Annex - K

ORGANOGRAM OF PIEDMC



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Non-Judicial

Rs 1,200/-

escription : AGREEMENT OR MEMORANDUM OF AN AGREEMENT - 5(ccc)
rst Party : Punjab Industrial Estates Development And Management Company [35202-8279686-3]
econd Party : Sui Norden Gas Pipe Line Limited [35200-0000000-0]
gent : Self [35202-8279686-3]
tamp Duty Paid by : Sui Norden Gas Pipe Line Limited [35200-0000000-0]
ssue Date : 30-Sep-2021, 11:28:47 AM
aid Through Challan : 20210DB53B857EAF
mount in Words : One Thousand Two Hundred Rupees Only

Please Write Below This Line

UNDERTAKING

I, Ali Muazzam Syed s/o Aslam Bahar Syed bearing CNIC No. 35202-8279686-3 as Chief Executive Officer of Punjab Industrial Estates Development and Management Company (PIEDMC), authorized by the Board of Directors, hereby undertake that:

a. PIEDMC has requested Sui Northern Gas Pipelines Limited (SNGPL) to lay the internal gas network on 100% cost sharing basis for supply of 65 MMCFD RLNG.
b. The total cost is Rs. 425 Million.
c. PIEDMC shall make payment of any difference from the above stated project cost due to any reason whatsoever including escalation of exchange rate (dollar fluctuation) and agreed all terms as specified at offered letter.

Punjab Industrial Estates Development and Management Co. (Govt. of Pakistan) PIEDMC CEO

Ali Muazzam Syed
Chief Executive Officer

Stamp

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PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY

PIEDMC/QAAP/SNGPL/1388
28th February 2018

Mr. Shahid Maqsud
General Manager (Sales),
Sui Northern Gas Pipelines Limited (SNGPL),
GAS House, 21 Kashmir Road,
Lahore.
Ph: 042-9201055

Subject: **PROVISION OF RLNG FOR ESTABLISHMENT OF QUAID-E-AZAM APPAREL PARK (QAAP) ON M-2 MOTORWAY, DISTRICT SHEIKHUPURA**

Ref: Your letter no. GMS: 938 (RLNG) QAAP, dated February 08, 2018 & letter no. GMS: 938 (RLNG) QAAP, dated November 10, 2017 (Annex. - A).

This is with reference to your letters cited above. As required, please find attached Pay Order no. 04112724 dated 27-02-2018, amounting to PKR. 686,000,000/- (Six Hundred Eighty Six Million Rupees Only) in the name of SNGPL.

It is requested to execute the construction of 16 inch dia x 17 kms pipeline for provision of RLNG for establishment of Quaid-e-Azam Apparel Park (QAAP) M2- Motorway, District Sheikhupura on top priority basis for earliest completion.

Please acknowledge the receipt of above mentioned Pay Order.

Encl: Original Pay Order no. 04112724, dated 27-02-2018, issued by BOP.

(Shahzad Sheikh)
Project Director - QAAP

Cc:

1. Chairman – PIEDMC
2. Chairman - QAAP Committee
3. Secretary IC&I Dept., Govt. of Punjab
4. CEO – PIEDMC
5. GM (P&D) - SNGPL

575

Account Payee Only

P.O No 04112724

Stationery/Ref No: 323

UNIVERSAL CHEQUE

002 Egerton Road Branch - Lahore

04112724

002BCIQ180580008

Pay to SUI NORTHERN GAS PIPELINES LIMITED (SNGPL) Or Order

Rupees Six Hundred Eighty Six Million Only

PKR 2 7 0 2 1 8

PKR *****686,000,000.00

Signatory PA/Attorney No

Signatory PA/Attorney No

Payable at any branch of BOP

Please do not write below this line

Not Over Rs. 686,000,000.00

Valid for 6 months from the date of issuance, thereafter requires revalidation

⑈04112724⑈083000 26:0000000000000000⑈020⑈

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY
A Company setup under Section 42 of the Companies Ordinance, 1984 (now Companies Act, 2017)

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PIEDMC/QABP/SNGPL/203
12th Oct. 2021

Mr. Farrukh Majeed
GM (P&D)-SNGPL
Gas House, 21- Kashmir Road
Lahore

SUBJECT: **INTERNAL GAS DISTRIBUTION NETWORK FOR ESTABLISHMENT OF QUAID-E-AZAM BUSINESS PARK-(SEZ) ON M-2, MOTORWAY, DISTRICT SHEIKHUPURA**

(Undertaking)

Ref: Your Letter No. P&D/02(15475), dated 27-08-2021

Dear Sir,

Please find enclosed original undertaking on Rs. 1200/- stamp paper as desired vide your above referred letter. It is requested to expedite the process for execution of priority internal network at QABP.

(Muhammad Nouman Rafique)
Chief Engineer-QABP

Encl./As above:
Cc: CEO-PIEDMC
GM (T)-PIEDMC
PD-QABP
Mr. Imran Yousaf, SGM (P&D)-SNGPL

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SUI NORTHERN GAS PIPELINES LIMITED

Ref. No. PRD/22(15475)

Date: 27.08.2021

Mr. Ali Muazzam Syed,
Chief Executive Officer,
Punjab Industrial Estates
Development and Management Company,
Commercial Area (North) Sundar Industrial Estate,
Sundar – Raiwind Road, Lahore.

Subject: **INTERNAL GAS DISTRIBUTION NETWORK FOR QUAID-E-AZAM BUSINESS PARK (QABP) ON M-2 MOTORWAY, SHEIKHUPURA**

Dear Sir,

This refers to your recent letter No. PIEDMC/QABP/1571 dated: 16.07.2021 whereby it is requested to revise demand note / offer letter considering the laying of only priority internal network based on 16", 12" and 10" dia pipeline having total length of 13.04 Km of proposed internal gas network.

Foregoing to the above, the scope of the work has been changed / revised based on your revised network requirement of laying only 16", 12" and 10" dia pipeline of proposed internal gas network. The revised total project cost estimate and detail of internal gas network is tabulated below. It is pertinent to mention here that GST / other taxes are not included in the project cost and shall be charged as per prevailing laws in addition to this cost if applicable.

Sr. No.	Description	Project Total Cost (Rs. Millions)
1.	Gas network details: a. 16" dia x 3.45 Km pipeline. b. 12" dia x 3.28 Km pipeline. c. 10" dia x 6.31Km pipeline. d. 02 No. CP stations. e. Additional Valves & fittings.	**425**

This cost estimate is valid upto 31st October, 2021. The ownership of internal network to be laid under this arrangement shall remain with the developer. Operation & Maintenance for this internal network will be under separate contract.

The cost of above stated gas infrastructure shall be laid on following terms and conditions:

1. The above stated cost estimates are based on prevailing unit rates estimation and difference or escalation (if any) in unit rates during the said validity period shall be payable by the developer upon completion of work.

SUI NORTHERN GAS PIPELINES LIMITED

2. Procurement of material i.e., line pipe, valves, fitting etc. is likely to take a period of approximately 18 to 24 months from the date of receipt of payment. However, any variation in material cost due to escalation / dollar fluctuation (if any) shall be borne by PIEDMC.

3. Culvert shall be constructed for all road crossings of internal gas network inside the QABP which is to be arranged by M/s PIEDMC.

4. SNGPL will design and lay the proposed internal gas distribution network of QABP as construction contractor.

5. Any additional expenses due to re-routing of internal gas network or any extension of gas network / work not covered under the above stated scope shall be borne by PIEDMC.

6. M/s PIEDMC shall submit undertaking on Rs. 1000/- stamp paper for payment of any difference from above stated project cost due to escalation / dollar fluctuation (if any) or any other reason whatsoever along with confirmation of term & conditions stipulated above.

If the above stated terms & conditions are acceptable to you, kindly send us payment of **Rs. 425 Million** in advance latest by 31.10.2021 in the form of Demand Draft or Pay Order in favor of SNGPL Head Office, 21-Kashmir Road, Lahore, along with signed undertaking as mentioned above, enabling us to take further necessary action.

Regards.

Yours faithfully,
Sui Northern Gas Pipelines Limited

(FARRUKH MAJEED)
General Manager (P&D)

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY
A Company setup under Section 42 of the Companies Ordinance, 1984 (now Companies Act, 2017)

PIEDMC/QABP/SNGPL/2044
01st Oct. 2021

Mr. Farrukh Majeed
GM (P&D)-SNGPL
Gas House, 21- Kashmir Road
Lahore

SUBJECT: **INTERNAL GAS DISTRIBUTION NETWORK FOR ESTABLISHMENT OF QUAID-E-AZAM BUSINESS PARK-(SEZ) ON M-2, MOTORWAY, DISTRICT SHEIKHUPURA.**

Ref: Your Letter No. P&D/02(15475), dated 27-08-2021

Dear Sir,

This is with reference to above letter regarding issuance of demand note for cited project. Please find enclosed Pay Order No. 04644581, amounting to Rs. 425,000,000/- in favour of SNGPL against the laying of internal gas network at QABP. It is requested to expedite the start of work at earliest.

Pay Order # 04644581
Received above amount of Rs. 425 Million

1/X/21

(Muhammad Nouman Rafique)
Chief Engineer-QABP

Encl./As above:
Cc: CEO-PIEDMC
CFO-PIEDMC
Mr. Imran Yousaf, SGM (P&D)-SNGPL

0/1/21, 11:35 AM

Account Payee Only

UNIVERSAL CHEQUE

232 SUNDAR INDUSTRIAL ESTATE BRANCH

THE BANK OF PUNJAB
Passion Reborn

U.C No. 04644581

Stationery Ref No. 2929CHQ2127A0001

4644581

0 | 1 | 1 | 0 | 2 | 1 | | |

SNGPL

Pay to _____ Or Order

Four Hundred and Twenty Five Million and paise zero only

Rupees _____

PKR **425,000,000.00**

Payable at any branch of BOP

Not Over Rs:PKR **425,000,000.00**

Valid for 6 months from the date of issuance, thereafter requires revalidation

Please do not write below this line.

Signatory
PA/Attorney No

Signatory
PA/Attorney No

⑈04644581⑈ ⑆08302321⑆ 0000000000000000⑈ 01⓪⑈

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329 G

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY

PIEDMC/QAAP/SNGPL/1388
28th February 2018

Mr. Shahid Maqsud
General Manager (Sales),
Sui Northern Gas Pipelines Limited (SNGPL),
GAS House, 21 Kashmir Road,
Lahore.
Ph: 042-9201055

Subject: **PROVISION OF RLNG FOR ESTABLISHMENT OF QUAID-E-AZAM APPAREL PARK (QAAP) ON M-2 MOTORWAY, DISTRICT SHEIKHUPURA**

Ref: Your letter no. GMS: 938 (RLNG) QAAP, dated February 08, 2018 & letter no. GMS: 938 (RLNG) QAAP, dated November 10, 2017 (Annex. - A).

This is with reference to your letters cited above. As required, please find attached Pay Order no. 04112724 dated 27-02-2018, amounting to PKR. 686,000,000/- (Six Hundred Eighty Six Million Rupees Only) in the name of SNGPL.

It is requested to execute the construction of 16 inch dia x 17 kms pipeline for provision of RLNG for establishment of Quaid-e-Azam Apparel Park (QAAP) M2- Motorway, District Sheikhupura on top priority basis for earliest completion.

Please acknowledge the receipt of above mentioned Pay Order.

Encl: Original Pay Order no. 04112724, dated 27-02-2018, issued by BOP.

(Shahzad Sheikh)
Project Director - QAAP

Cc:

1. Chairman – PIEDMC
2. Chairman - QAAP Committee
3. Secretary IC&I Dept., Govt. of Punjab
4. CEO – PIEDMC
5. GM (P&D) - SNGPL

575

330

Account Payee Only

UNIVERSAL CHEQUE

002 Egerton Road Branch - Lahore

Stationery/Ref No: 4112724

002BCIQ180580008

Pay to _____ Or Order

SUI NORTHERN GAS PIPELINES LIMITED (SNGPL)

PKR 2 7 0 2 1 8

Rupees _____

Six Hundred Eighty Six Million Only

PKR *****686,000,000.00

Signatory
PA/Attorney No

Signatory
PA/Attorney No

Payable at any branch of BOP

Please do not write below this line

Not Over Rs. *****686,000,000.00

Valid for 6 months from the date of issuance, thereafter requires revalidation

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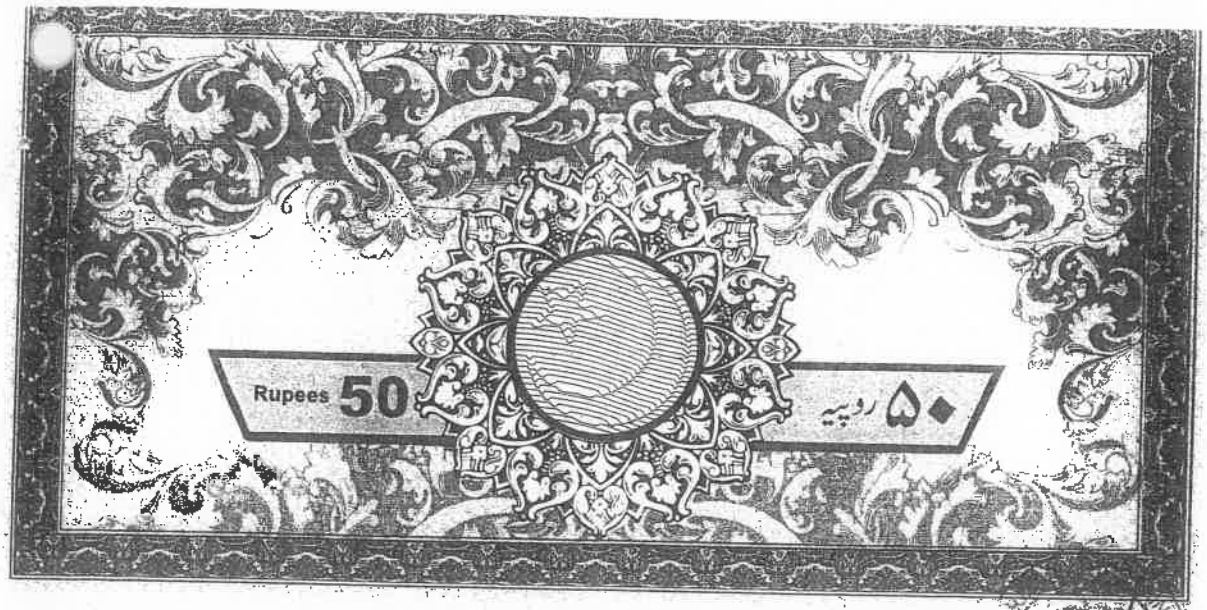


GAS PURCHASE AGREEMENT

BETWEEN

SUI NORTHERN GAS PIPELINES LIMITED

AND

M/S PUNJAB INDUSTRIAL ESTATES DEVELOPMENT & MANAGEMENT COMPANY

THIS AGREEMENT made on the ____ day of _____ 2018 at _____ between Sui Northern Gas Pipelines Limited, Head Office, 21- Kashmir Road, P.O Box 56, Lahore (hereinafter called "THE COMPANY") of the first part, which expression shall include their successors, administrators and assigns, and M/s. PUNJAB INDUSTRIAL ESTATES DEVELOPMENT AND MANAGEMENT COMPANY of the second part, expression shall include their successors, administrators and assigns.

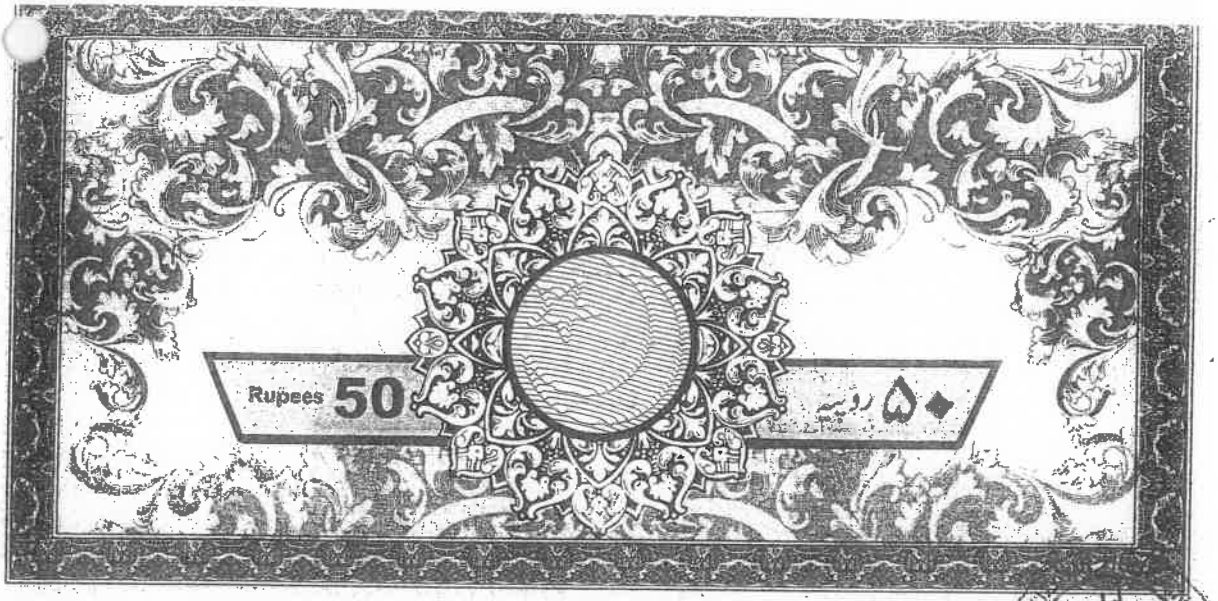
WHEREAS M/s. PUNJAB INDUSTRIAL ESTATES DEVELOPMENT AND MANAGEMENT COMPANY have applied to the Company to construct, operate and maintain a gas distribution pipeline for the needs of the above factory premises.

AND WHEREAS it has been agreed to by the Company to construct, operate and maintain a gas distribution pipe line for the said factory premises on terms and conditions as mentioned below:

It is, hereby agreed between the aforesaid parties as under:

1. That, THE COMPANY will construct, operate and maintain a gas distribution pipeline for the said factory premises on the terms and conditions mentioned below:
   i. The work shall involve the construction of under mentioned gas pipeline as per drawing already approved by the Company.
   ii. The work of laying pipe line for supply of gas to M/s PUNJAB INDUSTRIAL ESTATES DEVELOPMENT AND MANAGEMENT COMPANY shall be undertaken by the Company after procurement of the required material after receipt of full payment of Rs. 586.00 Million (Pak Rupees Five Hundred Eighty Six Million only).

CEO



2. THAT the above charges of Rs. 686.00 Million (Pak Rupees Six Hundred Eighty Six Million) covers the cost of line pipe and allied material, construction, and surface reinstatement work etc., wherever required.
3. THAT extra cost shall be charged by the Company for any additions / alterations in the layout plan on which the above estimate has been based.
4. Proprietary rights of the gas pipe line / allied material and its maintenance shall rest with the Company, who shall have the right to supply gas through this system, at its own cost and without any compensation to M/s. PUNJAB INDUSTRIAL ESTATES DEVELOPMENT AND MANAGEMENT COMPANY to any other consumer(s) and to the adjoining localities, including any extension(s) of the system that may be necessary for this purpose.
5. THAT if any dispute arises out of this agreement between the parties, it shall be referred to the Secretary, Ministry of Petroleum & Natural Resources, Government of Pakistan, Islamabad for the decision, who shall act as sole arbitrator and give award after hearing the parties. The award shall be binding on both parties.

In witness whereof the said parties hereon to set their hands and seal the date and year first above mentioned.

FOR AND ON BEHALF OF CONSUMER "PUNJAB INDUSTRIAL ESTATES DEVELOPMENT AND MANAGEMENT COMPANY (PIEDMC)"

Name: Shairyar Salim

CNIC #: 352013-5032

Signature:

FOR AND ON BEHALF OF SUI NORTHERN GAS PIPELINES LIMITED (SNGPL)

Name: SHAKIL AHMAD

CNIC #: 36302-0434495-5

Signature:

Mgr(T) Qstl

ATTESTED

WITNESSES

1). SHAHZAD A. SHEIKH

2). NOUMAN RAFIQUE
NOUMAN

Mgr (T) - Retd

WITNESSES

1). M. Farooq Ashraf

2). Naveed Iqbal

Executive Summary

The Government of Punjab has established Punjab Industrial Estates Development and Management Company (PIEDMC) to achieve orderly, planned and rapid industrialization in Punjab by developing new industrial estates and managing the existing industrial estates in a dynamic and innovative manner with a view to provide turnkey solutions to the prospective entrepreneurs thereby generating economic activity and creating mass employment opportunities. The PIEDMC intends to establish "Quaid-e-Azam Apparel Park" (QAAP) on 1,565 acres area in District Sheikhupura at 38 Km of Lahore-Islamabad Motorway (M-2). The main objective of the proposed project is to develop an integrated industrial Apparel Park with the objective to create a platform for apparel industries, create mass employment opportunities, skill development of local population and to best utilize the resources to boost the country's economy.

This Environmental Impact Assessment (EIA) Study has been conducted for Quaid-e-Azam Apparel Park, Sheikhupura, as a mandatory requirement of Punjab Environmental Protection Act (PEPA), 2012 as an amendment of Pakistan Environmental Protection Act, 1997. Section 12 (1) of this Act states that:

"No proponent of a Project shall commence construction or operation unless he has filed with the Provincial Agency an initial environmental examination or, where the Project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof."

National Engineering Services Pakistan (Pvt.) Ltd. (NESPAK) is providing services to carry out detailed Environmental Assessment (EIA) of the propose Apparel Park.

The establishment of QAAP would not only provide a collective platform for the segregated garment industry but would also become a training and development hub for the local population. The proper zoning in the Garment Industry would lead to best utilization of resources where similar units can be collectively located to increase output. Automation in garment units such as cutting, sewing/stitching and packaging

and published materials to establish baseline profile for physical, biological and socio-economic environmental conditions.

- The impacts of the project on the physical, biological and socio-economic environment prevalent in the project area were visualized at the design, construction and operational phases.
- The adequate mitigation measures and implementation mechanisms were proposed so that the proponent could incorporate them beforehand in the design phase.

The Government of Pakistan (GOP) has promulgated laws/acts, regulations and standards for the protection, conservation, rehabilitation and improvement of the environment. PEPA-2012 is the apex law for mandatory EIA before project construction. Other relevant laws have also been discussed briefly in the report. In addition, National Environmental Quality Standards (NEQS) are provided for the noise, ambient air, municipal/industrial wastewater discharges and drinking water quality.

Construction of the proposed Apparel Park will help to utilize the potential of physical and manpower resources for the local apparel industry and gain maximum benefits. In addition to increase in Pakistani exports, a regional uplift in the economy, livelihood and lifestyles is anticipated due to creation of a large number of direct and indirect job opportunities. There will be control over environmental performance of the individual industrial units through an independent administration and byelaws and policies may be enforced to support motives such as treatment of industrial effluents, waste minimization and reuse, safe disposal of hazardous wastes, control over gaseous emissions and workplace safety.

The project components include development of the basic infrastructure for the Apparel Park including roads, electrical works, water supply system, sewerage system, natural gas supply etc. As large workforce will be needed, therefore, separate residential area/hostels will also be provided. Project will also include export processing zones (EPZs), truck parking areas, commercial and public buildings etc.

The existing environment in and around the project area has been studied with respect to the physical, biological and socio-economic conditions.

The baseline conditions were studied with respect to physical, biological and socio-economic environment. The physical environment includes topography, geology and soils, climate, hydrology and drainage, land use, surface water quality, ground water quality, ambient air quality, noise levels, and seismicity.

The climate of the project area is hot in summer and moderate in winter. The coldest month is December and the hottest is June. According to the Seismic Zoning Map (prepared by Pakistan Meteorological Department), the proposed Project falls in Zone-2 A which corresponds to peak horizontal ground acceleration of 0.08 to 0.16g (where 'g' is the acceleration due to gravity).

Preliminary findings of air quality revealed that the conventional pollutants like CO, SO_X and NO_X are well within the prescribe limits of NEQS and WHO guidelines. Similarly, the noise levels and groundwater quality in the ambient air also well within the permissible limits of relevant NEQS. The wastewater analysis of the surface water bodies indicates a low to moderate level pollution.

The biological environment of the Project Area includes flora and fauna. The floral species found in the Project Area include trees, bushes, shrubs, herbs, forbs, agricultural crops, vegetables, fruit orchards, ornamental plants, and other rank growths. The faunal species noticed/reported in the Project Area include mammals (dogs, cats etc.), mongoose, squirrel, amphibians (frog, toad, turtle etc.), reptiles (small and medium sized lizards, snakes etc.), house sparrows, house crow, etc. However, no endangered species, agriculture and horticulture are found in the Project Area.

The aspects covered under socio-economic environment of the Project Area include population and communities, population size, growth and distribution, mother tongue, occupations, health care facilities, educational facilities, physical and cultural heritage (shrine, mosque, graveyard), recreational sites, respondent's age group, marital status, family system etc.

The proposed project will have both positive and negative impacts during the construction and operational phases, for which proper mitigation measures are necessary. During the field survey, significant efforts were made to identify the main social, cultural and environmental issues related to the project. Various government departments and agencies were also contacted for obtaining salient information along with area resident/ stakeholders. Most of the perceived impacts are during construction phase. Following is the list of main concerns identified in the study:

- Land Acquisition and Resettlement
- Disturbance to the public movement during construction;
- Excavation and Vibrations due to construction machinery may affect the nearby structures during construction.
- Air and noise pollution due to the operating of construction machinery during construction phase of the project;
- Solid waste generation during construction and operational phase;
- Accidental leaks/spills of hazardous chemicals from construction activities and machinery;
- Health and safety issues of the workers;
- Contamination of water body by construction activities; and
- Relocation of public utilities.

On the positive side, the proposed project is expected to improve economic condition of the country. The project will generate new opportunities for skilled/unskilled manpower. Recommended mitigation measures to contain potential adverse impacts are described in the Environmental Management and Monitoring Plan (EMMP) shall be strictly enforced during the implementation of the proposed Project.

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SECTION - 1
INTRODUCTION

1.1 GENERAL

The Government of Punjab has established Punjab Industrial Estates Development and Management Company (PIEDMC) to achieve orderly, planned and rapid industrialization in Punjab by developing new industrial estates and managing the existing industrial estates in a dynamic and innovative manner with a view to provide turnkey solutions to the prospective entrepreneurs thereby generating economic activity and creating mass employment opportunities. The PIEDMC intends to establish "Quaid-e-Azam Apparel Park" on 1,565 acres area in District Sheikhupura at 38 Km of Lahore-Islamabad Motorway (M-2). The main objective of the proposed project is to develop an integrated industrial Apparel Park with the objective to create a platform for apparel industries, create mass employment opportunities, skill development of local population and to best utilize the resources to boost the country's economy.

National Engineering Services Pakistan (Pvt.) Ltd. (NESPAK) provide services to carry out detailed Environmental Assessment (EIA) of the propose Apparel Park.

1.2 BACKGROUND AND NEED OF PROJECT

1.2.1 History of Garment Sector in Pakistan

The readymade garment industry started in 1970's in Pakistan. With the passage of time and industrialization, this industry expanded very rapidly. The majority of the units making cotton fashion garments are medium and small-size in terms of machines, workers and output, with a few notable exceptions scattered throughout Pakistan.

The Pakistani manufacturers, struggling with energy shortages and law and order situation, could only uphold their existing market share. Besides adverse business conditions, Pakistan's concentration in cotton apparel market was another factor that hindered in increasing the market share. Due to sharp increase in cotton prices, buyers were more attracted towards non-cotton apparel (including man-made fiber, wool, etc.). However, Pakistan's exports of non-cotton apparel are almost minimal due to a protected synthetic fiber market over the years and inability of textile manufacturers to equip for synthetic textile processing.

The home textile market in world remained under pressure in general due to weaker than expected recovery in USA and European Union (EU) economies and surge in prices, the

impact on Pakistan's export was more pronounced. Production of garments by units depends on export orders directly or indirectly. These orders have somewhat risen in terms of value, but they have fluctuated widely in terms of quantity. Generally export earnings from garments have increased tremendously. Exports increased from 28 million dozens of various types of readymade garments worth US $ 1.30 billion in 2009-10 to 36 million dozens worth US$ 1.77 billion in 2010-11, thus showing an increase of 38% in terms of value.

Pakistan exports garments to a number of countries. Major buyers of readymade garments during 2010-11 were USA, Germany, UK, Spain, France, Italy and Netherlands.

1.2.2 Need of the Project

Pakistan on December 12, 2013 succeeded to secure the long awaited duty-free access to the European markets for four years, by winning Generalized Schemes of Preferences (GSP) Plus status with an impressive count of votes. The GSP Plus status will allow almost 20 percent of Pakistani exports to enter the European Market at zero tariff and 70 percent at preferential rates for four years till 2017. Under the scheme, Pakistan can export most of its Textile and Garment products to 27 European nations at concessionary duty rates or absolutely duty free, making Pakistani products cheaper for European importers.

As a result of the GSP plus status, the Textile and Garment Industry alone is expected to earn profits up to one trillion rupees per year. Garment exports have been declining in Pakistan, as manufacturers and exporters were finding it hard to compete with Sri Lanka and Bangladesh who already had duty-free access to European markets. This special status will provide to Pakistan duty free or preferential duty rate access on 3,500 products to European markets where currently Pakistani Garment exports to the European draw an 11% duty. Pakistan can now export textile goods to European member countries till 2017 without having to pay duties, adding that it would increase exports worth $1 billion, and employment opportunities to about one million people of the country.

An apparel park is an area appropriated and planned estate for the purpose of industrial development. An apparel park would be a specialty industrial area wherein different garment units such as cutting, bleaching, swing/stitching and packaging involved in garment industry would work collectively to minimize wastages and increase production.

The establishment of such an apparel park would not only provide a collective platform for the segregated garment industry but would also become a training and development hub for the local population. The proper zoning in the Garment Industry would lead to best utilization of resources where similar units can be collectively located to increase output. Automation in garment units such as cutting, sewing/stitching and packaging will not only enhance production but also minimize rejection due to noncompliance with the approved standards. The export potential can be enhanced due to higher quality and enhanced production.

1.3 PROJECT OBJECTIVES

The main objectives of this project are:

- To make available structured platform to set up apparel park.
- To provide state-of-the-art infrastructure facilities including roads, electrical networks, water supply system, wastewater collection and drainage system including Combined Effluent Treatment Plant.
- To ensure availability of skilled manpower.
- To capitalize strength of each region.
- To secure comparative environment by providing green areas, parks.
- To provide Social compliance facilities including schools/ hospitals and residential facilities.
- To comply with health safety and environmental regulations.

1.4 SCOPE OF STUDY

The scope of the EIA Study aims at collecting and scrutinizing of data related to physical, biological and socio-economic environment of the project area and to prepare the baseline environmental profile. It also aims at the identification, prediction and evaluation of the possible environmental impacts of the proposed project on its immediate surroundings on both short and long-term basis. Based on the nature and levels of those impacts, appropriate mitigation measures have been incorporated in this EIA Report.

1.5 STUDY OBJECTIVES

The overall objective of EIA is to assess the environmental impacts arising from the project. The specific objectives of the EIA Study for construction of Quaid-e-Azam Apparel Park, Sheikhupura include the following:

- Collection and scrutinization of data related to physical, biological and socio-

economic environments of the project area and to prepare baseline environmental profile;

- Identification, prediction and evaluation of environmental impacts of the proposed Project;
- Implementation plan of mitigation measures to minimize the adverse impacts; and
- Preparation of an Environmental Management and Monitoring Plan.

1.6 NEED FOR EIA STUDY OF THE PROPOSED PROJECT

EIA is mandatory according to the Punjab Environmental Protection Act (PEPA-2012) amended. Section 12 (1) of the PEPA-2012 (see **Annexure-I**) which states that:

"No proponent of a project shall commence construction or operation unless he has filed with the Provincial Agency an initial environmental examination or, where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Provincial Agency approval in respect thereof."

According to the Pakistan Environmental Protection Agency (Review of IEE and EIA) Regulations 2000, the proposed project falls under category J (other projects) of Schedule II, which states that any other project likely to cause an adverse environmental impact, require EIA before commencement of construction.

1.7 THE PROPONENT AND CONSULTANT

The proponent of the project is Punjab Industrial Estates Development and Management Company (PIEDMC) while the Consultant is NESPAK; the details are given as under:

a) Proponent Contact Address

Punjab Industrial Estates Development and Management Company (PIEDMC)
Head Office PIEDMC, Commercial Area (North) Sundar Industrial Estate,
Sundar-Raiwind Road, Lahore
Tel: 042-35297203-6

b) Consultant Contact Address

National Engineering Services Pakistan Private Limited (NESPAK)
EPHE Division, NESPAK House
1-C, Block – N, Model Town Extension, Lahore
Tel: 042-99090000

1.8 STUDY TEAM

A multidisciplinary team was formulated to conduct the study. The team comprises the following professionals.

Muhammad Zubair	:	Project Advisor/ Quality Expert
Kashif Bashir	:	Group Leader
Makhdum Ali	:	Ecologist
Saeed Hussain	:	Senior Sociologist
Syeda Mudassara Gillani	:	Senior Environmentalist
Zahida Manzoor	:	Sociologist
Shehnila Hanif	:	Environmentalist
Komal Hanif Goraya	:	Environmentalist
Ali Mehtab	:	Environmentalist
Shahid Anwar Bajwa	:	Social Surveyor

1.9 STUDY APPROACH & METHODOLOGY

1.9.1 Study Approach

The study has been conducted in accordance with Environmental Protection Agency (EPA), Government of Pakistan (GOP) Guidelines, 2000. The study is based on both primary and secondary data and information. Discussions were held with stakeholders including government officials, community representatives and general public. The main purpose of this approach was to obtain a fair impression on the people's perceptions of the project and its environmental impacts.

1.9.2 Methodology

The following methodology was adopted for carrying out the EIA study of the proposed Project:

a) Orientation

Meetings and discussions were held among the members of the EIA Consulting Team. This activity was aimed at achieving a common ground of understanding of various issues of the study.

b) Planning for Data Collection

Subsequent to the concept clarification and understanding obtained in the preceding step, a detailed data acquisition plan was developed for the internal use of the EIA Consulting Team. The plan included identification of specific data requirements and their sources; determined time schedules and responsibilities for their collection; and indicated the logistics and other supporting needs for the execution of the data acquisition plan.

c) Data Collection

In this step, primary and secondary data were collected through field observations, environmental monitoring in the field, concerned departments and published materials to establish baseline profile for physical, biological and socio-economic environmental conditions.

- Site Reconnaissance
- Analysis of Maps and Plans
- Literature Review
- Desk Research
- Public Consultations
- Field Observations & Studies
- Laboratory Analyses

Physical Environment

Information was gathered on the existing physical environment, particularly as related to geology, topography, soils, hydrology and drainage, water quality, air quality and noise.

Geology, Topography, Soils

A review was conducted of relevant literature on the geology, topography and soils in the Project Area.

Hydrology and Drainage

A literature review was conducted to identify the components of the hydrological cycle that are likely to impact on the project and the possible impacts that the project could have on the hydrologic regime. Field assessments included a determination and verification of all the existing water bodies, assessment of drainage issues, interviews with local community members, and round-table discussions with stakeholders.

Air Quality

Ambient air quality measurements are essential to provide a description of the existing conditions, to provide a baseline against which changes can be measured and to assist in the determination of potential impacts of the proposed construction on air quality conditions. Ambient air quality was continuously monitored for Carbon Monoxide (CO), Sulphur Dioxide (SO_2), Nitrogen Dioxide (NO_2), Particulate Matter (PM_{10}), for 24 hours. CO was analyzed by Test 317-3 CO Analyzer, While SO_2 and NO_2 were analyzed

according to Standard Operating Procedures (SOP) based on recognized method ISO 6767 and method ISO 6768 of USEPA respectively.

Noise

Noise level readings were monitored at three sampling points for 24 hours with the interval of one second and hourly average data was reported. Sound level measurements were taken with the help of Digital sound meter (TES 1350A), a calibrated instrument.

Water Quality

The objective of the water quality monitoring was to determine water quality situation before construction. It has been observed that the surface water and air quality are the most important environmental variables to be affected in the construction project. The extent of surface water and groundwater contamination in the project area was assessed based on the test results of chemical and microbiological parameters for surface and groundwater. Laboratory analyses were performed in SUPARCO laboratory according to SOP based on recognized methods of ASTM, USEPA, or APHA methods. **Table 1.1** shows the standard analytical methods and instrument used for analysis of water quality parameters.

Table 1.1: Standard Analytical Methods for Analysis of Water Quality Parameters

Sr. No.	Parameter	Standard Method	Instrument Used
1	Temperature	APHA 2550 B	Digital Thermometer, USA
2	pH	APHA D1293-95	Hach pH meter,USA
3	Color	APHA 8025	Hach Spectrometer DR/2000,USA
4	COD	APHA 5220 C (1992)	Hach COD Reactor, USA
5	TSS	APHA 2540 D	Hach Conductivity meter, USA
6	Oil & Grease	APHA 5520 (1995)	Hach Conductivity meter, USA
7	Chloride	USEPA 1665	Hach Spectrometer DR/2000
8	Fluoride	USEPA 346.1	Hach Spectrometer DR/2000
9	Sulphate	APHA 4500 $SO4^{-2}$ E (1995)	Hach Spectrometer DR/2000
10	Sulfide	USEPA 376.2	Hach Spectrometer DR/2000
11	Ammonia	Hach Method 8038	Hach Spectrometer DR/2000
12	Cadmium	USEPA 3500 cd-D	Hach Spectrometer DR/2000
13	Chromium	USEPA 3500 cR-D	Hach Spectrometer DR/2000

Sr. No.	Parameter	Standard Method	Instrument Used
14	Copper	USEPA 3390 e	Hach Spectrometer DR/2000
15	Lead	Atomic Absorption	GBC-Atomic Absorption,Australia
16	Nickel	USEPA 3500 Ni-D	Hach Spectrometer DR/2000
17	Silver	USEPA 3500 Ni-D	Hach Spectrometer DR/2000
18	Zinc	----------	GBC-Atomic Absorption,Australia
19	Arsenic	USEPA 3500 As	Hach Spectrometer DR/2000
20	Barium	----------	Hach Spectrometer DR/2000
21	Iron	APHA 3500 Fe	Hach Spectrometer DR/2000, USA
22	Manganese	USEPA 34193	Hach Spectrometer DR/2000, USA
23	Potassium	----------	Microprocessor Flame photometer 1381, ESICO
24	Sodium	----------	Microprocessor Flame photometer 1381
25	Calcium	USEPA 130.2	Microprocessor Flame photometer 1381
26	Magnesium	USEPA 130.2	Hach Spectrometer DR/2000
27	Turbidity	USEPA 275	Hach Spectrometer DR/2000

Biological Environment

The status of the flora and fauna of the study area were determined by ecological survey, a review of literature relevant to the area, and an assessment of terrestrial environments.

Flora

The vegetative communities were identified and classified into community types. Identification was carried out of dominant tree species, assessment of stage of growth (mature or sapling) and assessment of canopy cover.

Fauna

Information on fauna was gathered from existing literature on reported species as well as observations in the field.

Socio-Cultural Environment

The consultants utilized a combination of desk research, field investigations, census data, structured interviews, maps, reports to generate the data required for description of the existing social environment and assessment of the potential impact of the construction of the proposed project. Data was gathered on the following aspects of the social environment:

- Land use and Municipal Status
- Traffic, Transportation and Access Roads
- Demographics
- Livelihoods
- Poverty
- Education
- Health
- Social Setup
- Community Facilities
- Solid Waste Management
- Proposed Developments
- Recreational Activities
- Archaeological and Cultural Heritage

d) Identification and Evaluation of Environmental Impacts

The impacts of the project on the physical, biological and socio-economic environment prevalent in the Project Area were visualized at the design, construction and operational phases.

e) Mitigation Measures and Implementation Arrangements

The adequate mitigation measures and implementation mechanisms were proposed so that the Proponent could incorporate them beforehand in the design phase.

1.7 STRUCTURE OF THE REPORT

Section 1 **"Introduction"** briefly presents the project background, objectives, methodology and need of the EIA study.

Section 2 **"Policy, Legal and Administrative Framework"** comprises policy guidelines, statutory obligations and roles of institutions concerning EIA study of the proposed Project.

Section 3 **"Description of the Project"** furnishes information about the location of the proposed Project, cost and size of the project, its major components and alternatives considered for the proposed project to select at the preferred alternative for detailed environmental assessment.

Section 4 **"Environmental Baseline Profile"** establishes baseline conditions for physical, biological and socio-economic conditions prevalent in the project area.

Section 5 **"Public Consultation"** identifies the main stakeholders and their concerns raised through scoping sessions, and deals with the measures to mitigate the social impacts.

Section 6 **"Anticipated Environmental Impacts and Mitigation Measures"** identifies, predicts and evaluates impacts of the project activities during the construction and operation stages and deals with the measures (including mitigation cost) proposed to mitigate potential environmental impacts of the proposed project.

Section 7 **"Environmental Management and Monitoring Plan"** outlines institutional arrangements for the implementation of the proposed mitigation measures, training needs of the staff for implementation of the mitigation measures, monitoring requirements, monitoring cost etc.

SECTION – 2
POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.0 General

This section deals with the relevant policies, legal and administrative frameworks instituted by the Government of Pakistan for the protection of environment. All the relevant provisions of these policies and legal frameworks have been duly considered in this EIA study. In addition to this, the roles and responsibilities of the proponent and other key players such as EPA, Punjab has also been discussed in this section.

2.1 Policy Framework

The Ministry of Environment is the responsible authority for policy making on environmental protection in Pakistan.

2.1.1 National Environment Policy, 2005

In March 2005, Government of Pakistan (GOP) launched its National Environmental Policy, which provides an overarching framework for addressing the environmental issues. Section 5 of the policy commits for integration of environment into development planning as instrument for achieving the objectives of National Environmental Policy. It further states in clause (b) of subsection 5.1 that EIA related provisions of Environmental Protection Act, 1997, will be diligently enforced for all development projects. It also provides broad guidelines to the federal government, provincial governments, federally administered territories and local governments to address their environmental concerns and to ensure effective management of their environmental resources.

2.2 Legal Framework

The Government of Pakistan (GOP) has promulgated laws/acts, regulations and standards for the protection, conservation, rehabilitation and improvement of the environment. In addition to this, they have also developed environmental assessment procedures governing development projects. Following are the excerpts of these laws and procedures relevant to the proposed project.

2.2.1 Punjab Environmental Protection Act, 2012 (Amended)

The Act was originally enacted on December 06, 1997 by the name Pakistan Environmental Protection Act (PEPA). It provides the framework for implementation of the Pakistan National Conservation Strategy (PNCS), 1992 establishment of provincial sustainable development funds, protection and conservation of species, conservation of

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renewable resources, and establishment of Environmental Tribunals, appointment of Environmental Magistrates, Initial Environmental Examination (IEE), and Environmental Impact Assessment (EIA). In year 2012 by formulation of Punjab Environmental Protection Agency, this law was amended by the name of Punjab Environmental Protection Act. Section 12 of the Act stresses the need to carry out EIA/IEE study prior to construction or operation of a project. A copy of the PEPA, 2012 (Amended) is attached as Annexure-I.

Pakistan Environmental Protection Agency (Review of IEE/EIA) Regulations, 2000
These regulations provide criteria for projects requiring IEE and EIA. They also briefly describe the preparation and review of environmental reports. A copy of these regulations can be found in Annexure-II.

2.2.2 Pakistan Environmental Assessment Procedures, 1997

Pakistan Environmental Assessment Procedures (1997) is, in fact, a package, which contains the following, sets of information relevant to the proposed project:

a) Policy and Procedures for Filing, Review and Approval of Environmental Assessment Reports

It describes environmental policy and administrative procedures to be followed for filing of environmental examination/assessment reports by the proponents and their review and approval by the concerned environmental protection agencies.

b) Guidelines for the Preparation and Review of Environmental Reports

These guidelines are developed to facilitate both the proponents and decision makers to prepare reports (inclusive of all the information contained therein) and carry out their review so as to take informed decisions.

c) National Environmental Quality Standards (NEQS), 2000

Pakistan Environmental Protection Council (PEPC) first approved these standards in 1993. They were later revised in year 1995, 2000 and 2010. They furnish information on the permissible limits for discharges of municipal and industrial effluent parameters and industrial gaseous emissions in order to control environmental pollution. Copies of the final version of the standards are attached as Annexure-III.

d) Other Relevant Laws

i) Punjab Local Government Ordinance, 2001

Environmental protection is devolved under Punjab Local Government Ordinance (LGO), 2001. Despite any specific provisions, every local government may perform functions conferred by or under the Punjab LGO, 2001 and in performance of such functions may exercise such powers, which are necessary and appropriate. Until different provisions, rules, regulations or byelaws are made, the local governments may exercise such powers as are specified in the Sixth Schedule of Punjab LGO, 2001. Environmental protection is at serial 48 of the Sixth Schedule.

ii) Canal and Drainage Act, 1873

This Act entails provisions for the prevention of pollution of natural or man-made water bodies.

iii) Pakistan Penal Code, 1860

This defines the penalties for violations concerning pollution of air, water bodies and land.

iv) Factories Act, 1934

The clauses relevant to the proposed project are those that concern the health, safety and welfare of workers, disposal of solid waste and effluent and damage to public and private property. The Act also provides regulations for handling and disposing of toxic and hazardous materials. Given that the construction activity is classified as 'industry', these regulations will be applicable to the project contractors. In addition to this, the following will also be consulted:

- Employees' Cost of Living Relief and Allowances
- Workers' Children (Education Law)
- Companies Profit (Workers' Participation) Law
- Law of Essential Services
- Industrial Relations Law
- Workers' Welfare Law
- Employees' Old Age Benefit Law
- The Shop Act
- The Law of Social Security
- The Law of Payment of Wages and Minimum Wages

- The Law of Industrial and Commercial Establishments

v) The Land Acquisition Act, 1894 (including later amendments)

Although quite old, this Act laid out the legal basis for any property affected by a Project and for compensating the affected owners of the land.

vi) Antiquities Act, 1975

The Act administered by the Provincial Government(s), is aimed at the protection of Pakistan's cultural heritage. The Act defines 'antiquities' as ancient products of human activity, historical sites, or sites of anthropological or cultural interest, national monuments etc. The Act was formulated to protect those antiquities from destruction, theft, negligence, unlawful excavation, trade and export. It prohibits new construction in the proximity of a protected antiquity and excavation in any area that may contain articles of archeological significance. Under the Act, the Project proponents must ensure that no activity is undertaken within 61meters (200 ft) of a protected antiquity, and report to the Department of Archeology, Government of Pakistan, if any archeological discovery is made during the course of the Project.

vii) Protection of Trees and Bushwood Act, 1949

This Act prohibits cutting or chopping of trees and bushwood without permission of the Forest Department.

viii) The Punjab Plantation and Maintenance of Trees Act, 1974

This Act defines rules and regulations for plantation and maintenance of trees in the Province of the Punjab.

ix) Pakistan Penal Code, 1960

This defines the penalties for violations concerning pollution of air, water bodies and land.

2.2.4 Air Quality Standards

In pursuance of the statutory requirement under clause (e) of sub-section (1) of section (6) of the Pakistan Environmental Protection Act, 1997 the Pakistan Environmental Protection Agency, Ministry of Environment has published the Air quality standards. USEPA standards along with National Environmental Quality Standards for Ambient Air may be used for bench marking purpose (Table 2.1).

Table 2.1: Air Quality Standards

#	Pollutant	NEQS		USEPA	
		Time-Weighted average	Concentration standard	Time weighted average	Concentration standard
1	SO_2	Annual average	80 µg/m^3	Annual arithmetic mean	80 µg/m^3, (0.030 ppm)
		24 hours	120 µg/m^3	24-hours average	365 µg/m^3, 0.50 ppm
2	NO	Annual average	40 µg/m^3	-	-
		24 hours	40 µg/m^3	-	-
3	NO_2	Annual average	40 µg/m^3	Annual arithmetic mean	100 µg/m^3, (0.053 ppm)
		24 hours	80 µg/m^3		
4	O_3	1 hour	130 µg/m^3		235 µg/m^3, (0.12 ppm)
		-	-	8-hours average	157 µg/m^3, (0.08 ppm)
5	Suspended Particulate Matters (SPM)	Annual average	360 µg/m^3	-	-
		24 hours	500 µg/m^3	-	-
6	PM_{10}	Annual average	120 µg/m^3	Annual arithmetic mean	50 µg/m^3
		24 hours	150 µg/m^3	24-hours average	150 µg/m^3
7	$PM_{2.5}$	Annual average	15 µg/m^3	Annual arithmetic mean	15 µg/m^3
		24 hours	35 µg/m^3	24-hours average	65 µg/m^3
		1 hour	15 µg/m^3	-	-
8	Lead	Annual	1 µg/m^3	Quarterly	1.5 µg/m^3

#	Pollutant	NEQS		USEPA	
		Time-Weighted average	Concentration standard	Time weighted average	Concentration standard
		average		average	
		24 hours	1.5 µg/m^3		
9	CO	8 hours	5 mg/m^3	8-hours Average	10 mg/m^3, (9 ppm)
		1 hour	10 mg/m^3	1-hour average	40 mg/m^3, (35 ppm)

2.2.5 Noise Standards

NEQS, USEPA and World Bank Guidelines are being used as benchmark of Noise level of the project area (Table 2.2).

Table 2.2: Noise Standards

#	Category of Area	NEQS		WB Standard		USEPA Standards	
		Day Time	Night Time	Day Time	Night Time	Indoor	Outdoor
1	Residential Area	55	45	55	45	45	55
2	Commercial Area	65	55	70	70	70	70
3	Industrial Area	75	65	70	70	70	70
4	Silence Zone	50	45	-	-	-	-

2.2.6 Drinking Water Quality Standards

In pursuance of the statutory requirement under clause (e) of sub-section (1) of section (6) of the PEPA, 1997 the Pakistan Environmental Protection Agency, Ministry of Environment has published National Standards for Drinking Water Quality (NSDWQ). NSDWQ, WHO Drinking water quality guidelines and USEPA standards may be used for bench marking purpose and given in Table 2.3.

Table 2.3: Drinking Water Quality Standards

#	Parameters	Concentration Standards		
		NSDWQ (mg/l)	WHO (mg/l)	USEPA (mg/l)
Chemical Parameters				
1	Aluminium (Al)	≤ 0.2	0.2	0.05-0.02
2	Ammonium (NH3)	-	1.5	NS
3	Antimony (Sb)	≤ 0.005	0.005	0.006
4	Arsenic (As)	≤ 0.05	0.01	0.05
5	Barium (Ba)	0.7	0.7	2.0
6	Boron (B)	0.3	0.3	NS
7	Cadmium (Cd)	0.01	0.003	0.005
8	Chloride (Cl)	< 250	250	250
9	Chromium (Cr)	≤ 0.05	0.05	0.1
10	Copper (Cu)	2	1-2	1.0
11	Cyanide (CN)	≤ 0.05	0.07	0.2
12	Fluoride (F)	≤ 1.5	1.5	2.0-4.0
13	Iron (Fe)	-	0.3	0.3
14	Lead (Pb)	≤ 0.05	0.01	0.015
15	Manganese (Mn)	≤ 0.5	0.1-0.5	0.05
16	Mercury (Hg)	≤0.001	0.001	0.002
17	Molybdenum (Mo)	-	0.07	NS
18	Nickel (Ni)	≤ 0.02	0.02	0.1
19	Nitrate (NO3)	≤ 50	NS	10.0 as N
20	Nitrite (NO2)	≤ 3	NS	10.0 as N
21	Selenium (Se)	0.01	0.01	0.05
22	Silver (Ag)	-	NS	0.1
23	Sodium (Na)	-	200	20
24	Sulphate (So3)	-	250	250
25	Residual Chlorine	0.2-0.5	-	-
26	Zinc (Zn)	5.0	3.0	5.0
Physical Parameters				

#	Parameters	Concentration Standards		
		NSDWQ (mg/l)	WHO (mg/l)	USEPA (mg/l)
27	Color	≤ 15 TCU	15 cu	15 cu
28	Taste	Non Objectionable/ Acceptable	-	-
29	Odour	Non Objectionable/ Acceptable	N S	3 TON
30	Turbidity	< 5 NTU	5 NTU	0.5-5.0 NTU
31	Total hardness	< 500 mg/l	-	-
32	TDS	< 1000	1000	500
33	pH	6.5-8.5	6.5-8.5	6.5-8.5
Biological Parameters				
34	E-Coli	Must not be detectable in any 100 ml sample	0	0
35	Total Coliform	Must not be detectable in any 100 ml sample	0	0

2.2.7 Occupational Health

Construction and operational activities could affect the occupational health of the workers. Quantitative national standards with respect to the above aspect are yet to be developed in Pakistan. However, guidance in qualitative terms can be obtained from the Pakistan Factories Rules, 1962 (based on the Factories Act, 1934) and the Labor Laws (Amended) Ordinance, 1972.

2.2.8 Toxic or Hazardous Waste

Protection of the environment with regards to toxic and hazardous waste is covered by the Pakistan Penal Code (PPC), 1860. Environment Protection Agency (EPA), Punjab, is mandated to monitor the transportation of hazardous materials within the provincial limits.

2.2.9 Preservation of Cultural Heritage

The Antiquities Act, 1975, administered by the Provincial Government, is aimed at safeguarding the preservation of cultural heritage, destruction, damage or defacement of antiquities is an offence under the Act.

2.3 Administrative Framework

2.3.1 Punjab Industrial Estates Development & Management Company (PIEDMC)

The implementing agency of the proposed project is PIEDMC who will execute the proposed project at M-2 district Sheikhupura. The management of PIEDMC will ensure that all the proposed measures are effectively implemented at the operational stages.

2.3.2 Environmental Protection Agency, Punjab

Pakistan Environmental Protection Council is the apex inter-ministerial and multi-stakeholders decision-making body, which is headed by Prime Minister. While Pakistan Environmental Protection Agency is meant for the enforcement of environmental laws in Pakistan. They have delegated powers to provincial environmental protection agencies for review, approval and monitoring of environmental examination/assessment of projects. As regards the proposed Project, EPA Punjab will be responsible for reviewing the report, issuing No Objection Certificate (NOC) and overall/broad based monitoring of the proposed Project activities.

SECTION 3
PROJECT DESCRIPTION

3.0 GENERAL

This section briefly describes alternatives, scope and components of the proposed Apparel Park. Town planning and infrastructure facilities proposed for the Apparel Park has been mainly described along with discussion on the requirement of manpower and physical resources for the project.

3.1 Project Alternatives

3.1.1 Alternative-1: No Project Option

In case the proposed project will not be executed, the perceived economic and social benefits may not be achieved in the region. The opportunity to get due market value of Pakistani exports will be lost and agriculture and manpower resources will be wasted. Furthermore, the concept of development of industrial estates will be discouraged and individual industrial units will prevail causing more environmental and social concerns.

3.1.3 Alternative-2: Construction of Quaid-e-Azam Apparel Park

Construction of the proposed Apparel Park will help to utilize the potential of physical and manpower resources for the local apparel industry and gain maximum benefits. In addition to increase in Pakistani exports, a regional uplift in the economy, livelihood and lifestyles is anticipated due to creation of a large number of direct and indirect job opportunities. There will be control over environmental performance of the individual industrial units through an independent administration and byelaws and policies may be enforced to support motives such as treatment of industrial effluents, waste minimization and reuse, safe disposal of hazardous wastes, control over gaseous emissions and workplace safety etc.

3.2 Scope of the Project

The scope of this project encompasses development of the basic infrastructure for the Apparel Park including roads, electrical works, water supply system, sewerage system, sui gas supply etc. As large workforce will be needed, therefore, a separate residential area/hostels will also be provided. Project will also include export processing zones (EPZs), truck parking areas, commercial and public buildings etc.

3.3 Location of the Project area

The project area is located in on M-2 (Lahore-Islamabad Motorway) at a distance of about 2 Km from Sheikhupura Interchange. The project site extends along M-2 upto 3.5 Km from Mauza Qaimpur to Bamban Kalan with extension of approximately 1.75

Km on East side of the motorway. The project area comprises of 1565 acres. At present most of the area is being used for the purpose of agriculture. **Figure-3.1** is showing location of the proposed project.

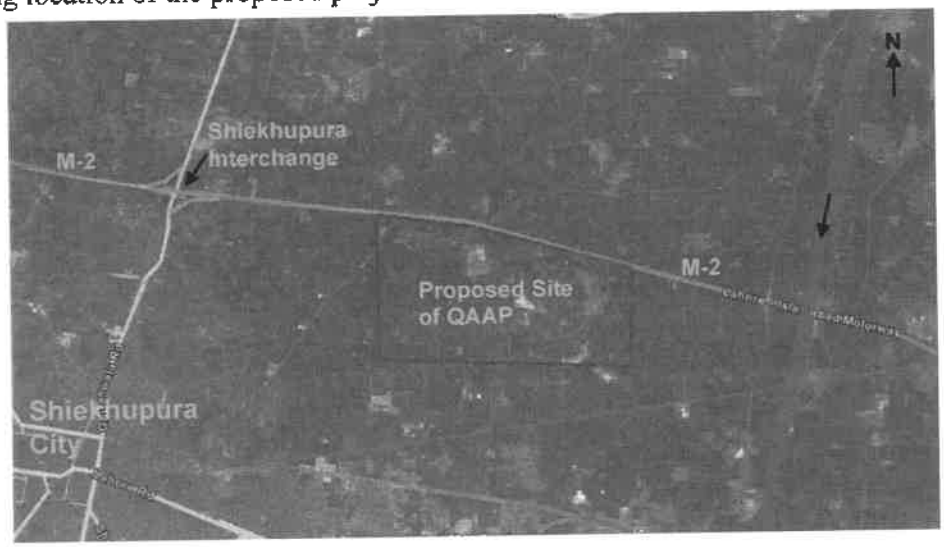

Figure-3.1Location of the Proposed Project

3.4 Population Estimation

In many instances the industrial population reflects the scale and, in turn, need of the infrastructural facilities for a particular industrial sector like apparel and textile. **Table 3.1** is presenting the summary of population estimated for QAAP.

Table 3.1 Estimated Population of QAAP

	Description	Area (Acre)	Population Density	Population (Persons)
1	Industrial Area	936.7	200	187,340
2	Administrative & Public Buildings area	172.8	10	1,728
3	Apartments (Double Storey)	8.0	1,742	27,872
4	Hospital (Visitors & Staff)	71.0	200 Bed	3,000
5	Parks (Visitors & gardeners)	121	500	500
			Total Population	**220,447**

3.5 Land Use Planning

As discussed earlier, 1565 acre of land will be developed for the proposed Apparel Park. During the landuse planning, different planning parameters have been

considered which includes topography, environment, town planning, urban design, transportation network and site condition etc. The land has been divided broadly into three main areas based on their function namely industrial area, hospital area and centralized public amenities. Details of these three areas are provided in **Table 3.2.Figure 3.2** gives the conceptual Master Plan of the proposed QAAP.

Table 3.2 Summary of Land use Classification and types of Amenities

Industrial Area	Hospital Area	Centralized Public Amenities
Small, Medium Apparel Industries Export Processing Zone Godowns, warehouses, Public Transportation, Bus Terminals Truck Parking Areas	Sizeable Hospital Units Residential Apartments Technical Training Institutes Mosques etc.	Commercial centers Exhibition Centers Community Center Grid Station Fire Brigade Recreational Parks Police station and Security system Mosques Post office Cargo and Administration Offices Banks, Accounting Firms, Law Firms etc.

The industrial plotsof Apparel Park have also been divided in different categories, which were based on type and size. **Table 3.3** shows the distribution of industrial plots.

Table 3.3: Proposed Size of Industrial Plots

Sr. No.	Category of Industrial Plot	Area (acres)	No. of Plots
1	A Category	20-25	11
2	B Category	2	209
3	C Category	1	182
4	D Category	0.5	150

Furthermore, area of 79 acres has been allotted for hospital, residential apartments, schools and vocational training institute on the North-Eastern corner of site area. Out of this total pocket, 50 acres are allocated to hospital, which will not only serve the

industrial population of QAAP but will also cater for surrounding population of project area with modernized and cheap health facilities.

Beside the industrial and residential area there is a specific amount of area which have been allocated for the amenities that are essential for comfortable living. These facilities include commercial area, medical centres, schools, rescue 1122, sports area, mosques, banks restaurants/hotels etc.These buildings have been located more or less in the center of the industrial area in Neighborhood center. Wherever possible these have been provided in Sub-neighborhood independently; to be easily accessible from other parts of the QAAP. **Table 3.4** shows the area estimated for these amenities.

Table 3.4 Public Buildings and Amenities

Sr. No.	Facility	Area (acres)
1	Administration building	1.8
2	Exhibition center	2.3
3	Community center	4.28
4	Computerized Weigh stations	7.12
5	Petrol Pumps/CNG stations	5.5
6	Grid station& Power Plant	28
7	Combined Effluent Treatment Plant	24
8	Land fill site	5.5

3.6 Roads

The proposed road network of Quaid-e-Azam Apparel Park is rectilinear form, with hierarchy of main and local streets. All the circulation arteries have been planned as dual carriageways with adequate tree plantation, landscaping, street lightening, and foot path facilities to properly facilitate vehicular and pedestrian traffic. The designed right-of-way of the Roads for the Quaid-e-Azam Apparel Park is given in **Table 3.5.**

Table 3.5 Right Of Way of Different Types of Road

Sr. No.	Road Type	Right of Way (m)
1	Approach Roads/Main Roads	61
2	Secondary Road	36
3	Local Distributors	25

3.7 Electrical Works

It is estimated that about 261 MW of electricity will be required for the proposed project. Major electrical works proposed for the Apparel Park are following:

- 3 Separate Grid Stations of 132/11kV
- 132 KV Transmission line
- Overhead Distribution system
- 11/0.415kV Distribution transformers
- Area lighting through LED lights

3.8 Water Supply System

Water supply system of QAAP Park has been designed to cater the peak demand of water. For this purpose, the water demand has been calculated for each purpose separately i.e. for industrial purposes (dry and wet process), domestic purpose, for hospital, parks and firefighting. It is estimated that about 40 cusecs of water will be required for the operational phase after full development of QAAP. **Table 3.6** shows the water demand adopted for different purposes.

Pumping with balancing reservoir have been proposed for the water supply. **Figure 3.3** shows the layout of water supply system

Table 3.6 Summary of Estimated Total Water Demand of QAAP

Sr. No.	Description	Average Water Demand (Gal/d)		
		Industrial	Domestic	Total
1	Dry/ Apparel Industry	2,529,090	2,810,100	5,339,190
2	Wet/ Textile Industry	10,537,875	936,700	11,474,575
3	Administration & Public Buildings	34,564	-	34,564
4	Apartments	278,784	1,115,136	1,393,920
5	Hospitals	20,000	56,000	76,000
6	Parks	2,178,581	10,000	2,188,581
7	Fire Demand	-	-	1,425,400
Total average water requirement			**Gal/day**	**21,932,230**
			Cusec	**40.75**

As the quality of groundwater in this vicinity is fairly good, therefore, the source of water will be the groundwater which will be extracted through tubewells. Total fifteen (15) tubewells of 4 cusecs capacity will be used to abstract and meet the water requirements of the QAAP .Furthermore, total fourteen (14) overhead tanks will be required to provide balancing storage. High Density Polyethylene (HDPE) pipe lines have been proposed for the water supply.

3.9 Wastewater and Stormwater Collection System and Disposal

Conceptual diagram of wastewater collection system is presented in **Figure 3.4**.Partially combined system is being proposed mainly for both industrial/domestic wastewater and stormwater collection or tertiary roads. In this system, industrial wastewater as well as stormwater coming in the industrial/institutional premises will be collected in the roadside sewers/conduits. Lateral sewers will also receive the stormwater of the lateral roads. All this contaminated wastewater will be collected and pumped through wastewater disposal station near Combined Effluent Treatment Plant (CETP). Treated effluent will be preferably disposed of into seepage drain. Excess effluent will either be disposed of in UCC or re-used for irrigation in nearby agriculture land.

Separate stormwater drainage system is also provided in the central medians of the main roads to cater for runoff generated from rainfall on the main roads. This rainwater will be discharged into the proposed artificial lake located at South-West corner of the Apparel Park. The overflow of the lake will be collected in a Stormwater Disposal Station to pump water into seepage drain/UCC. Both Wastewater and Stormwater Disposal Stations will be interconnected to economize the operation of disposal stations.

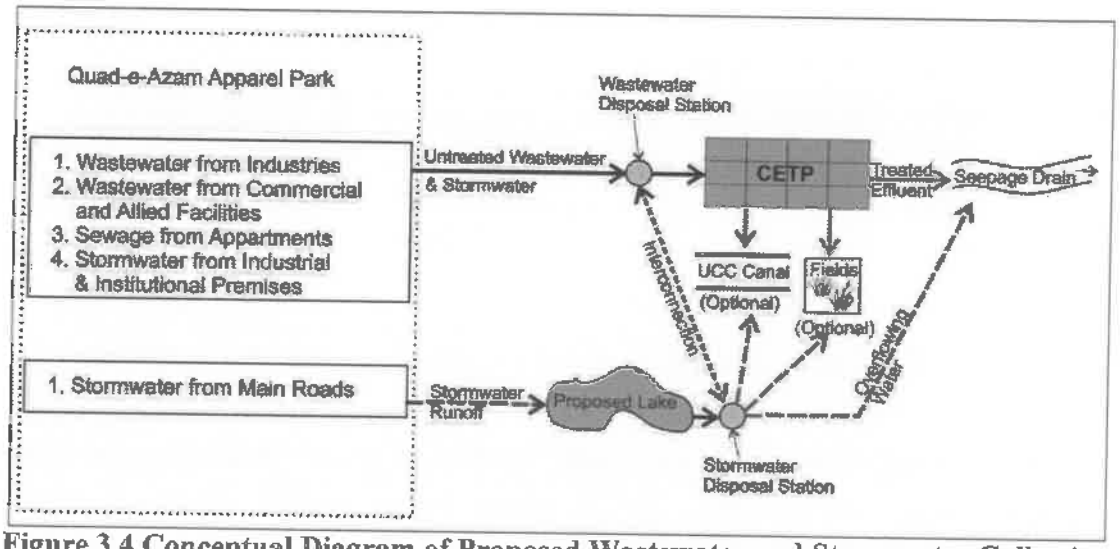

Figure 3.4 Conceptual Diagram of Proposed Wastewater and Stormwater Collection system in the QAAP

Figure 3.5&3.6 are showing the layout of the sewerage and stormwater drainage system respectively. Sewers/conduits will be provided on both sides of each road. Overall direction of wastewater flow will be from South-East towards North-West corner where both wastewater disposal station and CETP are located. Trunk conduit will convey wastewater to the wastewater disposal stations which will take it to the Combined Effluent Treatment Plant (CETP). The ultimate sizes of the sewer/conduit and design flows are given in **Table 3.7.** About 220 cusec flow will be generated from the QAAP.

Table 3.7Summary of the Sizes of Trunk Sewers/Conduits

Sr. No.	Description		Length (m)	Design Flow (cusec)	Dia. (mm)/ Size (mm x mm)
1	Trunk Line - A	Sewer	3300	-	610 – 1520
		Conduit	1765	220	3000 x 4000
2	Trunk Line - B	Sewer	2465	46	610 - 1370
3	Trunk Line - C	Sewer	2125	33	460 - 1220
4	Trunk Line - D	Sewer	2270	51	530 - 1520
5	Trunk Line - E	Sewer	1260	17	530 - 910

Stormwater drains have been proposed in the middle of major roads (61 m ROW) to collect and convey the stormwater of roads only. Trunk stormwater drains will convey the stormwater to artificial lake proposed on North-West corner of the QAAP for recreational purposes. Overflow of the lake will be collected and pumped through a stormwater disposal station. The overall sizes and length of these drains have been provided in **Table 3.8.**

Table 3.8: Summary of the Sizes of Trunk Stormwater Drains

Sr. No.	Description	Length (m)	Width (m)
1	Stormwater Drain - A	4560	1.0 – 3.0
2	Stormwater Drain - B	1060	1.0 – 2.0
3	Stormwater Drain - C	1290	1.0 – 1.75

A Combined Effluent Treatment plant has been proposed for keeping the effluent discharging into the water bodies within the permissible limits of National Environmental Quality Standards (NEQS).

3.10 Miscellaneous Works

3.10.1 Natural Gas

Natural gas will be required for domestic, commercial and industrial processing use. A main gas pipe line of Sui Northern Gas Pipe Line (SNGPL) Limited is passing through the project site. However, the requirement of natural gas and its delivery network should be designed by SNGPL at detailed design stage.

3.10.2 Telephone Lines

The requirement of telephone lines and exchange and its delivery network will be designed by Pakistan Telecommunication Corporation Limited (PTCL).

3.10.4 Sanitary Landfill

About 53 tons/d of domestic solid waste will be generated during operational phase. Area for landfill has been allocated for the disposal of municipal solid waste. Location of landfill site is away from the residential area. Leachate collection and nuisance shall be major considerations while designing landfill site. Disposal/management of industrial/hazardous waste will be the responsibility of industries.

3.10.5 Landscaping

Landscaping shall be carried out in the parks and buffer zones provided within the Apparel Park. Selection of plants will be based on the climate and soil conditions the area keeping in view their ecological fitness.

3.10.6 Boundary Wall

Boundary wall of about 8 ft high shall be provided around the Industrial City and razer-wire shall be installed at the top of wall for security purposes.

3.10.7 Approach Roads

Two approach roads have been proposed to provide access to the apparel park. The one is proposed from existing bridge after 500 m from UCC canal to Sheikhupura Interchange. While the other one is proposed from Joyanwala More (Lahore-sheikh road) to the apparel park site.

3.11 Construction Materials

The materials used in civil works will include coarse aggregates (crush), fine aggregates (sand), soil, water, asphalt, steel reinforcement, cement etc. Reinforced cement concrete (RCC) Precast slabs and conventional bricks will be used in the buildings. RCC sewer will be used. High Density Polyethylene (HDPE) pipes will be used for the water supply and Mild Steel (MS) pipes will be used for the natural gas supply. PVC coated copper wired will be used for internal wiring.

3.12 Construction Equipment

The list of the machinery and the equipment required for the proposed Project is provided in **Table 3.9**.

Table 3.9 Machinery and Equipment Requirement for the Construction Phase of Proposed Project

Sr. No.	Type of Machinery and Equipment	Sr. No.	Type of Machinery and Equipment
1	Dump Truck	12	Self-propelled Pneumatic Roller
2	Front End Loader	13	Asphalt Distributor
3	Dozer	14	Batching Plant
4	Grader	15	Concrete Transit Truck
5	Vibratory Roller	16	Concrete Pump
6	Water Tankers	17	Excavator
7	Aggregate Spreader	18	Water Pumps
8	Three Wheel Rollers	19	Cranes
9	Tandem Roller	20	Vibrators
10	Asphalt Plant	21	Generators
11	Paver		

3.13 Construction Cost

Total cost of the project estimated to be Rs. 22,524 million.

3.14 Project Duration and Phasing

It is estimated that the infrastructural work of the proposed Apparel Park will be completed within 1.5 to 2.0 years. Land acquisition, site clearance, laying of underground ground utilities, construction of boundary walls and internal and

approach roads will be completed on priority bases. Construction of overhead tanks, disposal station, tube- wells will be carried out as per the development trends of the industrial units.

3.15 Standards and Guidelines

Following standards and guidelines will be followed for design of different components of the project:

i. American Standards for Testing Materials (ASTM)
ii. American Standards For Highways And Transportation Officials (ASHTO)
iii. Technical and Service Delivery Standards for Water Supply and Sanitation Sectors, PDSSP, 2008
iv. Design Criteria, Water and Sanitation Authority (WASA)
v. National Environmental Quality Standards (NEQS), 2000& 2012

SECTION-4

BASELINE ENVIRONMENTAL PROFILE

4.0 General

An environmental baseline study is intended to establish a database against which potential project impacts can be predicted and managed later. The EIA of the proposed Project covers a comprehensive description of the project area, including regional resources which are expected to be affected by the project, as well as, those which are not expected to be directly affected by the construction and operation of the project. The existing environmental conditions around the proposed project have been considered with respect to physical, biological and socio-economic aspects. Numerous site visits were conducted to survey the field area and to collect environmental data on physical, biological and socio-economic parameters. Further, consultations were held with the general public and stakeholders of the project area in order to seek the public opinion on the implementation of the proposed project.

4.1 Physical Environment

The physical environment includes topography, drainage, climate, landuse, seismology, surface water, groundwater, and ambient air quality.

4.1.1 Topography and Drainage

The area of the District is flat. The district is a part of Rachna Doab. By topography, the District falls into three main divisions: i) upland or Sandal bar in north-west; ii) the lowland along the River Ravi; iii) The Degh valley in between them. The River Ravi forms southern boundary of the District. There is well-established irrigation system in the District. Upper Chenab Canal (UCC) and its distributaries form an irrigation network in the District. The groundwater resources are in abundance. Soil is fertile for agriculture. The drainage system of the District consists of natural drains. Bhed Nullah, Lila Nullah, Degh Nullah, Niki Degh and Chicho Ki Malian Drain form the natural drainage system of the area. Degh Nullah is the main and the biggest drain in the District. Saim Nullah (seepage drain) and Uppar Chenab Canal (UCC) are the nearest surface water bodies in the project area presented in **Plate 4.1**.

Plate 4.1 Nearest surface water body (Seim Nullah)

4.1.2 Climate

The District has extremes of climate. The summer season starts from the month of April and continues till October. **Table 4.1** presents month-wise mean temperature, precipitation and relative humidity. **Figure 4.1** shows the graphical presentation of humidity of the project area.

Table 4.1: Month-wise Mean Temperature, Precipitation and Relative Humidity

Month	Mean Temperature (°C)		Precipitation (mm)	Relative Humidity %
	Maximum	Minimum		
January	19.8	5.9	23.0	64.6
February	22.0	8.9	28.6	57.6
March	27.1	14.0	41.2	51.1
April	33.9	19.6	19.7	37.9
May	38.6	23.7	22.4	31.9
June	40.4	27.3	36.3	39.8

Month	Mean Temperature (°C)		Precipitation (mm)	Relative Humidity %
	Maximum	Minimum		
July	36.1	26.8	202.1	63.3
August	35.0	26.4	163.9	68.8
September	35.0	24.4	61.1	59.6
October	32.9	18.2	12.4	53.2
November	27.4	11.6	4.2	61.4
December	21.6	6.8	13.9	67.8
Annual	**30.8**	**17.8**	**628.7**	**54.7**

Source: *Sheikhupura District Census Report, 1998*

The above table depicts that May and June are the hottest months with mean temperature usually ranging from 39 to 41 degree centigrade. The winter season begins from the month of November and continues till March. January is the coldest month with a mean minimum temperature of 6 degree centigrade. Most of the rain falls in July, August and September during summer months and in January, February and March during the winter months.

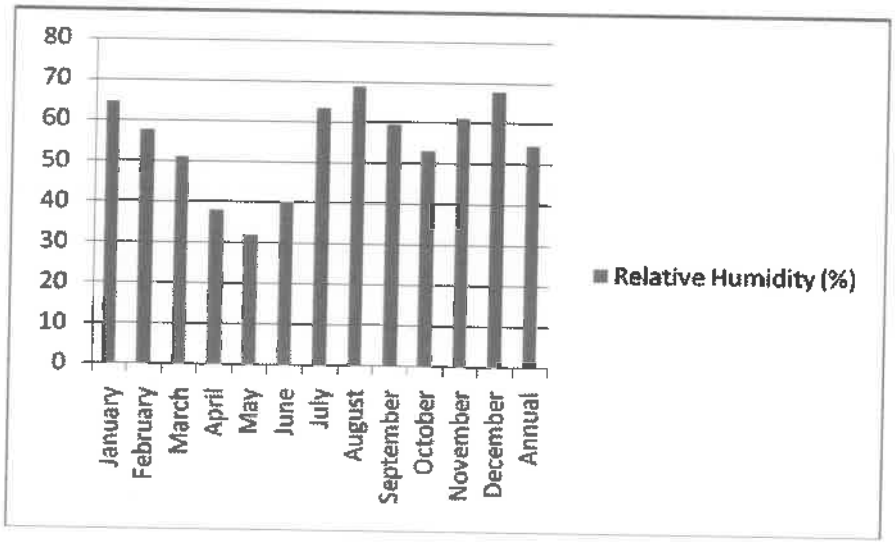

Figure 4.1: Relative Humidity in the Study Area

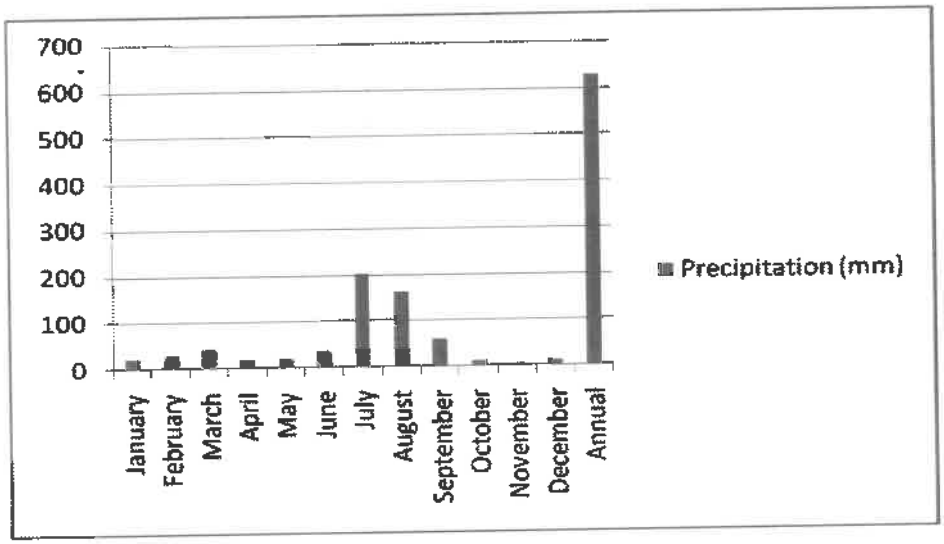

Figure 4.2: Average Rainfall in the Project Area

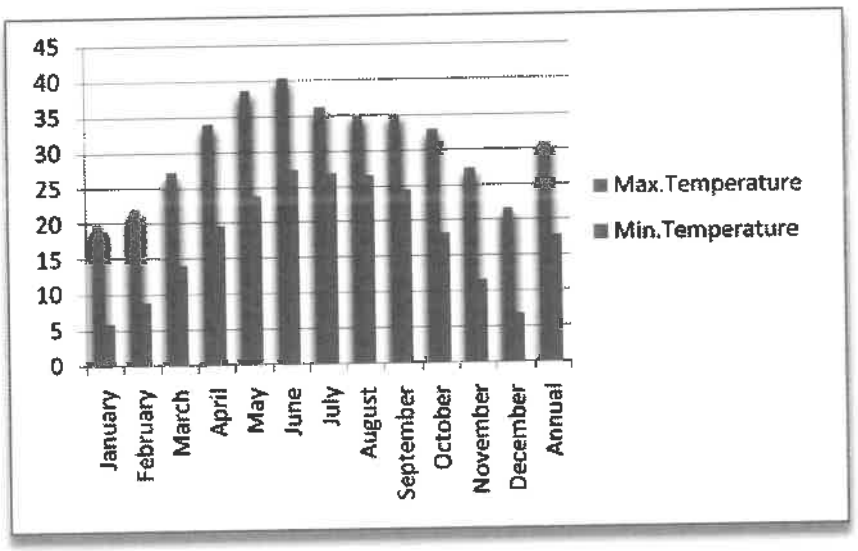

Figure 4.3: Mean Temperature in the project area

4.1.3 Regional Geology and Soil

Sheikhupura District is a part of Rachna Doab and consists of some recent sediment brought from Chenab River. There are some old channel levee remnants and old basins filled up with clay materials. The only mineral products of the District are Kankar and Kallar.

4.1.4 Land Use

The land use in the project area comprises of agricultural fields and few human settlements. The proposed site is inhabited at few locations with scattered houses. No

prominent commercial facilities or public buildings are present at site. However, a major settlement Bamban Kalan is situated within the project boundary.

4.1.5 Seismology

Sheikhupura is situated in *Seismic Zone-2 A* which corresponds to peak horizontal ground acceleration of 0.08 to 0.16g (where 'g' is the acceleration due to gravity). The impacts associated with this zone are low-moderate. **Figure 4.2** shows seismic zoning map of Punjab indicating location of the proposed project.

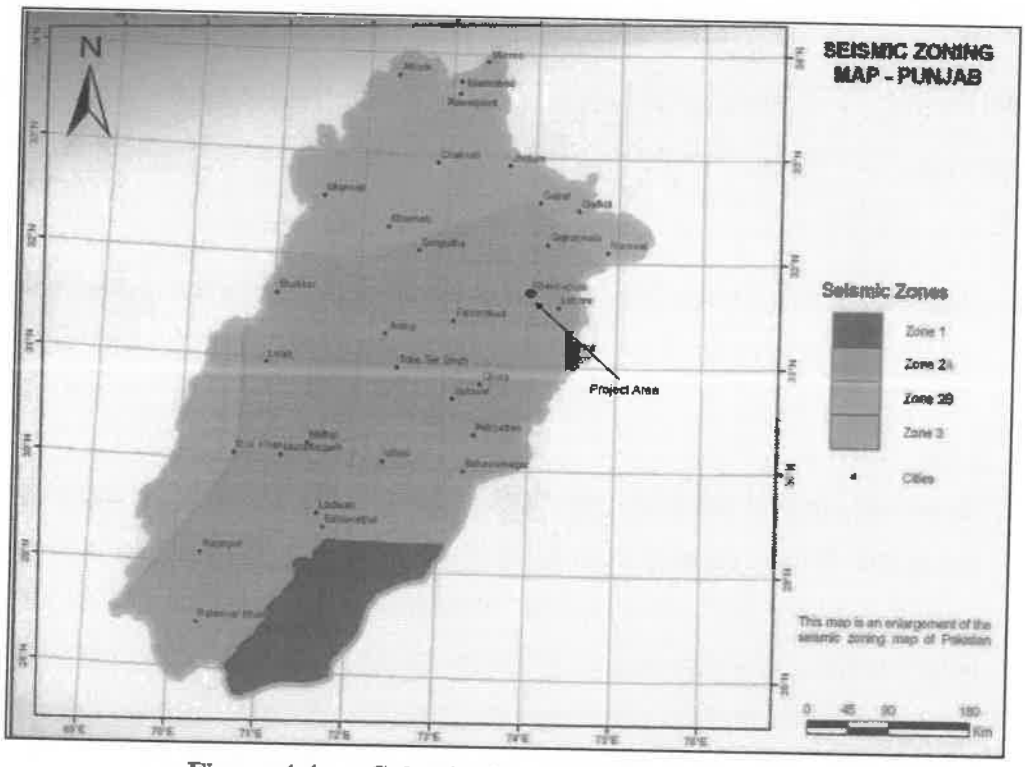

Figure 4.4: Seismic Zoning Map of Punjab

4.1.6 Ambient Air Quality

Atmospheric pollution, particularly in urban areas like Sheikhupura, has a strong impact on daily life. Motor vehicles are a major source of air pollution. However, factories and cottage industry inside the Sheikhupura City are also contributing to the air pollution. Sulphur dioxide (SO_2), Nitrogen dioxide (NO_2), Carbon dioxide (CO_2), Carbon monoxide (CO), Ozone (O_3) and particulate matter (PM_{10}) are considered pollution indicators. The ambient air quality was monitored at three different sites of the project area (Plate 4.2) during the month of May 2014 by SUPARCO Laboratory. The ambient air quality was monitored for priority pollutants such as CO, NO_2, SO_2

and PM_{10}. The monitoring period was 24 hours at each sampling point. The results obtained are tabulated under Table 4.2.

Table 4.2: Ambient Air Quality Result

Parameter Carbon	Average Time		NEQS	Unit	Average Concentration (Quaid-e-Azam Apparel Park, Sheikhupura		
					Chichu Ki Malian	Bamban Kala	Motorway Camp site
Carbon Monoxide (CO)	1st Third	8 h	5	mg/m³	4.08	3.88	3.73
	2nd Third	8 h			4.44	3.76	3.7
	3rd Third	8 h			3.46	4.28	4.22
Sulphur Dioxide (SO_2)	24 h		120	µmg/m³	25	21.8	35.6
Nitrogen Dioxide (NO_2)	24 h		80	µmg/m³	40.4	28	48.4
Particulate Matter (PM_{10})	24 h		150	µmg/m³	139.6	123.6	121.2

The results indicate that the concentration NO_2, SO_2, CO and PM_{10} were within permissible limits of Pak EPA NEQS.

4.1.7 Noise

Noise pollution (or environmental noise) is displeasing to human or machine-created sound that disrupts the activity or balance of human or animal life. A common form of noise pollution is from transportation, principally motor vehicles. The source of most noise worldwide is transportation systems, motor vehicle noise, along with aircraft noise and rail noise. Poor urban planning may give rise to noise pollution, since side-by-side industrial and residential buildings can result in noise pollution in the residential area. Noise levels were monitored with the help of a potable digital sound meter at three locations for twenty four (24) hours with an interval of one second. The hourly average data was monitored by SUPARCO Laboratory. The minimum and maximum noise levels observed at the given locations are tabulated under Table 4.3.

Plate 4.2: Ambient Air Monitoring in the Project Area

Table 4.3: Noise Level Results

Parameter Carbon	Average Time		NEQS	Unit	Average Concentration (Quaid-e-Azam Apparel Park, Sheikhupura		
					Chichu Ki Malian	Bamban Kala	Motorway Camp site
Noise	Day-time (0600 to 2200)	16h	65	Db(A)	63.47	59.73	61.08
	Night-time (2200 to 0600)	8h	55		61.93	58.82	58.88

Above Table depicts that noise levels at day time are well within the permissible limits of NEQS, while the noise levels were slightly high at night time due to harvesting/growing activities in the project area.

4.1.8 Ground Water Quality

The major source of drinking water supplied to Sheikhupura is through ground water. Thus, quality of groundwater is very important in terms of public health and shall be monitored regularly. Ground Water Quality was monitored in May, 2014 at four different locations in the Project area. The results are given in **Table 4.4.** The monitoring of Ground Water Quality is shown in **Plate 4.3.**

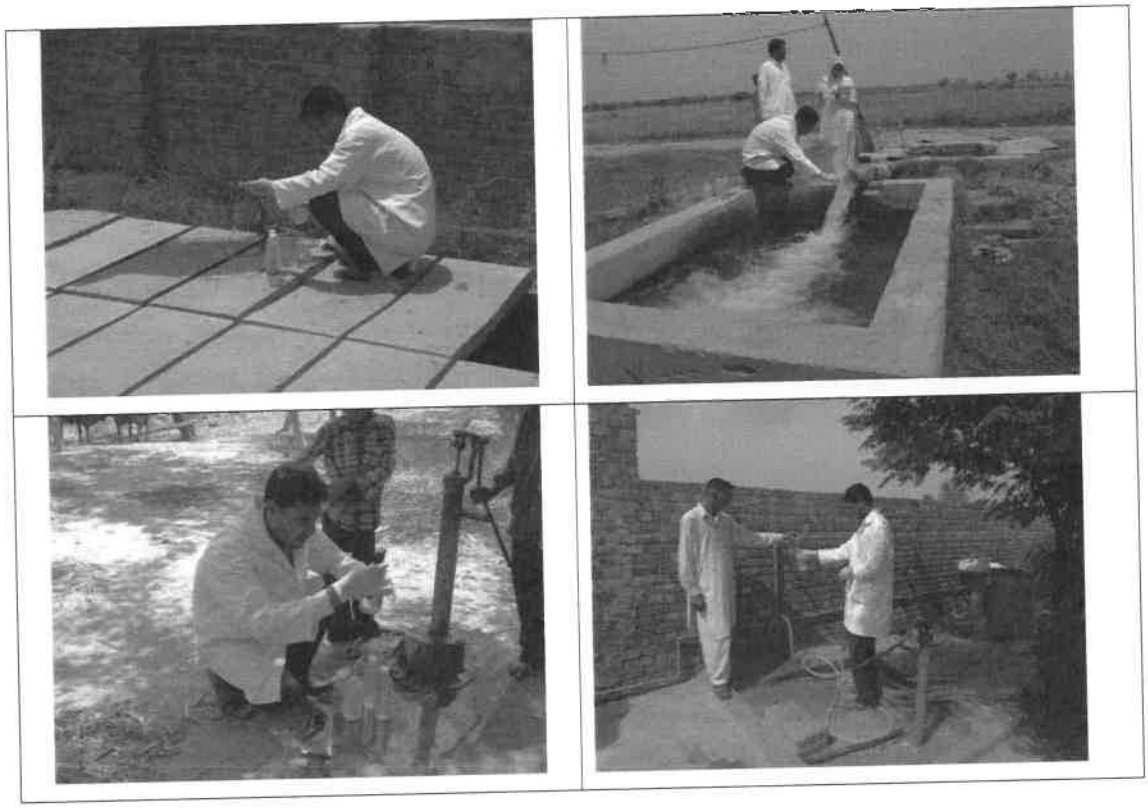

Plate 4.3 Sample Collection for Ground Water Quality Monitoring

Table 4.4 Ground Water Quality Results

Sr. No.	PARAMETER	GROUND WATER QUALITY RESULTS, SHEIKHUPURA				NEQS
		Dairy Farm Tube well (Rao Naeem)	Motor (Rao Naeem)	Pir Shams Shah, Hand Pump Bamban Kalan	Dera Arayan Tube well	
1	Colour	Acceptable	Acceptable	Acceptable	Acceptable	≤ 15 TCU
2	Taste	Acceptable	Acceptable	Acceptable	Acceptable	Non objectionable/ Acceptable
3	Odour	Acceptable	Acceptable	Acceptable	Acceptable	Non objectionable/ Acceptable
4	pH	7.59	7.34	7.25	7.92	6.5 - 8.5
5	Turbidity (NTU)	0.6	0.4	0.7	0.4	<5
6	Total Hardness as $CaCO_3$ (mg/l)	210	240	396	105	<500
7	Total Dissolved Solids (mg/l)	295	633	474	259	<1000
8	Aluminium (mg/l)	BDL	BDL	BDL	BDL	≤0.2
9	Antimony (mg/l)	BDL	BDL	BDL	BDL	≤0.005
10	Arsenic (mg/l)	BDL	BDL	BDL	BDL	≤0.05
11	Barium (mg/l)	0.028	0.031	0.020	0.022	0.7
12	Cadmium (mg/l)	0.002	0.001	BDL	0.002	0.01
13	Chloride (mg/l)	11.55	11.9	23.45	11.2	<250
14	Chromium (mg/l)	ND	0.004	ND	0.0012	≤0.05
15	Copper (mg/l)	BDL	BDL	BDL	BDL	2
16	Cyanide (mg/l)	BDL	BDL	BDL	BDL	≤0.05
17	Fluoride (mg/l)	0.31	0.28	0.34	0.38	≤1.5
18	Lead (mg/l)	BDL	BDL	BDL	0.001	≤0.05
19	Manganese (mg/l)	0.025	0.025	0.015	0.030	≤0.5
20	Mercury (mg/l)	ND	ND	ND	ND	≤0.001

Sr. No.	PARAMETER	GROUND WATER QUALITY RESULTS, SHEIKHUPURA				NEQS
		Dairy Farm Tube well (Rao Naeem)	Motor (Rao Naeem)	Pir Shams Shah, Hand Pump Bamban Kalan	Dera Arayan Tube well	
21	Nickel (mg/l)	0.007	0.008	0.006	0.007	≤0.02
22	Nitrate (mg/l)	BDL	0.004	BDL	0.006	≤50
23	Nitrite (mg/l)	BDL	0.003	BDL	0.005	≤3
24	Selenium (mg/l)	BDL	BDL	BDL	BDL	0.01
25	Residual Chorine (mg/l)	<0.02	<0.02	<0.02	<0.02	0.2-0.5 at consumer end, 0.5-1.5 at source
26	Zinc (mg/l)	0.02	0.02	0.01	0.04	5.0
27	Phenolic Compounds as Phenols (mg/l)	BDL	BDL	BDL	BDL	-
28	E. coli or Thermotolerant (MPN/100ml)	0	0	0	0	Must not be detectable in any 100 ml sample
29	Fecal Coliform (MPN/100ml)	0	0	0	0	Must not be detectable in any 100 ml sample
30	Total Coliform Bacteria (MPN/100ml)	0	0	0	0	Must not be detectable in any 100 ml sample

*BDL: Below Detection Limit

The results (**Table 4.5**) indicate that all the parameters are within the limits specified by NEQS.

4.1.9 Surface Water Quality

Surface Water Quality was monitored in May, 2014 at three different points (Saim Nallah, a pond of Bamban Kalan and Khanpur canal) in the project area. The results are given in **Table 4.6.** The monitoring of Surface Water Quality is shown in **Plate 4.3**.

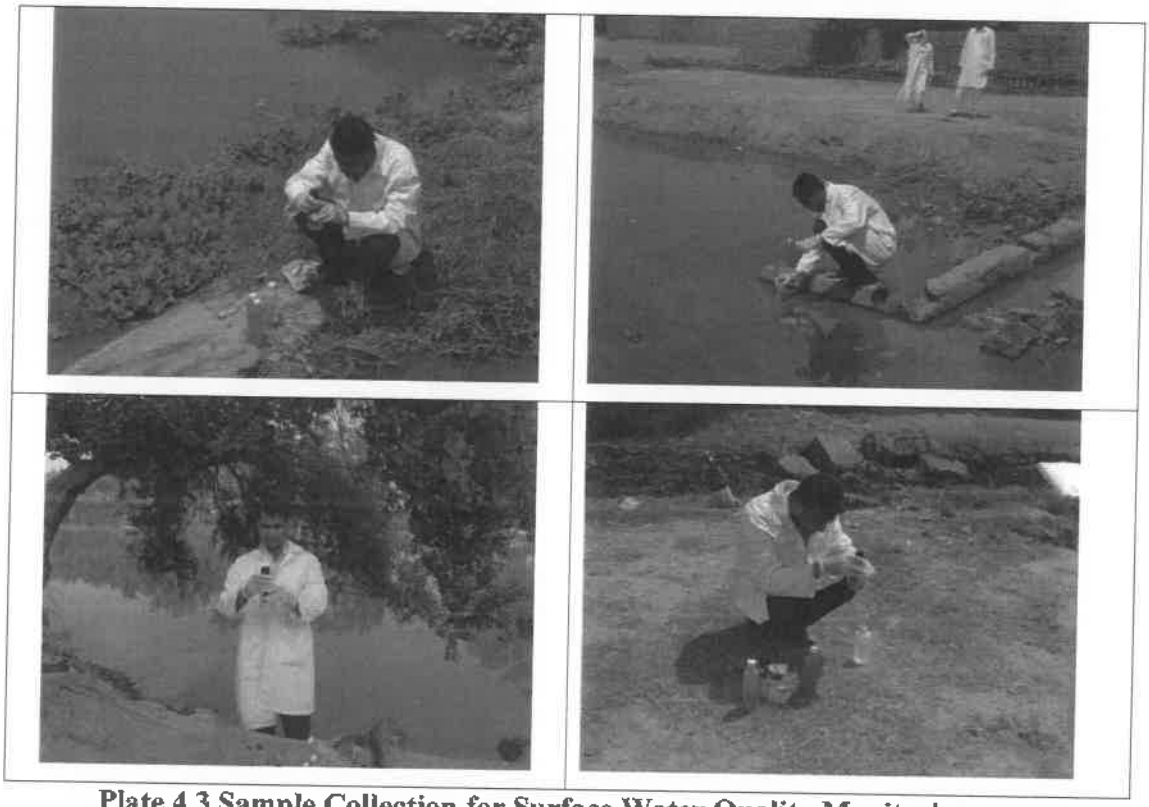

Plate 4.3 Sample Collection for Surface Water Quality Monitoring

Table 4.5 Surface Water Quality Results

Sr. No.	PARAMETER	SURFACE WATER QUALITY RESULTS, SHEIKHUPURA		
		Saim Nallah	Pond, Bamban Kalan	Khanpur Canal
1	Color			
2	Temperature (°C)	29.2	33.4	31.7
3	pH	7.7	7.98	8.04
4	BOD_5 (mg/l)	9.5	17	5.7
5	COD (mg/l)	15	28	12
6	TDS(mg/l)	604	988	125
7	TSS (mg/l)	80	281	16
8	Grease & Oil (mg/l)	5	8	3
9	Phenolic compounds (mg/l)	0.2	0.45	<0.02
10	Chloride (mg/l)	16.6	12.2	2.7
11	Fluoride (mg/l)	0.4	0.6	0.1
12	Cyanide (mg/l)	0.11	0.19	ND
13	Anionic Detergent (mg/l)	0.1	1.8	0.1
14	Sulphate (mg/l)	820	280	53
15	Sulphide (mg/l)	<0.04	0.18	<0.04
16	Ammonia (mg/l)	0.58	1.56	0.11
17	Calcium (mg/l)	12	19	16
18	Cadmium (mg/l)	0.004	0.005	0.001
19	Chromium (mg/l)	BDL	BDL	0.006
20	Copper (mg/l)	0.012	BDL	0.003
21	Lead (mg/l)	BDL	BDL	BDL
22	Mercury (mg/l)	BDL	BDL	BDL
23	Selenium (mg/l)	BDL	BDL	BDL
24	Nickel (mg/l)	0.003	0.002	0.007
25	Silver (mg/l)	BDL	BDL	BDL
26	Zinc (mg/l)	0.012	0.014	0.021
27	Arsenic (mg/l)	ND	ND	0.003
28	Barium (mg/l)	0.09	0.07	0.009
29	Iron (mg/l)	BDL	BDL	0.04
30	Manganese (mg/l)	BDL	BDL	BDL
31	Boron (mg/l)	BDL	BDL	0.04
32	Chlorine (mg/l)	<0.02	<0.02	<0.02
33	E. coli or Thermo tolerant (MPN/100ml)	$>38\times10^3$	$>38\times10^3$	$>38\times10^3$
34	Fecal Coliform (MPN/100ml)	$>38\times10^3$	$>38\times10^3$	$>38\times10^3$
35	Total Coliform Bacteria (MPN/100ml)	$>38\times10^3$	$>38\times10^3$	$>38\times10^3$

4.1.10 Solid Waste

District Sheikhupura is experiencing urban sprawl and industrialization leading to a generation of enormous amount of solid waste from many sources, like household waste, commercial activities, industries, hospitals, animal waste, all of which are contributing in creating environmental and health hazards for citizens. Tehsil Municipal Administration (TMA) Sheikhupura is facing severe problem in collection and dumping of Solid Waste due to rapid increase in the population of the city.

Sheikhupura currently generates about 205.12 tons of municipal solid waste daily (Situation Analysis Report for Integrated Solid Waste Management (ISWM) in Sheikhupura, 2013) and is estimated to have a yearly generation of 74869 tons. The existing solid waste collection is divided into primary and secondary collection system. The primary collection is accomplished by sanitary workers those carry out through sweeping of streets & roads and collect the solid waste from small heaps with the help of brooms, wheel barrows etc. and store at permanent and temporary collection points. The secondary collection is accomplished through Tractors & trolleys. TMA also has to collect wastes from debris-demolition of building structures; Hospital wastes; Slaughter Houses wastes; Vegetable Market; Dead animals etc. and those are mixed with municipal waste. In Sheikhupura the disposal of solid waste is mainly done in the form of open dumping at Raitly Road near Chahg, Lakhi Wal Road, Farooqa Road and Jhang Road.

4.2 Ecological Resources

Project site is spread over an area of 1565 Acres and is located, along the Motorway at 38 Kilometer of Lahore-Islamabad Motorway M 2.

4.2.1 Flora

Original vegetation of the tract falls under scrub, dry, tropical thorn forest type as per phyto-geographical classification of the area. These forests consisted of the trees like Karir (capparisaphylla), Wan (Salvadoraoleoides) and Jand (Prosopisspicigera). With the increase in population and advent of irrigation system, the area was converted into agricultural lands. Farmers have raised a mixture of tree species, along the water channels and boundaries of their agricultural fields. At present, flora consists of a

wide range of trees, bushes, shrubs, herbs, forbs, agricultural crops, vegetables, fruit orchards, ornamental plants, and other rank growths. There are no forests in the Project Area, however, tree species, existing in the Project Area include, Kikar, Shisham, Sirris, Ber, Jaman, Mango, Bakain, Semal, Mulberry, and a number of Ficus species i.e. Berh, Borhi, Pipal etc. There is generally a mixture of species found in the tract. Common trees found in the area are as follows:

Common Name	Botanical Name
Kikar	*Acacia nilotica*
Shisham	*Dalbergiasissoo*
Ber	*Zyzyphusjijuba*
Sufaida	*Eucalyptus camaldulensis*
Toot	*Morus alba*
Neem	*Azadirachtaindica*
Sirris	*Albizzialebbek*
Jand	*Prosopisjuliflora*
Sohanjna	*Morinaga pterygosperma*
Lasura	*Tecomaundulata*
Bakain	*Meliaazadirachta*
Bohr,Rubber Plant, Peelak	*Ficus species*

Existing Trees in the Project Area

Trees existing in the project area are mostly of medium size and with ages between 5 to 15 years. These trees consist of species, such as Kikar, Shisham, Sirris, Jaman, Mulberry, Poplar, Eucalyptus and Ficus species. Boundary of the project area has been marked on ground by erecting pillars, but on a site visit dated 06.05.2014, it was observed that most of the pillars were uprooted and the boundary area could not be clearly ascertained. However, by a rough estimation and partial sample counting in 3 different representative areas of 1 acre each, the number of trees per acre comes to 2.75, and as the total project area is 1565 acres, the estimated number of trees in the entire project area comes to nearly 4000.

Shrubs and Herbs

Common shrubs and weeds are Mesquite (Prosopis species), Ak (Calatropis),MallahBer (Zizyphusnummularia). Other common shrubs and herbs found in the project area are Jawan (Alhajimaurorum), Bhakra (Tribulusterrestis), Lana (Suedafruticosa), Phog (Calligonumpolygonides) Jantar (Sesbaniaaculeata) and Tumba (Citrulluscolocyntbus). Juntar, Tumba and Bathu are found mostly grown in left over agricultural fields, while Arind is present mostly along the water channels. The remaining shrubs and herbs grow in open places.

Grasses

The most common grass of the tract is Khabbal (*Cynodondactylon*). It is a useful fodder grass. Other grasses found in the area are Khawi (*Cymbopoganjawarnica*), Sinn (*Elionorushirsutus*) and Gam, mali (*Panicumantidotale*). Kana (*Saccharummunja*) and Dib (*Typhaangustata*) are found along the fish ponds or in moist places.

Reserve or Protected Forest

No reserve or protected forest exists in the vicinity of the project area.

Agriculture

Agricultural cropping is the main land use. The entire area is a recent terrace with deep alluvial, fertile soils. Almost all the project area is under agriculture except areas under houses, existing in different "Deras" or village Bumban Kalan, Dairy Farms or Fish Ponds. Dominant mode of irrigation is the groundwater, which is being withdrawn at a depth of 60 to 70 feet. However tube wells are installed at a depth of 200 to 250 feet depth. A canal called Maujo ki Minor also partially irrigates the project area. The canal is a perenniel one with insufficient water supply. However shortage of water is amply compensated by irrigation through tube wells and peter engines. Modern standards of farming are practiced, such as use of tractors, fertilizers and insecticides.

Cropping Pattern

The crop pattern in the project area is the same as followed throughout the plains of Punjab. Major crops of the area are Wheat during Rabi and Rice during Kharif. Rabi crop is sown during November to December and harvested during May to June. Kharifcrop is sown during June, July and harvested in the month of October to November.

Fruit Orchards

Fruit crops are grown on a smaller scale in the area. There are 3 fruit orchards in the project area. One is of Lemon, consisting of nearly 3 Acres and the other two are of Guava, consisting of 2 Acres each.

Endangered Species

There are no endangered species of flora in the Project Area.

4.2.2 Fauna

The project area was once rich in wildlife, but due to onslaught of civilization and conversion of forests into agricultural lands, proper habitat for the fauna and especially the mammals has degraded. Fauna of the tract consist of mammals, reptiles and birds. The details are given as under.

Mammals

Common mammals found in the project area are dogs, cats, house rats and bats, Gots, Cows. Small Indian Mongoose and Indian Palm Squirrel have also been reported. These are mostly seen in Derajats or villages.

Reptiles

Snakes such as cobra, kraits etc. were once common in the tract, but now cases of snake bites are very rare, as these reptiles have been either killed by expanding urbanization or they have moved away. Lizards such as Spiny tailed lizard (Uromastixhardwickii) and fringed toed lizard (Acanthodactylus cantoris) are also reported by the residents of the area.

Amphibians

Amphibians frequently seen in and around the project area, especially during rainy season, include common Frog (Ranatigrina) and Indus valley toad.

Birds

House sparrow (Passer domesticus), House crow (Corvussplendens) and Mynah (Acredotherestristis) are the most common sight in the area. In addition, following birds have also been observed or reported in the area.

1. Nightingale (Pycnontuscafer)
2. Parrot (Psittaculakrameri)
3. Pigeon (Columba livia)
4. Asian Koel (Eudynamysscolopacea)
5. Red-vented bulbul (Pycnonotuscafe)
6. Black Partridge (Francolinusfrancolinus)
7. Grey Partridge (Francolinuspondicerianus)
8. Quail (Coturnixcoturnix)

Above birds are generally found in the open areas and in the fields, whereas little egret (Egrettagarzetta) is found along the marshy areas or in the fish ponds.

Fishery

Fishing is common in the tract. A number of fish ponds have been built in the project area and its vicinity by the landowners of the tract. The ponds are usually of 4 to 5 acres size. However smaller and even larger ponds are reported in the area. As reported by local landowners, fish ponds exist on about 27 acres in the project area. Varieties usually introduced in the fish farms are Rahu (Labeorohita), Thela (Catlacatla), Gulfam (Hypophtalmichthysmoltrix) and Grass carp (Cetenopharngdonidela).

Livestock

Besides agriculture raising of a large number of livestock is the other main source of income. Dominant among livestock are buffaloes followed by cows, goats and sheep. Buffaloes of both Ravi and Nili Breeds which are high milk yielders are raised. Most

feeding is done by stalls, open grazing is very limited due to agricultural crops, orchards and due to restriction on free grazing. Sheep are found in large number at Project Site. Many Australian and foreign breed Cows are present in the two modern poultry farms which exist within the project area. Milk is supplied from these farms to a multinational company, who are well equipped to preserve and supply this milk to nearby Sheikhupura or Lahore city using modern technology. Government as well as private veterenies and vaccinators attend to the diseases of livestock.

Other livestock includes Donkeys, Horses and few Mules. No Camel are found in the area. Dogs of diverse breeds are very common for watch and looking after livestock

4.3 Socio-economic Environment

The baseline socio-economic conditions of the area are briefed below:

4.3.1 Administrative Setup

The project area falls in the administrative jurisdiction of District Sheikhupura, which is under general charge of the DCO, followed by Additional Deputy Commissioner and three Assistant Commissioners and ten Illaqa Magistrates responsible for the coordination of function of all the nation building departments in the district. The judicial administration of the district is under the charge of district and session judge along with three additional session judges and civil judges.

4.3.2 Demographic Profile

According to 1998 census, the total population of Tehsil Sheikhupura is 1,049,264 which is 31 percent of the district population (3321029). The total area of Tehsil Sheikhupura is 1267 sq.km, which gives population density of 783.6 persons per sq. km. The average annual growth rate in the Tehsil was 3.12 percent and average household size is 7.5 persons.

4.3.3 Rural and Urban Distributions

The urban population is 870,616 or 26.2 percent of the total population of the district which grew at an average rate of 4.8 percent during 1981-98. There are five municipal committees and 1,073 mouzas (a smallest revenue unit) in 1998 of which 112 had

population over five thousand, 261 had 2 to 5 thousand, 243 had 1 to 2 thousand, 402 had under one thousand persons while 55 were un-inhabited.

4.3.4 Religion

The population of the Sheikhupura District of which the Project Area is an integral part is predominantly Muslim i.e. 95.1 percent. The next higher proportion is that of Christians with 4.5 percent. While other minorities like Ahmadis, Hindus, etc. also live in very small numbers. The population of the project area is also predominantly Muslim.

4.3.5 Ethnic Structure

The population generally is divided by, Jats, Khokhar, Pathan, Dogar, Gujjar, Quershi, Rajputs, Syed, arian, Wahga Maan and Kharal. These have been further sub-divided in various sub- caste and sub-tribes.

4.3.6 Mother Tongue

The mother tongue refers to the language used for communication between parents and their children in any household. Punjabi is the predominant language being spoken by majority (98.7%) of the population of the district Sheikhupura followed by Urdu, Pashto, Siraki, Sindhi, Balochi, Bravi and Dari.

4.3.7 Sex Ratio

Sex ratio, i.e. number of males for every 100 females, was 109 per cent recorded in 1998 Census .The ratio was 109 per cent in rural areas and 109 in urban areas. The higher sex ratio observed in the latter areas as compared to the former areas could be sex selective migration to the latter areas.

4.3.8 Migration

The total number of life time in migrants in Sheikhupura district were 330,053 or 9.9 percent of the total population of the district. Of the total life time in migrants

121,314 persons are settled in the towns. Of total district migrants 72.7 percent came from Punjab, 3.9 per cent were from Sindh, KPK and Balochistan, 0.3 percent from Azad Kashmir and Northern Areas while remaining 23.1 percent were Pakistanis who repatriated from other countries.

4.3.9 Economically Active Population

The economically active population is defined here as the persons working, most of the time during the year preceding the census date March 1998 looking for work, laid off and unpaid families helper assisting their family. The economically active population as enumerated in the last census was 22.2 percent of the total population or 31.6 percent of the population 10 years and over i.e. the population exposed to the risk of entering the economically active life at any time. Of the total male population 40.6 percent were economically active, while 59.4 percent not economically active 29.4 percent children under ten years, 12.7 percent students, 2.5 percent domestic workers while 14.8 percent were land lords, property owners, retired persons, disabled, etc.

4.3.10 Unemployment

Unemployment rate is measured as ratio of looking for work and laid off in total economically active population comprising employed, looking for work, laid off and un paid family helpers, generally representing in percentage. The unemployment rate in the district was 17.7 percent which was mainly due to unemployment amongst both the sexes representing 17.8 percent for male and 16.2 percent for female. The unemployment rate was three-eighths times lower in rural areas as compared to urban areas representing 15.3 and 25.1 percent respectively.

4.3.11 Occupations

Of the employed persons in 1998 about 45.3 percent had elementary occupations followed by skilled agriculture and fishery workers representing 29.7 percent, service, shops and market sales workers 7.6 percent while craft and related trade worker representing 5.7 percent.

4.3.12 Education

Education has significant impact on the life of an individual, which enhances the quality of life and productivity. It also serves as a key indicator of any socio-economic development. The educational facilities are not adequate, and people have to send their children to the nearest village(s) and town(s) for higher education, which becomes a hardship for the parents, especially to educate their daughters. Perhaps the lack of education facility is the main cause of low literacy rate in the Project Area, especially among the women.

According to 1998 census, the literacy ratio in Sheikhupura district is 43.8 percent. The literacy ratio for males is 53.3 percent as against 33.3 percent for female.

4.3.13 Health

Health conditions are one of the major determinants of a society's social development and quality of life. Healthy manpower is imperative for advancement and economic growth. The major health facilities available in the district are District Headquarter Hospital, Tehsil head quarters Hospital at each Tehsil along with M.C. Health Centre, Primary Rural Health Centers, Primary Dispensaries, Basic Health Units, TB Centers and 72 Dispensaries. The Zila Council is also running dispensaries, MC Centers and Veterinary Hospitals.

4.3.14 Communication and Roads

Communication network is a fundamental prerequisite for boosting economic activities. The villages of the Project Area are normally connected with main road(s) and district headquarters through metalled roads and with nearby Railway station. A motorway section M-2 is passing through the district, the total length of motor way in the district is 67 km that passes through 31 villages of Tehsil Sheikhupua and Ferozewala. The telephonic facility by Pakistan Telecommunication Company Limited (PTCL) is limited, however a growing trend of utilization of cell phones, whose connections are easily available, is also facilitating the local population with communication network.

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4.3.15 Industry

Sheikhupura district has undergone rapid industrialization. However presently there is no industrial estate in the district. There are approximately 650 cottage and small/medium/large scale industrial units operating in the district. The prominent industries in the district are of rayon and polyester fiber, woolen textile, rice husking flour mills, cotton textile spinning and weaving, tanneries, heavy engineering, pharmaceutical, fertilizers, paper and board, assembling of motor cycles and cycles, sugar and ghee mills, ice and cold storage, foundries, steel re-rolling, jute products, steel pipes, glass products, poultry farms, agricultural implements, ceramics, petroleum products, extraction of rich brand oil, etc.

4.3.16 Archeological and Cultural Property/ Places of Interest

District Sheikhupura has many places of interests that attract the tourist from within and outside country which includes Hiran Minar, Sheikhupura Fort and Shrine of Warris Shah.

4.4 Impact Assessment Survey of the Project Area

The Impact Assessment Survey of project area was conducted in order to derive primary data / information and also to identify the impacts and their magnitudes on the affected population. A sample of 150 respondents was taken on the basis of random sampling technique, which included farmers, residents, drivers and students and other notable persons like number dars, ex-councilors, teachers etc. During the survey, both males and females were contacted for information. The purpose of survey was to get responses about the perceived impacts and preferences towards the project implementation.

4.4.1 Survey Findings

Detailed findings of the survey comprising of different parameters are discussed in the following section.

i) Gender Ratio of the Respondent

Total 150 respondents were contacted for information collection, comprising of 70% males and 30% females. **Table 4.7** shows Gender ratio of the respondents interviewed during the survey

Table 4.7: Gender Ratio of the Respondents

Sr. No.	Gender Ratio	Number of Respondents	Percentage %
1	Male	105	70
2	Female	45	30
Total		150	100

ii) Age Composition

The demographic characteristics of the sample survey show (**Table 4.8**) that 8% of the respondents were up to 25 years of age. 43% of the respondents were aged 26 – 35 years, 28% were 36 – 45 years and 20% were more than 45 years of age. These figures show that by and large respondents were mature enough to express their opinion/concerns about the implementation of Quaid-e-Azam Apparel Park, Sheikhupura.

Table 4.8: Age Composition of the Respondents

Sr. No.	Frequency Distribution	Number	Percentage
1	15 – 25	13	8
2	26 – 35	65	43
3	36 – 45	43	28
4	46 and above	30	20
Total		**150**	**100**

The pie chart given below, (**Figure 4.3**) reflects the age composition of the respondents.

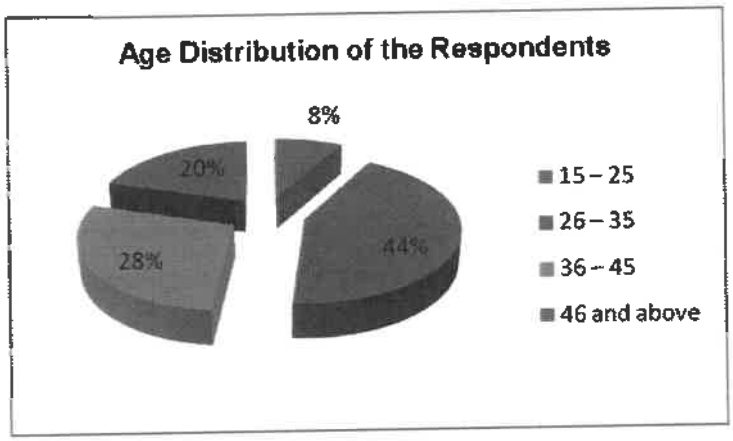

Figure 4.5: Age Composition of the Respondents

iii) Education Level

Educational distribution of the respondents is shown in **Table 4.9**. The data in the table represents that 13% of the respondents were illiterate, 10% were educated up to primary level, 40% were with middle schooling, and 22% were educated up to matric and 8% intermediate. A very few number i.e., 2% and 5% respondents were graduates and masters respectively.

Table 4.9: Educational Level of the Respondents

Sr. No.	Educational Level	Number	Percentage
1	Illiterate	20	13
2	Primary	15	10
3	Middle	60	40
4	Matric	33	22
5	Intermediate	13	8
6	Graduation	3	2
7	Masters & Above	8	5
Total		**150**	**100**

The pie chart given below shows the educational level of the respondents. **(Figure 4.4)**.

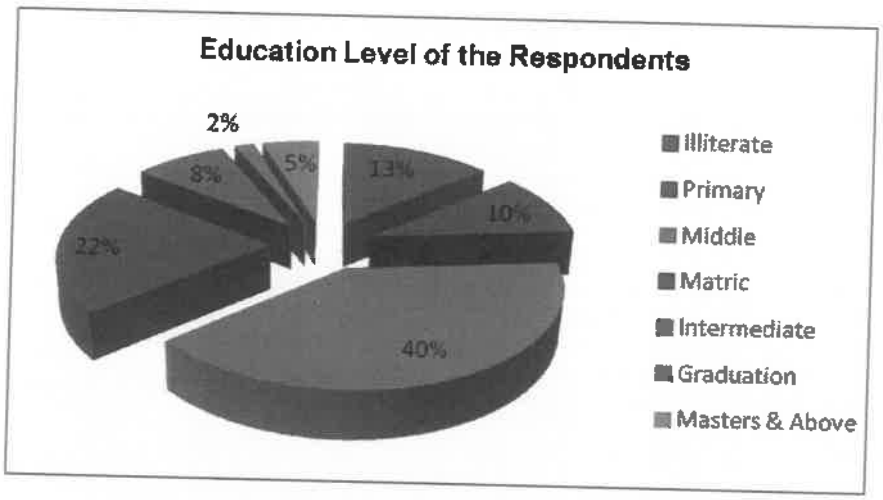

Figure 4.6: Educational Level of the Respondents

iv) Marital Status

According to survey findings 56% of the respondents were married and 44% were living as single member of the society (**Table 4.10**).

Table 4.10: Marital Status of the Respondents

Sr. No.	Marital Status	Number	Percentage
1	Married	145	97
2	Un-married	5	3
Total		**150**	**100**

v) Occupation

The respondents were inquired about their professions in the project area. Majority of the respondents i.e. 90% were belonging to agriculture / farming on their lands, while 5% were doing jobs in different sectors. Only 3 % were students and 2% respondents were linked with driving profession.

During survey, efforts were made to interact with project stakeholders representing all walks of life. The detailed statistics based on sample survey, regarding occupational status of the respondents are presented in **Table 4.11**.

Table 4.11: Occupations of the Respondents

Sr. No.	Profession	Number	Percentage
1	Farmers	135	90
2	Office workers	8	5
3	Students	5	3
4	Drivers	3	2
Total		**150**	**100**

The occupational distribution of the respondents is given below in the form of pie chart (**Figure 4.5**).

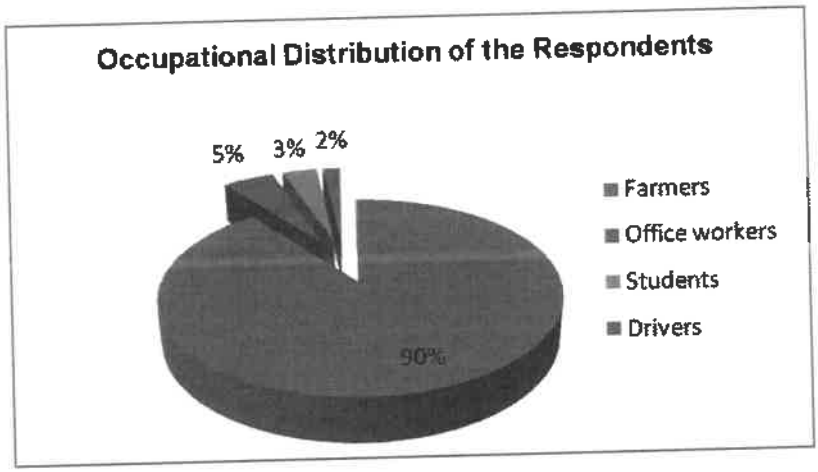

Figure 4.7: Occupational Distribution of the Respondents

vi) Income Level of the Respondents

From the **Table 4.12**, it is clear that majority of the respondents (50%) belong to income group of 10,000 to 20,000 and 30% fall in the income group of Rs. 20,000 and above. Whereas 8% of the respondents were earning their monthly income up to Rs. 10,000 and 12% respondents did not give any response about their incomes.

Table 4.12: Income Level of the Respondents

Sr. No.	Frequency Distribution	Number	Percentage
1	Below 10,000	13	8
2	10,000 – 20,000	75	50
3	20,000 and above	45	30
4	No Response	18	12
Total		**150**	**100**

In the pie chart (**Figure 4.6**), the income groups of various respondents are shown below.

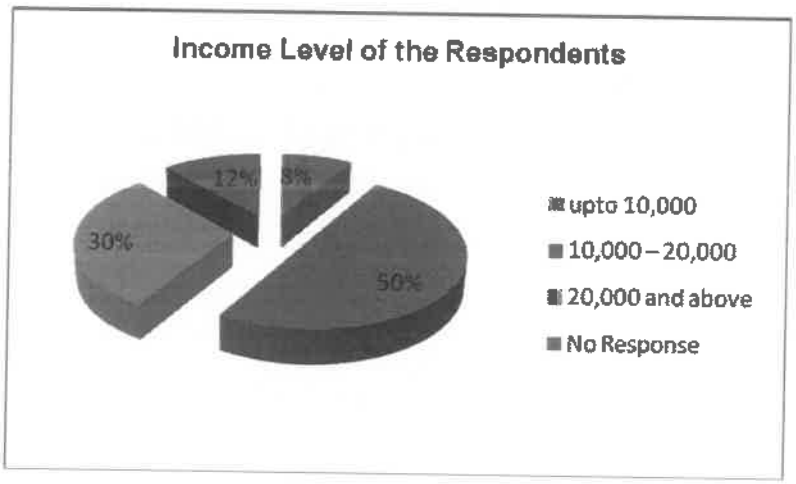

Figure 4.8: Average Monthly Income of Various Respondents

Vii) Sources of Water for Domestic Use

An easy access to potable / safe drinking water is one of the basic human rights and needs. **Table 4.13** indicates that the residents of the entire project area are deprived of tapped water supply system. All the population of project area (100%) was using hand pumps for domestic usage.

Table 4.13: Sources of Domestic Water Supply

Sr. No.	sources of domestic water supply	Number	Percentage
1	Public Water Supply	0	0
2	Hand Pump	150	100
Total		**150**	100

viii) Water Quality

Table 4.33 shows the current situation of the water quality in the project area. Significant numbers of the respondent i.e.100% were satisfied with the quality of water available in the project area. The quantitative figures regarding the water quality were shown below **Table 4.14.**

Table 4.14: Satisfaction level about Quality of Water

Sr. No.	level satisfaction with water quality	Number of Respondents	Percentage (%)
1	Yes	150	100
2	No	0	0
Total		**150**	100

ix) Land Holding

During the survey, the respondents were asked about their landholding size in the project area. It is clear from survey findings that a large number of respondents (65%) were holding small piece of lands i.e. up to 0-10 acres. The farmers who fall between 10-50 acres land holding were 18%, while 10% of the respondents were holding land up to 50-100 acres. Remaining of the respondents 7% were reported their land holding up to 100 & above acres.

Table 4.15: Land Holding Size of the Respondents

Sr. No.	Average Landholding Size (Acres)	Number of Respondents	Percentage %
	0-10	98	65
	10-50	28	18
	50-100	15	10
	100 & above	10	7
	Total	**150**	**100**

In the pie chart **(Figure 4.7),** the landholding size of respondents is shown below.

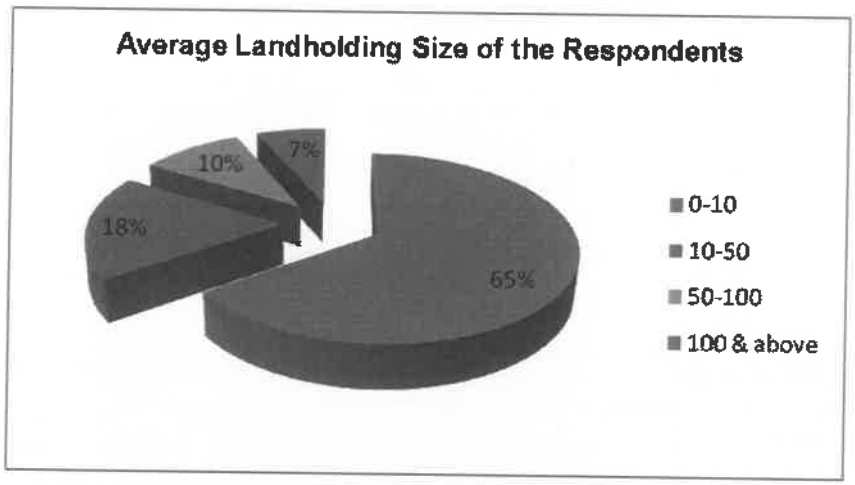

Figure 4.9: Land Holding Size of Respondents

x) Irrigation Water

Study revealed **(Table 4.16)** that 56% respondents; out of total sampled population depends upon tube well (ground water) for irrigation purpose and 44% respondents use canal water for their agriculture lands. Multiple responses were recorded in each village due to availability of more than one option. Figure 3.18 shows irrigation system within the Project Area.

Table 4.16: Sources of Irrigation Water

Sr. No	Irrigation Channels	Number of Respondents	Percentage %
1	Canal	72	44
2	Tube well	93	56
	Total	**165**	**100**

* Multiple responses recorded that shows, the respondents were using more than single source of water for irrigation purpose at the same time.

xi) Cropping Pattern in the Project Area

The major crops grown in project area are rice and wheat. A few numbers of farmers sow vegetables (Potato, Onion, Carrot, Radish, Peas, Pumpkin, Bringle etc.) and Orchards of Illaichi & Guava were also observed in project area. The average yield of major crops in project area is 35 to 40 (maunds) per acre for each crop. **Table 4.17** indicates the cropping pattern in the project

area. The data contains multiple response because every village produce number of crops.

Table 4.17: Cropping Pattern in the Project Area

Sr. No.	Cropping Pattern	Number of Respondents	Percentage %
1	Rice & Wheat	120	77
2	Vegetables	35	23
	Total	**155**	**100**

*Multiple responses

xii) Acceptability of the Project

Table 4.18 shows the willingness of the respondents about the implementation of the Project. A large number of respondents i.e. 80% did not favor the implementation of Quaid-e-Azam Apparel Park due to various concerns, while 20% show their willingness about the implementation of the project.

Table 4.18: Frequency of Project Acceptability

Sr. No.	Frequency Distribution	Number of Respondents	Percentage %
1	Yes	30	20
2	No	120	80
Total		**150**	**100**

xiii) Perceived Impacts

Table 4.19 provides us the various impacts perceived by the respondents about the construction of Apparel Park. The big apprehension of the respondents (47%) was about the acquisition of their agriculture lands by the implementation of this project. This way, they will lose not only lands but also unable to meet the requisite standard of their socio-economic well being.

The second most important concern raised by the 33% of the total respondents was the availability of local jobs during the operation phase of propose

project. While 11% were those, who feared about the usage of local material during construction stage. About 9% considered that it will lead to ultimately development of project area in future.

Table 4.19: Perceived Impacts

Sr. No.	Perceived Impacts	Number of Respondents	Percentage %
1	Local building material will be used	19	11
2	Job opportunities during operation	55	33
3	Beneficial for the development of area	15	09
4	Private Land Acquisition	78	47
Total		**167***	**100**

*Multiple Responses

The perceived impacts of the respondents about the operation of Apparel Park are shown below in graphical form **(Figure 4.8)**.

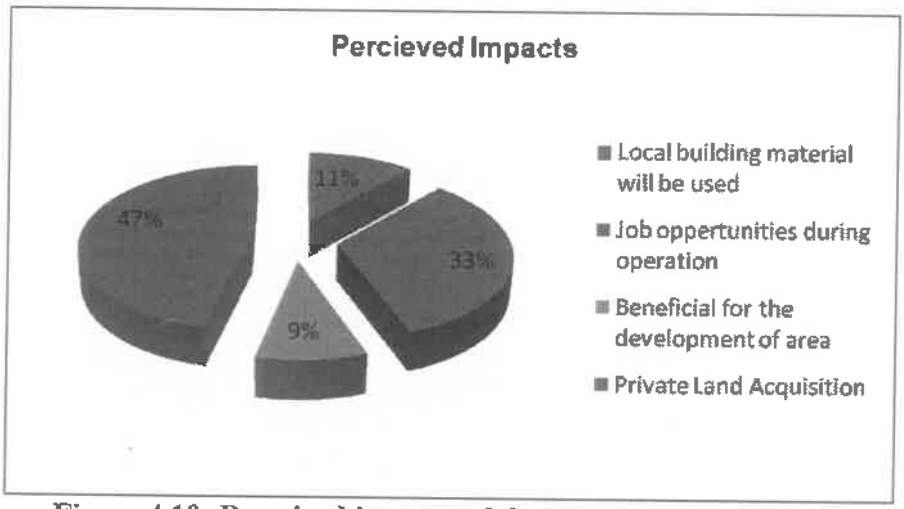

Figure 4.10: Perceived impacts of the respondents

SECTION - 5
PUBLIC CONSULTATION

5.0 General

This section describes the outcome of the public consultation sessions held with different stakeholder groups that may be affected by the project. The consultation process was carried out in accordance with the requirements of Pakistan Environmental Procedures. The objectives of this process were to:

a) Share information with stakeholders on the construction of the proposed project and expected impacts on the physical, biological and socio-economic environment of the project area;

b) Understand the perceptions, assessment of social impacts and concerns of the affected people / communities in the near vicinity of the proposed Apparel Park for the project;

c) Provide an opportunity to the public to provide valuable suggestions for the project design in a positive manner; and

d) Reduce the chances of conflict through the identification of controversial issues, and consult them to find acceptable solutions;

5.1 Identification of Main Stakeholders

During the field survey, significant efforts were made to identify the possible categories of stakeholders and their stakes. Different stakeholders identified during survey were the shopkeepers, local residents, office workers, drivers, schools, transport users and representatives from different Government Departments etc. All the stakeholders had different types of stakes according to their professions.

a) Consultation and Participation Process

For ascertaining the perceptions of different stakeholders about the project (during construction/operation), meetings were held with them. These meetings were conducted in an open atmosphere, in which participants expressed their views freely.

Informal group discussions were also held as an additional tool for the assessment of the perceptions of the stakeholders.

b) Categories of Stakeholders Contacted

The stakeholders contacted belonged to different categories as shown in the **Table 5.1.**

Table 5.1: Stakeholders Contacted in the Project Area

Sr. No.	Stakeholder Category
1.	Residents
2.	Business/ shop owners
3.	Office workers
4.	Customers/ clients
5.	Schools
6.	Ex-Council Members
7.	Drivers

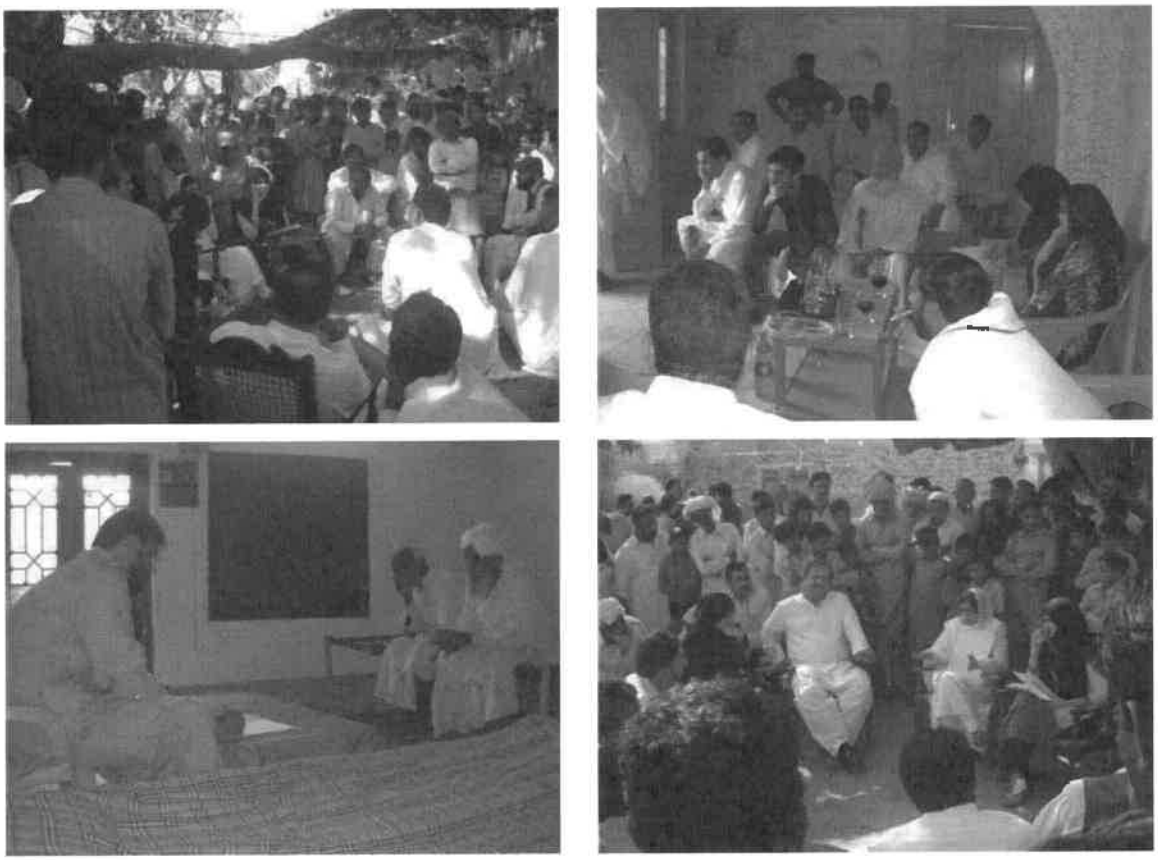

Plate 5.1 Interviews with Major Stakeholders

5.2 Consultation Meetings and Informal Group Discussions

Consultation meetings and informal focus group discussions regarding project impacts and its mitigation measures were held with the villagers, number dars, ex-councillors members and representatives from Government Departments like DCO & Tehsil dar etc. These meetings were held at various locations of villages namely, Qayam Pur, Khokhar ki Malian, Saho ki Malian, Bomb kalan.

Generally, people were found to be aware of the need of the proposed Apparel Park project and also showed their support for the project after the again and again meetings with affectees. The people demanded that they must be compensated properly in case of loss of their properties.

5.3 Commonly Raised Stakes / Concerns of the Stakeholders

The most commonly raised concerns during the meetings are listed below:

- Proper compensation should be paid to the affectees for the loss of their properties;
- Criteria of payments to the affectees should be transparent and fair and must be based on current market rate
- Affected people must given some other additional allowances other than compensation for lost assets
- Displaced villages should be compensated properly like provision of hamlets must be there by government ;
- Minimize the effects of noise, dust, vibration, traffic and lightening associated with construction activities on the communities living near the project area that can cause disturbances and emotional stress,
- Adopt measures to control the spillages from construction machinery in order to avoid accidents;
- Avoid dumping construction material openly;
- Solid waste produced during the construction should be disposed of properly;
- Construction site should be fenced with the corrugated iron sheets to control the noise and dust emissions;
- Scheduled sprinkling of water during the construction phase;

- Utilities disturbed at the site should be restored as early as possible;
- Cutting of trees should be avoided at the maximum level;
- Efforts should be made to transplant the trees according to the available facilities;

5.4 Proposed Measures and Mitigation Measures for Addressing the Stakeholders' Concerns

The contractors and design consultants will include the following environmental and safety provisions in the project design and to protect surrounding communities from the expected impact of construction:

- About 1767 people are being affected by the project. An independent Resettlement Plan should be prepared for fair compensation to the project affectees in order to give them fair replacement cost.
- A tree plantation programme to compensate for the anticipated loss of vegetation during the construction activities, and to help abate pollution caused by emissions, dust, and noise during the operation;
- Project site will be fenced with corrugated iron sheets to minimize the level of noise and dust on the surrounding areas during the construction phase;
- Construction machinery will be placed in an adequate locations away from the sensitive areas to minimize the impacts related to the noise;
- Utilize spray mist to reduce fugitive dust particles from impacting surrounding environment;
- Project facilities will be located outside the existing residential and commercial areas. In order to avoid restricting the mobility of the local stakeholders, construction vehicles will remain confined within their designated areas of movement;
- The utilities to be shifted due to the construction of Apparel Park will be rehabilitated on priority basis to minimize the impact on the stakeholders;
- Punjab Industrial Estates Department and Management Company (PIEDMC) is bound to comply with the prevailing national/provincial regulations concerning pollution and waste disposal;
- PIEDMC will make sure the payment for the acquisition of properties;

- Compensation rates will be finalized after the consultation of the affectees;
- Solid waste generated during construction and at camp sites will be disposed of safely at the waste disposal sites approved by the City District Government Sheikhupura; and
- All necessary measures will be taken to ensure the safety of traffic during construction, including barricades (including signs, pavement markings, flags, and lights). All such barricades will be set up to facilitate the local traffic.

5.5 Major Concerns in the Project Area

In addition to the above discussed commonly raised concerns, there were certain issues at site, which needs special attention during the construction stage. The detailed schedule of meetings at site with the stakeholders and the issues raised is given below in **Table 5.3.**

2/3

Table 5.3: Schedule of Meetings with Stakeholders and their Concerns

Sr. No.	Date	Time	Venue	No. Of Participants	Major Concerns Raised
1.	16-04-2014	02:30 PM	Dera of Rao Naeem, Rao Waseem, **Village Qayam Pur**	22	• Loss of fertile agriculture land. • Compensation should be paid at current market rate. • Dust & noise problem during the construction period. • Water should be sprinkled regularly to control the dust emission. • Government should be shifted proposed project in some other area where barren land available.
2	17-04-2014	11:50 AM	Dera of Akber Ali, Malik Ashraf, **Village Khokhar ki Malian**	36	• Land acquisition should be avoided. • Market rates should be adopted for compensation of land/assets. • The main source of income from farm lands will be disturbed due to land acquisition. • Criteria of payments to the affectees should be transparent • Rate of un-employment will be increased. • Project should be shifted some where else where minimum land acquisition involved.
3	17-04-2014	01:15 PM	Haji Naseer Ahmed, Atif Momin Goraya, Malik Abdul Sattar, Sajid Pindher, Faiz Ahmad Cheema Local Villagers) **Village Saho ki Malian**	41	• Loss of fertile agriculture land. • Loss of employment. • Fair compensation should be provided to the affectees. • Criteria of payments to the affectees should be transparent • Efforts should be made for minimum land acquisition. • Government should use alternative site for proposed project.

4	18-04-2014	12:30 PM	Haji Annaytullah (owner) Dairy Farm	07	• Loss of agriculture land. • Loss of employment sources. • Dairy Farm sales will be affected during the construction work due to inconvenience for the customers. • Social disturbance will occur due to land acquisition. • Arrangement should be made to minimize the disruption of public utilities. • Alternative site should be utilized for proposed Apparel Park.
5	18-04-2014	2:30 PM	Dera of Aslam Number Dar, **Village Bamban Kalan**	25	• Criteria of payments to the affectees should be transparent • Government should be shifted proposed project in some other area where barren land available. • Compensation should be paid at current market rate. • Arrangement should be made to minimize the disruption of public utilities. • Alternative site should be utilized for proposed Apparel Park.

SECTION - 6
ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This section describes the preliminary analysis of potential environmental impacts of the proposed project during planning, construction and operational phase on the physical environment and social setup in the project area. Furthermore, mitigations measures of the perceived environmental impacts are also briefly discussed so that the negative impact of the project can be minimized.

6.1 Environmental Impact Matrices

Methodology adopted for the identification and evaluation of environmental impacts by the proposed project is "Matrix Method". The environmental impacts matrices have been developed to evaluate magnitude of the impacts of various project activities on different environmental settings for both construction and operational phases. These matrices are given in **Tables 6.1** and **6.2**. The following scale has been used for the evaluation of impacts:

LA =	Low Adverse (low/short-term damage to the environment)
MA =	Medium Adverse (moderate damage to the environment)
HA =	High Adverse (severe damage to the environment)
B =	Beneficial (beneficial to the environment)
N/A =	Not Applicable
O =	Insignificant / No Impact

6.2 Environmental Sensitivity Map

A comprehensive map showing sensitive receptors of the project area such as, educational institutes, mosques, health facilities etc is given in **Figure 6.1**. Tentative locations of these Sensitive Receptors (SR) are indicated on the map and list of these SRs is attached as an **Annexure-IV**.

6.3 Anticipated Impacts during Pre-Construction/Design Phase

Following is the description of impacts envisaged and the recommended mitigation measures during Pre-construction/Design Phase:

6.3.1 Design & Layout Planning

Incompatible layout plan and engineering design of the project's structures can undermine the overall aesthetic beauty and ambience of the project area as the project

area is planned to be constructed on agriculture land. The prospective and futuristic needs can result in structures with low social acceptability and functionality. This impact will be temporary and moderate negative in nature.

Mitigation:
All structural, layout and engineering designing of Apperal Park should be in strict accordance with the applicable by-laws and engineering parameters.

6.3.2 Topography

The Project area lies in the flat terrain and consists of natural drains. Furthermore, development of the area will increase the impervious part of the project area. Most of the existing landuse is agriculture and will be lost due to development of the proposed project. Also excavation/borings would be done for infrastructural development. However, this impact will be insignificant in nature and no change in topography is expected.

6.3.3 Land Acquisition and Resettlement

Due to the construction of the Apperal Park, land acquisition will occur. The land acquisition involved is approximately 1565 Acre. This will result in loss of highly agricultural area, disturbance to people and people if losing their farms will have to start their business from scratch if relocated. Although most of the area is agriculture, but area of the residential communities is coming in the proposed project site.

Mitigation measures will involve careful alignment and route selection by the designer to minimize the impacts by avoiding the residences of these families. Proper access should be provided to the farmers to cultivate the divided land.

6.3.4 Changes in Land Value

The proposed Project is expected to increase the land values, Land owners will have an opportunity to sell their land on increased prices and start new businesses. This impact will be major positive in nature.

6.3.5 Social Issues

Due to the proposed Project, bifurcation of settlements, loss of agricultural land/fields may occur serious problem for the residents. This will result in causing inconvenience to the residents/farmers and affect their daily activities. This impact is permanent and moderate negative in nature. As the project area is high agricultural area with scattered houses educational institutes and Mosques. There are about 242 HHs will be relocated from the affected villages

Mitigation measures will include provisions in the design such as: During construction phase, job opportunities will be created for the local people. Furthermore, indirect positive impacts on the local markets of Sheikhupura are anticipated. However, people losing their land may get livelihood problems if land is their only mean of earning. As the site is away from any major town, the changes in the local culture and lifestyle will be minor during construction phase of the project.

Physical Cultural Resources

Some Physical Cultural Resource is falling within the Project area, so there is need for relocation of such resource. Cultural resources such as graveyards, mosques and shrine are situated in nearby communities and are visited by local people. This impact will be permanent and major negative in nature.

Mitigation measures will include compensation to the communities which have important Physical Cultural Resource.

Biodiversity Conservation and Natural Resource Management

Due to the proposed Project, numbers of trees of various species will be affected. Like fruit trees mainly Guava, Orange, lemon and the some trees include Phulai, Sheesham, Kikar, Eucalyptus, Bakain, Taman, Kau etc. This may have an adverse affect on the ecological habitat of the project area. Many trees and plants will be cut off during construction phase for site clearance. Trees are vital ecosystem, which perform variety of functions for the improvement of environment such as reduction in air pollution, noise abatement, cooling effect on earth, supply of oxygen etc. Furthermore, native terrestrial fauna and avifauna species will have to migrate during construction phase. These impacts will adversely impact the natural ecosystem of the area. This impact will be permanent and moderate negative in nature.

The proposed mitigation measures will include:

- Incorporate technical design measures to minimize removal of these trees, if possible such as change in design;
- Plan for compensatory planting for each trees against each fallen tree of similar floral function;
- Provision of compensation in the Project Budget for the loss of trees to the affected people;
- Disallow introduction of invasive/ exotic species and native species should be recommended for plantation ;
- Only necessary cutting of trees shall be allowed and all trees beyond project site shall remain un-harmed

- The contractor's staff and labour should be strictly directed not to damage any vegetation. They shall use the paths and tracks for movement and should not be allowed to trespass through farmland.
- Construction vehicles, equipment and machinery will remain confined within their designated areas of movement
- Comprehensive plantation plan shall be implemented during construction phase of the project
- Borrow pits should be fenced if located near grazing fields so that no animal can face hazard of injury
- The camps should be properly fenced and gated to check the entry of grazing animals in search of eatable goods. Similarly waste of the camps should be properly disposed off to prevent the chances of eating by wild animals, which may prove hazardous to them.
- Contractor should ensure that the no hunting, trapping of animal should be carried out during construction
- Special measures should be adopted to minimize impacts on wild birds such as avoiding noise generating activities during the critical period of breeding.

6.3.6 Air Quality

Activities during construction of the infrastructure such as earthwork, Concrete plant, operation and movement of vehicles on the unpaved roads may be the potential sources of dust, PM and other gaseous pollutants. Due to the construction of the proposed project, noise and air pollution and associated health risks may increase. Air pollution related mitigation should be adopted for the health of labor, working staff and specific villages. Following are the general mitigation measures to minimize potential impacts on air quality:

- Concrete hot mix and batching plants shall not be located near residential areas
- NEQS applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works
- Where needed Air Pollution Control (APC) equipment shall be installed with concrete plants, Batching Plants and generators
- Preventive measures against dust should be adopted for on-site mixing and unloading operations. Regular sprinkling of the Site by water should be carried out to suppress excessive dust emissions
- Open burning of solid waste should be strictly banned
- All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions

6.3.7 Noise

Existing background noise levels in the project area are well within the acceptable range. However, occupational noise is likely in the construction phase. Main sources of noise will be heavy machinery such as bulldozers, excavators, stabilizers, concrete mixing plant, pneumatic drills and other equipment. The above machinery is expected to generate noise levels that would be severe in the areas. Noise generated by construction machinery is likely to affect sensitive receptors located within 50 meters of the project area. Following are the general mitigation measures to minimize the impacts of noise:

- Provide construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use
- Preferably, restrict construction vehicles movement during night time near the residential areas and camp sites
- Locate the concrete mixing, and materials shipment yards at least 2km from residential areas, particularly schools and health centers
- Selection of up-to-date and well maintained plant or equipment with reduced noise levels ensured by suitable in-built damping techniques or appropriate muffling devices.

Heavy machinery like percussion hammers and pneumatic drills should not be used during the night

6.3.8 Solid Waste Management

Proper solid waste management system is required for the efficient handling of waste and reduction of waste related impacts during construction. Impacts due to solid waste are expected to be temporary and minor negative in nature.

Mitigation measures will include:

- Planning for disposal sites with reasonable distance from the human settlements;
- Disallow siting for work camps, including waste dump sites, in a distance closer than one (1) kilometer to any inhabited areas;
- Incorporate technical design features for refuse collection containers at sites that would minimize burning impacts;
- Devise plan(s) for safe handling, storage and disposal of harmful materials; and
- Burning of waste will not be allowed in any case.

6.3.9 Excavation of Earth

The excavation of earth from borrow areas and for clearance of project area may result in change of edaphic characteristics of soil. Loss of fertile top soil may affect adversely on the agriculture of the project area. For the construction of the proposed

project, about 1565 Acre of land will be acquired which is highly agricultural in nature. This impact is permanent but major negative in nature.

Mitigation measures will include:

- Borrow pits will not be located on agricultural land unless completely unavoidable; and
- Contractor needs to obtain approval for excavation and submit the plan of rehabilitation of the site after excavation;
- The top 1 ft soil will be stored for future use in rehabilitation of the site; and
- Plan for Rehabilitation of Borrow Pits will be implemented.

6.3.10 Public Utilities

Due to the proposed project, public utilities affected may create disruption of public services and economics including telephone lines, open drainage, electric facilities etc. This impact is however temporary and moderate negative in nature.

Mitigation measures will include:

- Incorporate technical design features to minimize affect on public utilities; and
- All public utilities likely to be affected by the proposed project need to be relocated/rehabilitated well ahead of the commencement of construction work. Incorporate technical design features to minimize affect on public utilities; and
- All public utilities likely to be affected by the proposed project need to be relocated well ahead of the commencement of construction work.

6.3.11 Change in Hydrologic Regime

The project has network of drainage channels/ nullah falling in to the Qadarabad Baloki Canal and Rivers Ravi. Groundwater table is observed high during monsoon season. Tube Wells and hand pumps are the main source for drinking water in the project area.

Mitigation measure would involve:

- Provision of sufficient sizes of drains to take design flows.

6.3.12 Loss of Agricultural Land

Due to the proposed project, mainly agricultural land will be lost and crop yield will be disturbed. But in the long run, due to the construction of the Apparel Park, better Infrastructure facilities and job opportunities will be available to the farmers to enhance their economy. This impact is insignificant in nature. No Mitigation measures are required.

6.3.13 Surface and Ground Water

Sem Nullah is the significant water body present in the project area and construction activities may increase the pollution load . Also, there is a possibility that various materials like fuel, lubricant oil and other oily products, which are used during the construction phase may contaminate groundwater, if they are not handled properly. This contamination will not only endanger the aquatic life but may also result in jeopardizing the health of population/ communities. Surface water gets contaminated by the discharge of wastewater on the surface which may percolate.

These impacts are temporary and negative in nature.

Mitigation measures will include;

- Protection of groundwater reserves from any source of contamination such as the construction and oily waste that will degrade its potable quality;
- Planning of location of construction camps must be at an appropriate distance from the surface water bodies;
- Septic tanks and soakage pits should be designed to cater the wastewater from the construction camps.

6.4 Construction Phase

Following is the brief description of impacts and their mitigation envisaged during the Construction Phase.

6.4.1 Topography

The project area has plane/flat topography and all land is highly cultivated. Extensive work is involved for preparation and clearing of the land. This may involve many activities; cutting and clearing of the land in the project area and borrow pits and may lead to erosion of top soil cover. This impact is permanent and minor negative in nature.

Mitigation measures will include:

- Where the use of agricultural land, the top 1 ft of the plough layer will be stripped of and stockpiled for redressing the land after the required borrow material has been removed;
- Where deep ditching is to be carried out, the top 1m layer of the ditching area will be stripped and stockpiled. The ditch will initially be filled up with scrap material from construction and then levelled with the stockpiled topsoil;
- Ditches or borrow pits that cannot be fully rehabilitated will be landscaped to minimize erosion and to avoid creating hazards for people and livestock; and

- Landowners will be compensated according to the terms of lease agreements negotiated with them and the restoration actions agreed upon by the Contractor will be duly carried out.

6.4.2 Soil

Earth work operation for construction of Apparel park may cause damage to fertile layer, erosion of the loose soil through drainage. Furthermore, excavation may contribute to increase soil erosion. This will lead to increase silt load and turbidity in the Qadarabad Baloki Canal and subsequently to River Ravi. Contamination of soil may be caused by oil and chemical spills at batching plant sites, workshop areas and equipment washing yards. Also due to unplanned use of borrow areas, soil erosion may cause degradation of landscape. These impacts may limit the future use of land. The project area is a plain terrain. Soil erosion and contamination may occur at contractors' camps due to the following likely impacts:

- Excavation of earth/cutting operations, clearing of vegetation and land levelling activities can destabilize the surrounding land surface;
- The unspent materials and debris produced from consumed up materials, if left as such and allowed to mix with soil underneath, can degrade the quality of receiving soils and may render them unfit for plantation later on;
- Leakages of oils, lubricants, chemicals, and other similar substances from their storage sites and from engines of the generators, machines, equipments and vehicles can spoil the receiving soils and may undermine ability of the spoiled soils to support growth of vegetation and plants;
- Non-provision of septic tanks with the temporary worksite toilets, constructed for the labour and others, can contaminate the effluent receiving soils because of raw nature of the effluents;
- Also washing of the gadgets, machinery and equipment without proper drainage of the washout water can adversely affect the soil quality.
- Onsite storage of the construction materials such as sand, aggregate, crushed stone, cement, bricks, lubricants, fuels and iron bars on the land without an intervening barrier, can degrade soil quality and may smear them with fine particulates of the dumped materials;
- Improper onsite storage of equipment and machinery such as wheel barrows, mixers and compactors and disorderly parking of machinery and equipment may cause soil contamination from trickling or accidental leakages of oils and lubricants there from.

Mitigation measures will include:

- All spoils will be disposed off as desired and the site will be restored back to its original conditions;

- Non-bituminous wastes from construction activities will be dumped in approved sites, in line with the legal prescriptions for dump sites, and covered;
- As applicable and needed, plantation of grasses and shrubs will be done at appropriate place where required;
- Excavations would be kept confined to the specified foundation spots as per the approved engineering drawings. Unnecessary excavations should be avoided;
- Site camps for the resident labour should not be setup on the land earmarked for developing green belts and lawns;
- Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures or store rooms, which should be safe from rainfall and away from any potential source of fire;
- Septic tanks of adequate capacities should be constructed for receiving and treating wastewater from all temporary worksite toilets and at the temporary container offices, if any. The toilet wastewater should not be discharged untreated onto the adjacent lands;
- All machineries and materials should be stored at the designated areas and compounds;
- All the unspent and left over materials be completely removed offsite upon completion of construction and the site be restored to original or near to original condition; and Washout from washing of equipment and gadgets should be drained into either a septic tank or a sand-gravel bed for removal of the grit and contaminants.

6.4.3 Land Acquisition, Resettlement and Compensation

Due to the construction of the Apperal Park land acquisition will occur. The land acquisition involved is approximately 1565 Acre. This will result in loss of highly agricultural area, disturbance to people and people if losing their farms will have to start their business from scratch if relocated. Although most of the area is agriculture, but area of the residential communities is coming in the proposed project site. The project will require total 1,565 acres of land. Out of those 1484 acres is cultivated land and 27 acres in the form of built up areas. The landuse pattern of the total land area to be acquired is given below in Table 6.1.

Table 6.1: Landuse Pattern

Sr. No.	Land Use Pattern	Area (in Acres)
1	Cultivated Land	1484
2	Fish Farm	27
3	Built Up Area	27
4	Orchards	5
5	Dairy Farm	2

6	Seepage drain	7.5
7	Roads/Tracks	13
Total		1565

Estimation of the Affected Households (HHs) and Population

Total 242 HHs will be relocated from the 04 affected villages with total population of 1767 persons. The built-up area of these HHs is 27 acres. Population has been estimated by taking average HH size of 7.3 persons (DCR1998, District Sheikhupura),

Mitigation measures will involve land management and providing judicious compensation to the affectees by providing sufficient budget in the project cost. The process of land acquisition and compensation will be followed in a transparent manner to minimize the impacts.

According to Land Acquisition Act 1894, the following points are to be considered while determining compensation to the Project affectees:

The market value of land at the date of publication of notification under section 4 sub section (1);

- The damage sustained by the person interested, by reason of the taking of any standing crops, or trees which may be on the land at the time of the collector's taking possession thereof;
- The damage if any sustained by the person interested at the time of the collector's taking possession of the land by reason of acquisition injuriously affecting his other property, moveable, or immoveable, in any other manner, or his earning;
- As a consequence of the acquisition of the land by the collector, the person affected is compelled to change his residence or place of business, the reasonable expenses incidental to such change; and

Proper compensation should be paid to the affectees for the loss of their properties before taking the possession of the land. The Criteria of payments to the affectees should be transparent and fair.

6.4.4 Construction Camps/Camp Sites

Due to the proposed camp sites, loss of vegetation and assets on the selected land and dissatisfaction of rehabilitation measures during and after completion of construction phase may occur. However, it will be a temporary and minor negative impact. For these impacts, mitigation measures have been developed to minimize the likelihood, extent or duration of their occurrence, and any associated adverse effects. **Table 6.3**

summarizes potential impacts and proposed avoidance and mitigation measures associated with construction camps.

Table 6.2: Summary of Impacts of Worker Camp & Mitigation Measures

Potential Impact	Proposed Avoidance and Mitigation Measures
Environmental	
• Temporary habitat loss or disturbance • Temporary visual intrusion • Noise emissions • Waste generation • Discharge of sanitary effluent and rainwater run-off to water courses	• Individual trees and shrubs of high conservation value to be marked and preserved wherever possible or transplanted if the root conditions are suitable for such an operation. • Reinstate any temporary facilities to pre-existing conditions in ecologically sensitive areas. • Implement landscaping plan for all facilities in areas where high landscape value and visual vulnerability to the proposed activities warrants site-specific landscape restoration measures. • Limit the working hours of noisy activities when near identified sensitive receptors to normal day time working hours. • Operate equipment in a manner sympathetic to the ambient noise environment. Do not leave equipment idling unnecessary. • Eliminate tonal, impulsive or low frequency noise through noise control engineering techniques where practicable (fitting of mufflers, damping, etc.), and substitute for a different method if necessary (e.g., instead of hammering actions, use hydraulics). • Provide adequate warnings of impeding works to all potential receptors within a 1 km corridor surrounding the right-of-way

Potential Impact	Proposed Avoidance and Mitigation Measures
	via public notices and local news. • Implement Waste Management Plan to include procedures for the classification, storage and disposal of all construction wastes and the training of employees who handle hazardous materials. • Ensure that discharge of sewage from temporary construction facilities to surface courses does not impact surface water ecology. This will be achieved through the provision of treatment facilities and by enforcing the discharge standards.
Social	
• Worker camp sitting: consultation surrounding potential construction camp sites revealed concerns regarding the location of proposed sites for Worker Camps. • Tension between Communities and Workers: cultural differences, behavior of construction workers, potential disregard for local cultural norms, potential for prostitution and the attraction of "hangers on" at camp sites could lead to increased tension between local communities and the workers and camps. The scale of this impact will depend on successful implementation of mitigation measures and in part on the origin of the workforce staying in construction camps. Some communities have expressed particular concerns in this regard.	• In order to minimize social disturbances as a result of construction workers, existing camps from previous projects will be identified as a first preference. State land will be a second preference for worker camp locations, followed by land where there is a willing lessee. • The project will seek to avoid sitting camps where their presence might contribute to any conflicts between residents. • Employment policies which aim to maximize job opportunities for local people will help to minimize tensions caused by different socio-cultural values. • Training will be provided to all staff on camp management rules and overall discipline and cultural awareness. This will include, in appropriate languages: 1. A briefing on Camp Rules 2. A community relations orientation to increase awareness about the local

Potential Impact	Proposed Avoidance and Mitigation Measures
	area, cultural sensitivities and the project Code of Conduct 3. Awareness-raising on health considerations, including STDs. • The construction contractor is required to develop a Construction Camp Management Plan to address: 1. Discipline 2. Community liaison 3. Ethnic tensions 4. Market distortion (see employment and local sourcing mitigation) and 5. Communicable diseases. • A Code of Conduct and Camp Rules will be required within the Construction Camp Management Plan, which provides policies and a disciplinary framework with respect to worker behavior.
Camp Location	
The final location will be determined by the construction contractors and agreed with the PIEDMC.	The construction contractor will be required to assess the environmental/social sensitivity of any additional or alternative sites prior to their approval for adoption.

Some additional mitigation measures will include:

- All efforts during the construction stage should be made to minimize the removal of existing macro-plants at camp sites;
- The contractor(s) will provide plan for removal & rehabilitation of site upon completion;
- Photographical and botanical inventory of vegetation before clearing the site; and
- Compensatory plantation to be scheduled when construction works near end.

6.4.5 Health and Safety

a) Occupational Health and Safety

Health risks and workers safety problems may result at the workplace if the working conditions provide unsafe and/or unfavorable working environment due to storage, handling and transport of hazardous construction material. Workers will be provided with safe and healthy working environment taking into account risks inherent to the particular sector and specific classes of hazards in Project area.

Mitigation measures will include;

- Obligatory insurance against accidents for labourers/workers;
- Providing basic medical training to specified work staff and basic medical service and supplies to workers;
- Layout plan for camp site, indicating safety measures taken by the contractor, e.g. fire fighting equipment, safe storage of hazardous material, first aid, security, fencing, and contingency measures in case of accidents;
- Work safety measures and good workmanship practices are to be followed by the contractor to ensure no health risks for labourers;
- Protection devices (ear muffs) will be provided to the workers doing job in the vicinity of high noise generating machines;
- Provision of adequate sanitation, washing, cooking and dormitory facilities including light up to satisfaction;
- Proper maintenance of facilities for workers will be monitored;
- Provision of protective clothing for labourers handling hazardous materials, e.g. helmet, adequate footwear for bituminous pavement works, protective goggles, gloves etc;
- Ensure strict use of wearing these protective clothing during work activities;
- Elaboration of a contingency planning in case of major accidents;
- Instruct foremen to strictly enforce the keeping out of non-working persons, particularly children, off work sites;
- Adequate signage, lightning devices, barriers, yellow tape and persons with flags during construction to manage traffic at construction sites, haulage and access roads.

b) Health and Safety

The construction activities and vehicular movement at construction sites and access service roads may result in road side accidents particularly inflicting local communities who are not familiar with presence of heavy equipment. This is a temporary and minor negative impact. Quality of groundwater and surface water resources available in the nearby local communities may be affected due to the

construction activities, oil spillage and leakage, roadside accidents etc. The labour works with different transmittable diseases may cause spread out of those diseases in the local residents. The borrow pit areas located near the residential, settlements, may cause accident for the people moving near to those areas.

Mitigation measures will include:

- There should be proper control on construction activities and Oil spillage leakage of vehicles;
- The Borrow areas should be fenced properly and banned for the movement of the residents;
- The labour works with different transmittable diseases should be restricted within the construction site;
- Efforts will be made to create awareness about road safety among the drivers operating construction vehicles;
- Timely public notification on planned construction works;
- Close consultation with local communities to identify optimal solutions for diversions to maintain community integrity & social links;
- Seeking cooperation with local educational facilities (school teachers) for road safety campaigns;
- Provision of proper safety and diversion signage, particularly at urban areas and at sensitive/accident-prone spots;
- Setting up speed limits in close consultation with the local stakeholders; and
- If identified, consider additional guard rails at accident-prone stretches and sensitive locations (schools);
- The communicable disease of most concern during construction phase, like sexually-transmitted disease (STDs) such as HIV/AIDS, should be prevented by successful initiative typically involving health awareness; education initiatives; training heath workers in disease treatment; immunization program and providing health service;
- Reducing the impacts of vector borne diseases on long-term health effect of workers should be accomplished through implementation of diverse interventions aimed at eliminating the factors that lead to disease, which includes;
- Prevention of larval and adult propagation of vectors through sanitary improvements and elimination of breeding habitat close to human settlements;
- Eliminate any unusable impounding of water;
- During construction work, pedestrian and vehicular passages should be provided for crossing near settlement;

- Bridges and other structures have to be structurally stable enough to bear maximum ground acceleration recorded for the area in past;
- Fencing should be strong enough so that it can not be broken easily by local people for making passages;
- Discharge of any wastewater at upstream of the point of public supply should be restricted;
- Batching plants should be installed away from settlements;

Use of water should not disturb public water availability. Source of water should be selected carefully.

6.4.6 Borrow/ Open Pits

Borrow/ open pits and its excavation activities may result in land disputes, soil erosion, loss of potential cropland, loss of vegetation, landscape degradation, and damage to road embankments.

Borrow/ Open pits may also result in potential sources of mosquito breeding may prove hazardous to human beings, livestock and wildlife. This will also degrade hygienic condition of the project area. Plan for closure and rehabilitation of the borrow pit sites will be prepared and implemented. This impact is permanent and minor negative in nature.

Mitigation measures will include:

- Conversion of borrow pits into fish farms and care in selection of borrow areas;
- Necessary permits must be obtained for any borrow pits from the competent authorities;
- No excavations are allowed within distance of 500 m of ROW;
- In borrow pits, the depth of the pit will be regulated so that the sides of the excavation will have a slope not steeper than 1:4;
- Soil erosion along the borrow pit shall be regularly checked to prevent / mitigate impacts on adjacent lands; and
- In case borrow pits fill with water, measures have to be taken to prevent the creation of mosquito-breeding sites.

6.4.7 Pollution Prevention and Abatement

Pollution Prevention technologies and practices will be applied in construction phase according to the International good practices and national and international recognized standards. National Environmental Quality standards (NEQS) will be adopted as performance indicators.

Different types of waste, especially construction waste, are expected to be generated in large quantities from different activities of the proposed project. Small quantities of hazardous waste may also be generated. During the construction phase, gaseous emission may occur from a wide variety of activities. The impacts of different project activities and their appropriate preventive and abatement techniques and mitigation measures are discussed below:

a) Air Quality

Air quality will be affected by fugitive dust emissions from construction machinery; dust from the unpaved surface and construction vehicles. Emissions may be carried over longer distances depending upon the wind speed, direction, temperature of surrounding air and atmospheric stability. Besides, multifarious construction activities and increased vehicular traffic (construction vehicles) would also contribute to the localized airborne dust. Once in the air, the larger sized particles, under influence of gravity, tend to settle down in the immediate vicinity of the source. The suspended particulate matter (SPM) of the size smaller than 10 micrometer (PM_{10}) tends to remain suspended in the environment for much longer and persistent time and is an environmental hazard. The objectionable impacts of settling of the suspended dust would be its dry deposition on vegetation, glass windows, motor vehicles, buildings, and other exposed surfaces. Exhausts from fossil fuel burning in the construction machinery will also deteriorate local air quality. Similarly, exhausts from generators can also have impacts on air quality in the vicinity.

The critical sources of dust pollution during the construction phase will be:

- Unpaved road surface;
- Transportation of materials and other construction activities that create dust emissions.

The overall impact on the quality of air during the construction phase will, however, be temporary and limited to the project's implementation phase only.

Mitigation measures will include:

- All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions;
- Blowing of dust from potential sources at the worksite should be avoided by shielding them from the exterior, for example using polythene curtains or raising a fence of corrugated sheets around areas of active constructions;

- Blowing of dust and particulate matter from stockpiled loose materials (e.g. sand, soil) should be avoided either by sheeting them with tarpaulin or plastic sheets or by sprinkling them with light shower of water;
- Open burning of solid waste from the contractor's camps should be strictly banned;
- Preventive measures against dust should be adopted for on-site mixing and unloading operations. Regular water sprinkling of the site should be carried out to suppress excessive dust emission(s);
- Only good quality oils, petroleum products, additives and spares should be used in the machinery, generators, and the construction vehicles. Usage of used oil should be strictly prohibited;
- Emissions from power generators and construction machinery are important point sources at the construction sites. Proper maintenance and repair is needed to minimize the hazardous emissions; and
- NEQS applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works.

Some of dust problems caused during the construction phase of the Project could be effectively mitigated by the implementation of simple procedures by the Contractor including:

- Service roads (used for earthmoving equipment and general transport) should be regularly sprayed with water during dry weather;
- All excavation work should be sprinkled with water;
- Construction workers should be provided with masks for protection against the inhalation of dust;
- Vehicle speed in the project area should be prescribed not more than 20 km/ hr and controlled accordingly; and
- Vehicles used for construction should be tuned properly and regularly to control emission of exhaust gases.

b) Noise and Vibrations

Noise is a by-product of human activity, and area of exposure increases as function of mobility and construction activities. Sources of noise during construction are heavy machinery such as bulldozers, excavators, stabilizers, concrete mixing plant, pneumatic drills, stone crushers and other equipments. The above machinery is expected to generate noise levels that would be severe in the areas whereas previously no roadside construction is done as in the case of the proposed project. Noise generated by construction machinery is likely to affect sensitive receptors located within 50 meter of the proposed project. This impact is temporary and moderate negative in nature. **Table 6.3** illustrates maximum permissible noise levels for different situations and is given below:

Table 6.3: Maximum Limits of Noise Levels

Noise Level dB (A)	Situation
194	Lung damage
180	Ear drum rupture
150	Absolute limit with ears protected
150	Maximum of instantaneous noise
135	Absolute maximum with ears unprotected
100	Prolonged noise causing permanent damage
90	Factory work for an 8-hour day, 5 days a week
*85	Ear protection should be worn
80	Noise on building or construction sites
70	Normal road traffic near residential areas

Source: *"Environmental Degradation"* by Engr. Col. Mumtaz Hussain

*Above 85 dB (A) ear protection devices should be worn.

According to **Table 6.4** given below, which presents the damage risk criteria for hearing loss, noise level above 110 dB(A) can be tolerated for half an hour only.

Table 6.4: Damage Risk Criteria for Hearing Loss

Sr. No.	Maximum Allowable Duration per day (Hours)	Noise-Level in dB (A)
1	8	90
2	6	92
3	4	95
4	3	97
5	2	100
6	1 ½	102
7	1	105
8	½	110
9	¼ or less	115 (Max.)

Source: Occupational Safety and Health Administration, OSHA, USA

The expected noise levels of heavy machineries during construction phase of the Apparel Park will be estimated.

The likely impacts due to noise are:

- Persistently higher noise levels can produce psychological effects of distraction of attention, irritation and short temperedness in the exposed persons;
- Noisy settings and higher background levels can cause temporary threshold shift and the consequent habit of speaking loud, which may cause damage to vocal cords in the persons exposed;
- Noise produced from moving construction vehicles and blowing of pressure horns, at times, could be intolerable particularly during quiet hours of night; and
- Vibrations from machinery and equipment such as hand held compactors and concrete vibrators can produce easy fatigability and generalized aches in the persons operating these machines.

All mitigation measures mentioned below should be taken in order to minimize the impacts of noise in the project area. These measures include, but are not limited to the following:

- Selection of up-to-date and well maintained plant or equipment with reduced noise levels ensured by suitable in-built damping techniques or appropriate muffling devices;
- Confining excessively noisy work to normal working hours in the day, as far as possible;
- Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use;
- Preferably, restricting construction vehicles movement during night time;
- Heavy machinery like percussion hammers and pneumatic drills should not be used during the night without prior approval of the client;
- Vehicles and equipment used should be fitted, as applicable, with silencers and properly maintained;
- Use of low noise machinery, or machinery with noise shielding and absorption;
- Contractors should comply with submitted work schedule, keeping noisy operations away from sensitive points; implement regular maintenance and repairs; and employ strict implementation of operation procedures;
- Noise barriers in sensitive areas in the form of high boundary walls (concrete or wood), earth berms, etc. in front of schools, hospitals and mosques.

c) Noise Sensitive Receivers

Representative noise sensitive receivers (NSRs) were identified during the site visit of the project area. As some of the part of the project area is highly agricultural with the scattered structures along the roads on both sides of the proposed project therefore, the

first layer of these noise sensitive receivers provides acoustic shielding to those receivers behind them. The noise sensitive receivers include the following:

Residential Uses	:	All domestic premises including temporary housing
Institutional Uses	:	Schools
Worship Places	:	Mosques
Others	:	Dispensary, Health centers

d) Solid Waste (Construction Waste and Hazardous Waste)

Due to construction activities waste will be generated at construction and contractors camp site. The construction waste will include waste water, oil spillage from machinery, domestic waste, and solid waste etc. The handling and storage of oil, bitumen may be a source of environmental pollution as a hazardous waste. This will result in unhygienic conditions, health risk to work force and public at the camp site. The likely impacts of solid waste are:

- Insecure and unhygienic disposal of the solid wastes generated at the worksite, particularly garbage and trash may cause degradation of soil and land;
- Insecurely disposed off heaps of wastes containing kitchen garbage and food waste can serve as breeding grounds for the disease spreading vectors and rodents;
- Throwing away of solid wastes into water channels and the wastewater network can result into choking of the latter.
- However, small amounts of solid waste may be generated due to different construction activities and it will mainly include surplus excavated and construction material, construction and demolition (C&D) waste, chemical waste, packaging waste, abandoned drums and equipment etc. and general refuse.
- The indiscriminate disposal of solid waste may cause dust emissions due to wind blowing thereby affecting the health of the workers working or passing in the immediate vicinity of solid waste heaps.
- Working in the project area will also generate some municipal solid waste and can cause nuisance to the workers themselves.

These impacts are temporary and minor negative in nature.

Mitigation measures will include:

- Wastewater effluent from contractor's workshop and equipment washing yards would be passed through gravel/ sand beds to remove oil/ grease contaminants before discharging it into natural streams;

- An efficient and responsive solid waste management system should be devised for the entire duration of the construction phase. Such a system should provide for separate collection of different categories of constructional wastes. The wastes which will be reusable/recyclable (iron bars, aluminum) should be sold to waste vendors and those which cannot be sold out (brick pieces) may be used as a filling material for leveling the depressions, subject to technical feasibility;
- Training of working force in the storage and handling of materials and chemicals that can potentially cause soil contamination;
- Solid waste generated during construction and camp sites will be safely disposed in demarcated waste disposal sites and the contractor will provide a proper waste management plan;
- Proper labelling of containers, including the identification and quantity of the contents, hazard contact information etc.;
- Training of employees involved in the transportation of hazardous material regarding emergency procedures;
- Providing the necessary means for emergency response on call 24 hours/day;
- The sewage system for camps will be properly designed (pit latrines or, as required, septic tanks) to receive all sanitary wastewaters;
- Lined wash areas will be constructed within the camp site or at site, for the receipt of wash waters from construction machinery;
- Use of pesticides in nurseries will be done and deemed necessary as suggested by the experts;
- Insecticides that are less toxic to human health should be used;
- Construction workers and supervisory staff should be encouraged and educated to practice waste minimization, reuse and recycling to reduce quantity of the waste for disposal; and
- Prohibit open burning of solid waste. C&D waste shall be dumped in the approved depression sites
- Recyclable packaging waste shall be sorted out and sold after separations
- Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary waste generation.
- Provide sufficient waste disposal points and regular collection for disposal
- Any unused chemical bin with remaining functional capacity shall be recycled

e) Green House Gas (GHG) Abatement

The main sources of green house gases (CO_2, CH_4, NO_x etc) during the construction activities of the proposed Apparel Park will include both mobile and stationary sources. The mobile source will be the construction and transportation vehicles while the stationary source will be the batching and concrete plants. Emission of green

house gases cause global warming and other climatic changes on regional and global scale.

Mitigation measures will include:

- Regular motioning of the vehicles for engine efficiency;
- Avoid any unnecessary work and transportation;
- Alternative energy resources should be considered where possible;
- NEQS applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works.

f) Resource Conservation

Almost all the materials to be used in the construction of Apparel Park are non-renewable and therefore their sustainable use is necessary for the future use. Large quantities of water are used in the construction of concrete structures and in watering the unfinished surfaces. Use of water is of major concern while developing resource conservation strategy. Other construction material like aggregate and sand are locally available and there is no concern of scarcity in future use

Mitigation measures will include:

- Wastage of water should be reduced by training the workers involved in water use;
- Wastage of water should be controlled through providing proper valves and through controlling pressure of the water;
- Water jets and sprays should be used for watering surfaces rather than using overflow system;
- Source of water should be carefully selected. Water use should not disturb the existing community water supplies;
- Unnecessary equipment washings should be avoided;
- Use minimum amount of bitumen for road surfacing.

g) Energy Efficiency

Use of electricity will be insignificant. Diesel and residual fuel oils will be used to operate construction machinery and concrete and batching plants. Sustainable use of energy resources is very important not to continue future use but it will also help to reduce air emissions. For conservation of energy, efficiency of the engines and burning processes is very important. Electricity shortage is not expected but the sustainable use of diesel and residual fuel is necessary.

Mitigation measures will include:

- Ensure adequate insulation to reduce heat loss through batching/concrete plants;

- Regularly monitor CO and CO_2 content of the flue gases to verify that combustion systems are using practical excess air volumes;
- Maintain clean heat transfer surfaces in batching/concrete plant;
- Regular service of the vehicles and bathing plants will reduce the mechanical losses of energy.

6.4.8 Surface and Groundwater

Sem Nullah is the significant water body present in the project area and construction activities may increase the pollution load . Also, there is a possibility that various materials like fuel, lubricant oil and other oily products, which are used during the construction phase may contaminate groundwater, if they are not handled properly. During the construction phase, the sanitary wastewater will be generated at the workers' camp(s). If this wastewater is allowed to stagnate in water ponds on the site, it can percolate into the soil, thereby, contaminating groundwater. Therefore, runoff from the construction area may contain increased loads of sediments, other suspended solids and contaminants. Moreover, runoff may carry hazardous materials like cement, fuel, lubricant oils etc. Discharge of sewage from construction camps may discharge bacteriological contaminants into the water bodies. This contamination will not only endanger the aquatic life but may also result in jeopardizing the health of population/communities. Surface water gets contaminated by the discharge of wastewater on the surface which may percolate.

These impacts are temporary and minor negative in nature.

Mitigation measures will include;

- Protection of groundwater reserves from any source of contamination such as the construction and oily waste that will degrade its potable quality;
- Regular water quality monitoring according to determined sampling schedule;
- Prohibit washing of machinery and vehicles in surface waters, provide sealed washing basins and collect wastewater in sedimentation/retention pond;
- Continuous withdrawal and over pumping of groundwater should be avoided. Instead, intermittent pumping be carried out to conserve the groundwater resources;
- Take precautions construct temporary or permanent devices to prevent water pollution due to increased siltation;
- Wastes must be collected, stored and taken to approve disposal site. Construction camps shall not be located near surface water bodies and groundwater bodies to avoid bacterial contamination of sub surface water;
- Storage yards, Batching plants and bitumen plants shall not be located near water bodies to avoid non-point pollution;

- Construction material such as concrete and oil etc. should be properly stored to avoid any chance of contamination of subsurface or surface water;
- Temporary cut-off drains shall be constructed around large stockpiles to regulate the sediment laden runoff;
- Temporary Best management Practices (BMPs) like vegetated strips etc. shall be adopted near water bodies to partially treat the runoff during construction.

6.4.9 Biodiversity Conservation and Natural Resources

Flora

Trees are vital ecosystem, which perform variety of functions for the improvement of environment such as reduction in air pollution, noise abatement, cooling effect on earth, supply of oxygen etc. It is obvious that the implementation of project activities will cause cutting of ornamental plant, existing on the median and within the proposed ROW. These ornamental plants of different species will be affected by the execution of the project. The cutting of these plants will cause a negative impact on the flora of the tract. Following impacts are expected on the flora of the project area:

- During the entire construction period dust laden polluted air will form a dust film on leaves thus blocking sunshine and stomata consequently hindering photosynthesis processes causing detrimental effect on the plant health;
- Exhaust of noxious gases from movement of heavy machinery will further pollute air which will adversely affect health and vigor of plants;
- Establishment of Contractors camps and warehouses for storage of equipment, material etc. shall involve clearing of vegetation from the area, causing a negative impact; and
- During construction activities the Contractor's workers may damage the vegetation and trees (for use as fire-wood to fulfill the camps requirements).

To minimize the impacts on flora, following measures will be adopted during construction stages:

- Camp sites will be established on waste/barren land rather than social and agricultural land. However, if such type of land is not available, it will be ensured that minimum clearing of the vegetation is carried out and minimum damage is caused to trees and undergrowth;
- Construction vehicles, machinery and equipment will remain confined within their designated areas of movement;
- The Contractor's staff and labour will be strictly directed not to damage any vegetation such as trees or bushes;
- Contractor will provide gas cylinders at the camps for cooking purposes and cutting of trees/bushes for fuel will not be allowed; and

- A tree plantation program will be formulated in consultation with the PIEDMC at available sites.

Fauna

As the project area is highly cultivated area so there are some significant faunal species present in the project area. However, mammals, such as dogs, cats, etc will avoid these areas for fear of being persecuted. Same will be the case with reptiles. Some reptiles might be killed during clearing of land. Similarly, birds will try to find shelter and food somewhere else and will tend to move away from the project area to the activities mentioned above for fear of being hunted or caught. Overall, the impact on fauna of the area is insignificant in nature.

6.4.10 Disruption of Existing Public Utilities/ Infrastructure

There may be some disruption to the already existing utilities like electricity poles, underground telephone lines, in the project area during the construction phase. These impacts are, however, temporary and minor negative in nature.

6.4.11 Public Inconvenience

Due to the proposed construction activities, traffic problems may arise in the Project area. This may result in traffic jams and cause inconvenience to the people especially on the Sheikhupura Road and Motorway (M-2). Furthermore, disruption of utilities like electrical lines, water supply pipes etc. will be problematic for the consumers. Following are the general mitigation measures to minimize these impacts:

- Provide proper diversions to the traffic and their maintenance have to be assured near the sites of construction.
- Provision of proper sign boards, especially before diversion, for smooth flow of traffic.
- Construction vehicles, machinery and equipment shall move or be stationed in the designated ROW to avoid un-necessary compaction of nearby soil.

Measures of disruption of public utilities shall be adopted

6.4.12 Traffic Management

Due to the proposed construction activities, proper traffic management may pose a challenge in the project area, particularly, where the construction of Apparel park. This may result in traffic jams and cause inconvenience to the people passing through the project area due to movement of vehicles carrying construction materials on Motorway M-2. It will also increase the traffic load on the existing road network. Also, the movement of vehicles along the haulage routes may cause soil compaction and alteration of percolation, vegetation pattern. This impact is temporary and minor negative in nature.

Mitigation measures will include:

- Proper traffic management plan will be needed to avoid traffic jams/ public inconvenience;
- Movement of vehicles carrying construction materials should be restricted during the daytime to reduce traffic load and inconvenience to the local residents;
- Coordinated planning of traffic diversions by the traffic police and the Transport Department in accordance with the construction programme with advance warnings to the affected residents and road users;
- Construction vehicles, machinery and equipment will move or be stationed in the designated ROW to avoid un-necessary compaction of soil.
- Availability of continuous services of the police in the diversion and control of traffic; and
- The executing agency is required to maintain liaison between the Motorway/ Traffic Police, local residents/ travelers and the contractor to facilitate traffic movement during construction stage.

6.4.13 Waste Disposal

Due to construction activities, waste will be generated at construction and contractors camp site. This may result in health risk to work force and public, if disposal site is improperly selected and operated. This impact is temporary and minor negative in nature.

Mitigation measures will include:

- The waste generated from the camp site will be disposed of through Municipal Committee;
- Burning of waste will be prohibited; and
- Solid Waste will be safely disposed in demarcated waste disposal sites and the contractor will provide a proper waste management plan.

6.4.14 Economic Activity

Due to the construction of the proposed Project, economic activity will be generated in the project area as the labourers and semi-skilled staff will have an opportunity to work for the construction of the proposed project. This will help in developing their skills and capacities. This is a moderate positive impact.

6.4.15 Lifestyle and Culture

There are chances of arising of issues related to cultural differences/conflict between the Contractor's workforce and the local inhabitants, conflicts arising due to the mix

of local and migratory job seekers as the use of local resources and products will be increased. In this situation, local residents may resist contractor's workforce attitudes, cultural clashes particularly when local/international contractors are engaged, social disturbance and dissatisfaction with employing outsiders may arise. This impact is temporary and minor negative in nature.

This impact can be mitigated by adopting the following mitigation measures:

- Timely and full public consultation and announcement of mobilizing equipment;
- Establishment of formal links with affected communities;
- Plan for social grievance redress mechanisms including the Nazims of Union Councils and community leaders;
- Seek assistance from and cooperation with local NGOs;
- Familiarize outside labourers on local etiquettes;
- Local labour should be employed for construction works; and

- Water supply and sanitation facilities, Contractor's workforces should exacerbate the existing shortages and environmental hazards; contractor should primarily seek their own sources of water in due distance (min. 1 km) from local user's wells.

6.4.16 Wastage of Fertile Plough Layer

The fertile plough layer of project area will be wasted if the construction of the Apparel park is carried out on top of the fertile layer. For the construction of the proposed Project, about 1565 Acre of land will be acquired. This is permanent and minor negative impact.

This impact can be mitigated by utilizing the soil excavated to reclaim the nearby borrow pits/ excavated areas for landscaping along the proposed Expressway.

6.4.17 Impacts of Heavy Vehicles on the Existing Road Network

The plying of heavy vehicles on the existing road network may result in air pollution (if unpaved roads), noise pollution due to tire-road friction especially near sensitive receptors (residential areas, school, health facility etc.), and damage to roads and traffic congestion. However, the impacts would be temporary and moderate negative in nature for which the following mitigation measures are proposed:

- Any vehicle with an open load carrying area used for transport of potentially dust producing materials shall have properly fitted side and tailboards. Materials having potential to produce dust shall not be loaded to a level higher than the side and tail boards and shall be covered with clean tarpaulin in good condition. The tarpaulin shall be properly secured and extended to at least 300 mm over the edges of the sideboard and tailboard;

- Where dust emissions are high, diversion tracks, if required, shall be overlain with shingle or surface treated. Diversion roads in built-up areas shall be established and scheduled to minimize traffic congestion;
- The Contractor shall not use any vehicles either on or off road with grossly excessive noise pollution. In case of built-up areas, noise mufflers shall be installed and maintained in good condition on all motorized equipment under the control of the Contractor;
- The Traffic Management Plan shall be prepared, which will comprise strengthening and widening of the existing minor and major roads or construction of new temporary roads; and
- The traffic on the existing roads shall be managed by NHA in cooperation with the local traffic police department in order to avoid traffic accidents and congestions causing unnecessary delays.

6.5 Anticipated Impacts during Operational Phase

The anticipated potential environmental impacts related to the proposed project have been studied for the operational stage of the Project and are discussed as under.

6.5.1 Ecology

a) Flora

During the operation stage, the trees and vegetation coming in the ROW of the proposed apparel park would already have been removed. However, raising of new plants/trees at available spaces will have a positive and permanent impact. No negative impacts are envisaged on the flora during the operational phase. A number of plants will be raised along the project area at available spaces. The presence of adequate flora, will absorb flue gases, emitted from a large number of cars, vehicles and public transport, which shall in turn improve air quality.

b) Fauna

In many ways, fauna of the project area is dependent upon flora for its resting, nesting and roosting activities. With the improved flora of the project area, due to raising of number of trees, the fauna and especially the avi-fauna shall be attracted to the area. The birds, which were scared away due to noise and degradation of their habitat, shall return to the area. Plantation shall not only reduce the noise and air pollution but will also be a source of attraction for the birds.

6.5.2 Surface and Groundwater

Wastewater from industrial, commercial and residential zone will contain high concentrations of Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solids (TSS) and Pathogens etc. Wastewater from other

industrial and commercial sectors may contain hazardous metals and compounds. If all this wastewater is not treated properly, it will be a continuous hazard for the aquatic system and downstream uses of canal and river water will be affected. Such impacts should be minimized through following general mitigation measures:

- Combined Effluent Treatment plant (CETP) shall be operated as per Standard Operating Procedures (SOPs) to follow NEQS.Special concentrations shall be paid to sludge treatment and handling
- Implementation of bylaws of individual treatment plants at industrial level shall be ensured
- Industries shall be bound to submit monitoring reports of their effluents regularly
- Monitoring plans for water quality analysis of the CETP effluent, Sem Nullah and groundwater shall be prepared
- Best management Practices (BMPs) shall be maintained to ensure their effective function to treat nonpoint source water pollution

6.5.3 Air Quality

Combustion and other processes in the industries may emit primary and secondary air pollutants. Depending upon the direction and speed of the prevailing wind in the area, these pollutants may create hazard for the nearby population. Long term impacts on human health and plants growth may occur. Possibility of air pollution and related impacts envisaged in EIA report. Following are environmental mitigation measures for reduction of potential environmental impacts:

- Bylaws related installation of Air Pollution Control (APC) equipment shall be strictly implemented;
- Industries shall be bound to submit monitoring reports of their air pollution sources and occupational environment regularly;
- Regular monitoring of the ambient air shall be carried out;
- Regular road maintenance to ensure good surface condition;
- Regular vehicle check to control/ensure compliance with NEQS;
- More green areas and trees should be planted in that region which would suck up the polluted air;

6.5.4 Soil Contamination

Disposal of hazardous waste of industries, hospitals and commercial areas is one of the major concerns during operational phase of the project. No area has been allocated for disposal of hazardous waste within apparel park. Therefore, its improper handling and disposal will pose serious threat to the physical and biological environment. This will also adversely impact the future use of the land where hazardous waste will be

disposed of. Impacts of soil contamination can be minimized through following measures:

- Each industry shall be bound to submit the inventory of use of hazardous chemicals, their use and final disposal including measures to control special waste;
- Signage shall be carried out to regulate the routes of especial waste disposal to avoid the risks of spillages;

6.5.5 Solid Waste

Large quantities of municipal waste from the residential and commercial waste will be disposed of in the sanitary landfill site provided within the Apperal Park . However, without a proper solid waste management system and engineered land filling practices, many environmental risks remain problematic for the residents and visitors. Such impacts should be minimized through following general mitigation measures:

- Solid Waste management (SWM) system shall be operated as per SOPs and improved with time to time;
- Primary collection and storage of solid waste shall be performed in the closed containers;
- Secondary collection shall be done in the compactor trucks;
- Only unusable trash material shall be disposed of into the landfill site and all the reusable material shall be separated, processed and sold accordingly;
- People shall be educated to waste lesser and avoid use of disposable items;

6.5.6 Landscape

At present, the landscape of the project area is dominated by open agricultural fields. However, after the construction of Apparel park, the landscape of the project area will be changed in terms of road infrastructure, construction of Lakes, Petrol Pumps/Weigh stations, Grid Stations, CETP, Administration Area, Hospitals, Hostels, Amenities/Commercial Area, Export Processing Zone, Parks, Green Belts, Roads . This will permanently change the landscape of the project area due to loss of agricultural land but at the same time will have a positive impact in terms of socio-economic development of the project area.

6.5.7 Community Development

Improved communication infrastructure will promote new business opportunities. In addition such an activity will also increase the land value that will benefit the local residents. This impact will be permanent and major positive in nature.

6.5.8 Occupational Health and Safety of Labours

Industrial occupational safety of the workers will be of significant concern during operational phase of the Apperal Park. Industrial processes involve several hazards for minor to major injuries for the workers which need to be addressed during policy making for the operational phase.

Health risks and work safety problems may result at the workplace if the working conditions provide unsafe and/or unfavorable working environment and due to storage, handling and transport of hazardous construction material. Workers should be provided with safe and healthy working environment taking into account risks inherent to the particular sector and specific classes of hazards in project area.

Mitigation measures will include:

- Obligatory insurance against accidents for labourers/workers;
- Providing basic medical training to specified work staff and basic medical service and supplies to workers;
- Layout plan for camp site, indicating safety measures taken by the contractor, e.g. fire fighting equipment, safe storage of hazardous material, first aid, security, fencing, and contingency measures in case of accidents;
- Work safety measures and good workmanship practices are to be followed by the contractor to ensure no health risks for labourers;
- Protection devices (ear muffs) should be provided to the workers doing job in the vicinity of high noise generating machines;
- Provision of adequate sanitation, washing, cooking and dormitory facilities including light up to satisfaction;
- Proper maintenance of facilities for workers will be monitored;
- Provision of protective clothing for labourers handling hazardous materials, e.g. helmet, adequate footwear for bituminous pavement works, protective goggles, gloves etc;
- Ensure strict use of wearing these protective clothing during work activities;
- Elaboration of a contingency planning in case of major accidents;
- Instruct foremen to strictly enforce the keeping out of non-working persons, particularly children, off work sites; and
- Adequate signage, lightning devices, barriers, yellow tape and persons with flags during construction to manage traffic at construction sites, haulage and access roads.

6.5.9 Emergency Response

Disasters such as earthquakes, flooding and other disasters such as fires may occur, and that must be considered for minimizing their impacts.

Mitigation measures will include:

An Emergency Response Plan for earthquakes and manmade disasters will be developed. Emergency Response Plan will be implemented in close consultation with the Rescue 1122 Service, Fire Fighting Department, bomb disposal squad and paramedics. Also evacuation plan will be developed in order to tackle with any emergency. In addition, training of the staff/employees regarding the emergency procedures/plans will be regularly conducted.

6.5.10 Socio-economic Condition

It is estimated that project will provide job opportunities to about 50,000 persons during operational phase. The increase of traffic load on M-2 detoriate the condition of the road but it also have positive impact i.e, revenue generate. Proposed project will help to alleviate the economic condition of the area. Local people will get enhanced chances of dependable livelihood. Furthermore, communication system of the area will improve and new corridors for growth of local markets will open. Project will tend to attract more urban development with improve living facilities.

SECTION - 7

ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

7.1 Environmental Management

Proper Environmental Management includes allocation of resources for mitigation of any potential environmental impact that may be caused due to the implementation of the project. For effective management of the environmental impacts identified in Section – 6 of this EIA Report, a comprehensive Environmental Management Plan (EMP) is prepared and would be followed during design, construction and operation phases of project.

The objective of the EMP is to provide framework for the implementation of the proposed mitigation measures during all three phases of the proposed project. The proper implementation of the EMP will ensure that all adverse environmental impacts identified in the EIA are adequately mitigated, either totally prevented or minimized to an acceptable level and required actions to achieve those objectives are successfully taken by the concerned institutions or regulatory agencies. The implementation of EMP should be carefully coordinated with the design and construction program of the project to ensure that relevant mitigation measures are implemented at the appropriate stage and adequate resources are properly allocated to achieve the desired results.

For effective environmental management, the client should assign the necessary responsibilities to an Environmental Committee (EC) through Project Director PIEDMC, which should be responsible for implementation of the EMP and Environmental Monitoring of the proposed project. The Project Director will be assisted by an Environmental Expert and a Social Expert in implementing the mitigation measures proposed in EMP.

The Contractor will be responsible for the implementation of the proposed project under the supervision of PIEDMC. The Contractor should be bound to follow the provisions of the contract documents especially about environmental protection and apply good construction techniques and methodology without damaging the environment. Obligation of the contractor, to safeguard, mitigate adverse impacts and rehabilitate the environment should be addressed through environmental provisions in the contract document as already highlighted in Section-6 and through adequate implementation at site.

7.2 Staff and Training

7.2.1 Environmental Committee and its Responsibilities

Punjab Industrial Estates Development And Management Company (PIEDMC) will form up an Environmental Committee (EC), which will be responsible for the environmental management and supervisory affairs during the construction phase of the proposed project.

The responsibilities of the Environmental Committee (EC) are as follows:

- To ensure implementation of all the proposed mitigation measures proposed in EMP during the construction of the project;
- To organize routine monitoring of motor vehicle emissions, air quality, traffic, noise and vibration; etc. In case, the noise and emission levels exceed the acceptable levels; a penalty or ban must be enforced;
- To develop operational guidelines and implementation schedule;
- Receiving complaints from residents and institutions and assisting the local environmental authority including liaison with PEPA; and
- To ensure that the proposed project is implemented in an environment friendly manner, causing least harm to the existing environment including flora and fauna, sites of religious and cultural significance etc.

7.2.2 Equipment and Instruments

Environmental monitoring during different stages of project will be carried out by a private laboratory hired by NESPAK during construction and operational stages of the proposed project.

7.3 Environmental Management Plan

The Environmental Management Plan (EMP) provides the framework for the implementation of the mitigating measures and environmental management and monitoring during the construction and operation phases of the proposed project. **Tables 7.1** portray impacts, targets, mitigations and the responsible organizations for the implementation of the mitigation measures during the construction and the operation phases respectively.

Table 7.1: Environmental Management Plan

Sr. No.	***Parameters***	***Target***	***Mitigation***	***Responsibility***
		Design Phase		
1	Topography	To minimize the negative impacts on Topography.	• Impact will be insignificant in nature and no change in topography is expected.	
2	Design & Layout Planning	To minimize the negative impacts of Design and layout Planning.	• All structural, layout and engineering designing of Apperal Park should be in strict accordance with the applicable by-laws and engineering parameters.	DC and PIEDMC
3	Land Acquisition and Resettlement	To avoid/minimize land acquisition and resettlement.	• Adequate budget will be provided in the project cost for the compensation to the affected people as per Land Acquisition Act, 1894 and framing of a judicious and fair compensation package for provision of compensation on at least the prevailing market rates.	DC and PIEDMC
4	Biodiversity Conservation and Natural Resource management	To minimize cutting of trees and negative impacts on fauna.	• Incorporate technical design measures to minimize removal of these trees, if possible such as change in design; • Plan for compensatory planting for each trees	DC and PIEDMC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			against each fallen tree of similar floral function; • Provision of compensation in the Project Budget for the loss of trees to the affected people; • Disallow introduction of invasive/ exotic species and native species should be recommended for plantation ; • Only necessary cutting of trees shall be allowed and all trees beyond project site shall remain un-harmed; • The contractor's staff and labour should be strictly directed not to damageany vegetation. They shall use the paths and tracks for movement and should not be allowed to trespass through farmland; • Construction vehicles, equipment and machinery will remain confined within their designated areas of movement; • Comprehensive plantation plan shall be	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			implemented during construction phase of the project; • Borrow pits should be fenced if located near grazing fields so that no animal can face hazard of injury; • The camps should be properly fenced and gated to check the entry of grazing animals in search of eatable goods. Similarly waste of the camps should be properly disposed off to prevent the chances of eating by wild animals, which may prove hazardous to them; • Contractor should ensure that the no hunting, trapping of animal should be carried out during construction; • Special measures should be adopted to minimize impacts on wild birds such as avoiding noise generating activities during the critical period of breeding.	

Sr. No.	*Parameters*	*Target*	*Mitigation*	*Responsibility*
5	Public Utilities	To avoid disturbance to the public utilities and infrastructure	• Incorporate technical design features to minimize affect on public utilities; and • All public utilities likely to be affected by the proposed project need to be relocated/rehabilitated well ahead of the commencement of construction work.	DC and PIEDMC
6	Air Quality	To minimize the air pollution	• Concrete hot mix and batching plants shall not be located near residential areas; • NEQS applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works; • Where needed APC equipment shall be installed with concrete plants, Batching Plants and generators; • Preventive measures against dust should be adopted for on-site mixing and unloading operations. Regular sprinkling of the Site by	DC and PIEDMC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			water should be carried out to suppress excessive dust emissions; • Open burning of solid waste should be strictly banned; • All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions.	
7	Noise	To minimize the noise pollution	• Provide construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use; • Preferably, restrict construction vehicles movement during night time near the residential areas and camp sites; • Locate the concrete mixing, and materials shipment yards at least 2km from residential	DC and PIEDMC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			areas, particularly schools and health centers; • Selection of up-to-date and well maintained plant or equipment with reduced noise levels ensured by suitable in-built damping techniques or appropriate muffling devices; • Heavy machinery like percussion hammers and pneumatic drills should not be used during the night.	
8	Excavation of Land	To save the top fertile land.	• Borrow pits will not be located on agricultural land unless completely unavoidable; • Contractor needs to obtain approval for excavation and submit the plan of rehabilitation of the site after excavation; • The top 1 ft soil will be stored for future use in rehabilitation of the site; • Plan for Rehabilitation of Borrow Pits will be implemented.	DC and PIEDMC

Sr. No.	*Parameters*	*Target*	*Mitigation*	*Responsibility*
9	Surface and Ground Water	To minimize the contamination of the surface and ground water.	• Protection of groundwater reserves from any source of contamination such as the construction and oily waste that will degrade its potable quality; • Planning of location of construction camps must be at an appropriate distance from the surface water bodies; • Septic tanks and soakage pits should be designed to cater the wastewater from the construction camps.	DC and PIEDMC
		Construction Phase		
1	Topography	To minimize the negative impacts on Topography.	• Where the use of agricultural land, the top 1 ft of the plough layer will be stripped of and stockpiled for redressing the land after the required borrow material has been removed; • Where deep ditching is to be carried out, the top 1m layer of the ditching area will be stripped and stockpiled. The ditch will initially be filled	

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Sr. No.	Parameters	Target	Mitigation	Responsibility
			up with scrap material from construction and then levelled with the stockpiled topsoil; • Ditches or borrow pits that cannot be fully rehabilitated will be landscaped to minimize erosion and to avoid creating hazards for people and livestock; and • Landowners will be compensated according to the terms of lease agreements negotiated with them and the restoration actions agreed upon by the Contractor will be duly carried out.	
2	Soil	To minimize the soil erosion	• All soil will be disposed off as desired and the site will be restored back to its original conditions; • Non-bituminous wastes from construction activities will be dumped in approved sites, in line with the legal prescriptions for dump sites, and covered; • As applicable and needed, plantation of grasses	CC , SC and EC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			and shrubs will be done at appropriate place where required; • Excavations would be kept confined to the specified foundation spots as per the approved engineering drawings. Unnecessary excavations should be avoided; • Site camps for the resident labour should not be setup on the land earmarked for developing green belts and lawns; • Oils, lubricants, chemicals, and other listed hazardous materials should be stored safely at their designated spots, enclosures or store rooms, which should be safe from rainfall and away from any potential source of fire; • Septic tanks of adequate capacities should be constructed for receiving and treating wastewater from all temporary worksite toilets and at the temporary container offices, if any. The toilet wastewater should not be discharged	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			untreated onto the adjacent lands; • All machineries and materials should be stored at the designated areas and compounds; • All the unspent and left over materials be completely removed offsite upon completion of construction and the site be restored to original or near to original condition; and • Washout from washing of equipment and gadgets should be drained into either a septic tank or a sand-gravel bed for removal of the grit and contaminants.	
3	Land Acquisition, Resettlement and Compensation	To avoid/minimize land acquisition.	• Land management and providing judicious compensation to the affectees by providing sufficient budget in the project cost; • The process of land acquisition and compensation will be followed in a transparent manner.	CC, SC and EC
4	Construction Camps/Camp Sites	To minimize loss of assets and vegetation due to labor	• All efforts during the construction stage should be made to minimize the removal of existing	CC, SC, PIEDMC and

Sr. No.	***Parameters***	***Target***	***Mitigation***	***Responsibility***
		movement.	macro-plants at camp sites; • The contractor(s) will provide plan for removal & rehabilitation of site upon completion; • Photographical and botanical inventory of vegetation before clearing the site; and • Compensatory plantation to be scheduled when construction works near end	EC
5	Health and Safety	To minimize health risks.	• Obligatory insurance against accidents for labourers/workers; • Providing basic medical training to specified work staff and basic medical service and supplies to workers; • Layout plan for camp site, indicating safety measures taken by the contractor, e.g. fire fighting equipment, safe storage of hazardous material, first aid, security, fencing, and contingency measures in case of accidents; • Work safety measures and good workmanship practices are to be followed by the contractor to	CC, SC and EC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			ensure no health risks for labourers; • Protection devices (ear muffs) will be provided to the workers doing job in the vicinity of high noise generating machines; • Provision of adequate sanitation, washing, cooking and dormitory facilities including light up to satisfaction; • Proper maintenance of facilities for workers will be monitored; • Provision of protective clothing for labourers handling hazardous materials, e.g. helmet, adequate footwear for bituminous pavement works, protective goggles, gloves etc; • Ensure strict use of wearing these protective clothing during work activities; • Elaboration of a contingency planning in case of major accidents; • Instruct foremen to strictly enforce the keeping out of non-working persons, particularly	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			children, off work sites; • Adequate signage, lightning devices, barriers, yellow tape and persons with flags during construction to manage traffic at construction sites, haulage and access roads.	
6	Borrow/ Open Pits		• Conversion of borrow pits into fish farms and care in selection of borrow areas; ▪ Necessary permits must be obtained for any borrow pits from the competent authorities; ▪ No excavations are allowed within distance of 500 m to ROW; ▪ In borrow pits, the depth of the pit will be regulated so that the sides of the excavation will have a slope not steeper than 1:4; ▪ Soil erosion along the borrow pit shall be regularly checked to prevent / mitigate impacts on adjacent lands; and ▪ In case borrow pits fill with water, measures have to be taken to prevent the creation of	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			mosquito-breeding sites.	
7	Air Quality	To minimize the air pollution.	• All vehicles, machinery, equipment and generators used during construction activities should be kept in good working condition and be properly tuned and maintained in order to minimize the exhaust emissions; • Blowing of dust from potential sources at the worksite should be avoided by shielding them from the exterior, for example using polythene curtains or raising a fence of corrugated sheets around areas of active constructions; • Blowing of dust and particulate matter from stockpiled loose materials (e.g. sand, soil) should be avoided either by sheeting them with tarpaulin or plastic sheets or by sprinkling them with light shower of water; • Open burning of solid waste from the contractor's camps should be strictly banned; • Preventive measures against dust should be	PIEDMC & CC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			adopted for on-site mixing and unloading operations. Regular water sprinkling of the site should be carried out to suppress excessive dust emission(s); • Only good quality oils, petroleum products, additives and spares should be used in the machinery, generators, and the construction vehicles. Usage of used oil should be strictly prohibited; • Emissions from power generators and construction machinery are important point sources at the construction sites. Proper maintenance and repair is needed to minimize the hazardous emissions; and • NEQS applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works.	
8	Noise and	To minimize the negative	• Selection of up-to-date and well maintained plant	PIEDMC &

Sr. No.	Parameters	Target	Mitigation	Responsibility
	Vibrations	impacts of noise and vibration.	or equipment with reduced noise levels ensured by suitable in-built damping techniques or appropriate muffling devices; • Confining excessively noisy work to normal working hours in the day, as far as possible; • Providing the construction workers with suitable hearing protection like ear cap, or earmuffs and training them in their use; • Preferably, restricting construction vehicles movement during night time; • Heavy machinery like percussion hammers and pneumatic drills should not be used during the night without prior approval of the client; • Vehicles and equipment used should be fitted, as applicable, with silencers and properly maintained; • Use of low noise machinery, or machinery with noise shielding and absorption; • Contractors should comply with submitted work	CC

Sr. No.	*Parameters*	*Target*	*Mitigation*	*Responsibility*
			schedule, keeping noisy operations away from sensitive points; implement regular maintenance and repairs; and employ strict implementation of operation procedures; • Noise barriers in sensitive areas in the form of high boundary walls (concrete or wood), earth berms, etc. in front of schools, hospitals and mosques.	
9	Solid Waste (Construction Waste and Hazardous Waste)	To minimize the Solid Waste.	• Wastewater effluent from contractor's workshop and equipment washing yards would be passed through gravel/ sand beds to remove oil/ grease contaminants before discharging it into natural streams; • An efficient and responsive solid waste management system should be devised for the entire duration of the construction phase. Such a system should provide for separate collection of different categories of constructional wastes. The wastes which will be reusable/recyclable	CC, SC and EC

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Sr. No.	Parameters	Target	Mitigation	Responsibility
			(iron bars, aluminum) should be sold to waste vendors and those which cannot be sold out (brick pieces) may be used as a filling material for leveling the depressions, subject to technical feasibility; • Training of working force in the storage and handling of materials and chemicals that can potentially cause soil contamination; • Solid waste generated during construction and camp sites will be safely disposed in demarcated waste disposal sites and the contractor will provide a proper waste management plan; • Proper labelling of containers, including the identification and quantity of the contents, hazard contact information etc.; • Training of employees involved in the transportation of hazardous material regarding emergency procedures;	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			• Providing the necessary means for emergency response on call 24 hours/day; • The sewage system for camps will be properly designed (pit latrines or, as required, septic tanks) to receive all sanitary wastewaters; • Lined wash areas will be constructed within the camp site or at site, for the receipt of wash waters from construction machinery; • Use of pesticides in nurseries will be done deemed necessary and suggested by the experts; • Insecticides that are less toxic to human health should be used; • Construction workers and supervisory staff should be encouraged and educated to practice waste minimization, reuse and recycling to reduce quantity of the waste for disposal; • Prohibit open burning of solid waste. C&D waste shall be dumped in the approved depression sites;	

Sr. No.	*Parameters*	*Target*	*Mitigation*	*Responsibility*
			• Recyclable packaging waste shall be sorted out and sold after separations; • Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary waste generation; • Provide sufficient waste disposal points and regular collection for disposal; • Any unused chemical bin with remaining functional capacity shall be recycled.	
10	Green house gas	To minimize the negative impacts of green house gases.	• Regular motioning of the vehicles for engine efficiency; • Avoid any unnecessary work and transportation; • Alternative energy resources should be considered where possible; • NEQS applicable to gaseous emissions generated by construction vehicles, equipment and machinery should be enforced during construction works.	

Sr. No.	*Parameters*	*Target*	*Mitigation*	*Responsibility*
11	Surface and Ground Water	To minimize surface and ground water contamination	• Protection of groundwater reserves from any source of contamination such as the construction and oily waste that will degrade its potable quality; • Regular water quality monitoring according to determined sampling schedule; • Prohibit washing of machinery and vehicles in surface waters, provide sealed washing basins and collect wastewater in sedimentation/ retention pond; • Continuous withdrawal and over pumping of groundwater should be avoided. Instead, intermittent pumping be carried out to conserve the groundwater resources; • Take precautions construct temporary or permanent devices to prevent water pollution due to increased siltation; and • Wastes must be collected, stored and taken to approve disposal site. Construction camps shall	CC, EC and SC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			not be located near surface water bodies and groundwater bodies to avoid bacterial contamination of sub surface water • Storage yards, Batching plants and bitumen plants shall not be located near water bodies to avoid non-point pollution • Construction material such as concrete and oil etc. should be properly stored to avoid any chance of contamination of subsurface or surface water. • Temporary cut-off drains shall be constructed around large stockpiles to regulate the sediment laden runoff • Temporary Best management Practices (BMPs) like vegetated strips etc. shall be adopted near water bodies to partially treat the runoff during construction	
12	Flora	To minimize the cutting of trees	• Camp sites should be established on waste/barren land rather than social and	CC, SC and EC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			agricultural land. However, if such type of land is not available, it will be ensured that minimum clearing of the vegetation is carried out and minimum damage is caused to trees and undergrowth; • Construction vehicles, machinery and equipment will remain confined within their designated areas of movement; • The Contractor's staff and labour will be strictly directed not to damage any vegetation such as trees or bushes; • Contractor will provide gas cylinders at the camps for cooking purposes and cutting of trees/bushes for fuel will not be allowed; and • A tree plantation program will be formulated in consultation with the PIEDMC at available sites.	
13	Fauna	To minimize the negative impacts on fauna species	• Overall,the impact on fauna of the area is insignificant in nature	

Sr. No.	Parameters	Target	Mitigation	Responsibility
14	Resource Conservation	To minimize the use of natural resources	• Wastage of water should be reduced by training the workers involved in water use; • Wastage of water should be controlled through providing proper valves and through controlling pressure of the water; • Water jets and sprays should be used for watering surfaces rather than using overflow system; • Source of water should be carefully selected. Water use should not disturb the existing community water supplies; • Unnecessary equipment washings should be avoided; • Use minimum amount of bitumen for road surfacing.	
15	Energy efficiency		• Ensure adequate insulation to reduce heat loss through batching/concrete plants; • Regularly monitor CO and CO2 content of the	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			flue gases to verify that combustion systems are using practical excess air volumes; • Maintain clean heat transfer surfaces in batching/concrete plant; • Regular service of the vehicles and bathing plants will reduce the mechanical losses of energy.	
16	Public Inconvenience	To minimize public inconvenience	• Provide proper diversions to the traffic and their maintenance have to be assured near the sites of construction . • Provision of proper sign boards, especially before diversion, for smooth flow of traffic • Construction vehicles, machinery and equipment shall move or be stationed in the designated ROW to avoid un-necessary compaction of nearby soil • Measures of disruption of public utilities shall be adopted	

Sr. No.	Parameters	Target	Mitigation	Responsibility
17	Lifestyle and Culture	To minimize cultural conflicts	• Timely public notification and announcement of mobilizing equipment; • Local labour should be employed for construction works; and • Water supply and sanitation facilities, Contractor's workforces should exacerbate the existing shortages and environmental hazards; contractor should primarily seek their own sources of water in due distance (min. 1 km) from local user's wells.	PIEDMC
18	Heavy Vehicles on the Existing Road Network& Sensitive Receptors	To minimize negative impacts on existing road and surroundings.	• Any vehicle with an open load carrying area used for transport of potentially dust producing materials shall have properly fitted side and tailboards. Materials having potential to produce dust shall not be loaded to a level higher than the side and tail boards and shall be covered with clean tarpaulin in good condition. The tarpaulin shall be properly secured and extended	CC, SC, Traffic Police Department, and EC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			to at least 300 mm over the edges of the sideboard and tailboard; • The Contractor shall not use any vehicles either on or off road with grossly excessive noise pollution. Noise mufflers shall be installed and maintained in good condition on all motorized equipment under the control of the contractor; • Timely maintenance of affected roads to avoid any inconvenience to the road commuters.	
19	Traffic management	To minimize traffic problems in the project area	• Proper traffic management plan will be needed to avoid traffic jams/public inconvenience; • Movement of vehicles carrying construction materials should be restricted during the daytime to reduce traffic load and inconvenience to the local residents; • Coordinated planning of traffic diversions by the traffic police and the Transport Department in accordance with the construction programme with advance warnings to the affected residents	CC, SC, Traffic Police Department, and EC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			and road users; • Construction vehicles, machinery and equipment will move or be stationed in the designated ROW to avoid un-necessary compaction of soil. • Availability of continuous services of the police in the diversion and control of traffic; and • The executing agency is required to maintain liaison between the Motorway/ Traffic Police, local residents/ travelers and the contractor to facilitate traffic movement during construction stage.	
20	Wastage of fertile plough layer	To minimize the wastage of fertile plough layer	• The waste generated from the camp site will be disposed off through Municipal Committee; • Burning of waste will be prohibited; and • Solid Waste will be safely disposed in demarcated waste disposal sites and the contractor will provide a proper waste management plan.	PIEDMC

Sr. No.	*Parameters*	*Target*	*Mitigation*	*Responsibility*
			Operational Phase	
1	Flora	To minimize the cutting of trees	• No negative impacts are envisaged on the flora during the operational phase	PIEDMC
2	Surface and Groundwater	To minimize surface and ground water contamination	• CETP shall be operated as per standard operating procedures (SOPs) to follow NEQS. Especial concentrations shall be paid to sludge treatment and handling; • Implementation of bylaws of individual treatment plants at industrial level shall be ensured Industries shall be bound to submit monitoring reports of their effluents regularly; • Monitoring plans for water quality analysis of the CETP effluent, Sem Nullah and groundwater shall be prepared; • Best Management Practices (BMPs) shall be maintained to ensure their effective function to treat nonpoint source water pollution.	PIEDMC

Sr. No.	Parameters	Target	Mitigation	Responsibility
3	Air Quality	To minimize the air pollution	• Bylaws related installation of Air Pollution Control (APC) equipment shall be strictly implemented; • Industries shall be bound to submit monitoring reports of their air pollution sources and occupational environment regularly; • Regular monitoring of the ambient air shall be carried out; • Regular road maintenance to ensure good surface condition; • Regular vehicle check to control/ensure compliance with NEQS; • More green areas and trees should be planted in that region which would suck up the polluted air.	PEPA and PIEDMC
4	Soil Contamination	To minimize the soil contamination	• Each industry shall be bound to submit the inventory of use of hazardous chemicals, their	PIEDMC

Sr. No.	Parameters	Target	Mitigation	Responsibility
			use and final disposal including measures to control special waste; • Signage shall be carried out to regulate the routes of especial waste disposal to avoid the risks of spillages.	
5	Solid Waste	To minimize the solid waste	• SWM system shall be operated as per SOPs and improved with time to time; • Primary collection and storage of solid waste shall be performed in the closed containers; • Secondary collection shall be done in the compactor trucks; • Only unusable trash material shall be disposed of into the landfill site and all the reusable material shall be separated, processed and sold accordingly; • People shall be educated to waste lesser and avoid use of disposable items.	
6	Occupational Health and Safety	To minimize health risks	• Obligatory insurance against accidents for labourers/workers;	

Sr. No.	Parameters	Target	Mitigation	Responsibility
			• Providing basic medical training to specified work staff and basic medical service and supplies to workers; • Layout plan for camp site, indicating safety measures taken by the contractor, e.g. fire fighting equipment, safe storage of hazardous material, first aid, security, fencing, and contingency measures in case of accidents; • Work safety measures and good workmanship practices are to be followed by the contractor to ensure no health risks for labourers; • Protection devices (ear muffs) should be provided to the workers doing job in the vicinity of high noise generating machines; • Provision of adequate sanitation, washing, cooking and dormitory facilities including light up to satisfaction; • Proper maintenance of facilities for workers will be monitored;	

Sr. No.	*Parameters*	*Target*	*Mitigation*	*Responsibility*
			• Provision of protective clothing for labourers handling hazardous materials, e.g. helmet, adequate footwear for bituminous pavement works, protective goggles, gloves etc; • Ensure strict use of wearing these protective clothing during work activities; • Elaboration of a contingency planning in case of major accidents; • Instruct foremen to strictly enforce the keeping out of non-working persons, particularly children, off work sites; and • Adequate signage, lightning devices, barriers, yellow tape and persons with flags during construction to manage traffic at construction sites, haulage and access roads.	

KEY

DC Consultant
CC Construction Contractor
PIEDMC Punjab Industrial Estates Development And Management Company
SC Supervision Consultant
EC Environmental Committee
PEPA Environment Protection Agency

7.4 Environmental Monitoring

Environmental Monitoring is undertaken during both the construction and operational phases to ensure the effectiveness of the proposed mitigation measures. Certain environmental parameters are selected and quantitative analysis is carried out. The results of analysis are compared with the guidelines; standards and pre-project conditions to investigate whether the Environmental Management Plan (EMP) and its implementation are effective for the mitigation of impacts or not. Parameters to be analyzed during construction and operation of the project and responsibilities for monitoring and reporting have been discussed below. A cost estimate for this measurement of parameters is given in **Table 7.2.**

7.4.1 Construction Phase

a) Air Quality

Air quality monitoring will be carried out as per monitoring plan during the construction phase at the representative locations.

The following parameters will be monitored:

- CO
- NOx
- SOx
- PM_{10}

b) Ground Water Quality

Ground water quality monitoring will be done during the construction phase at the representative locations. The following parameters will be monitored:

- Total Coliforms
- Fecal E.Coli
- Total Colonial Count
- Fecal Enterococci
- pH Value
- Total Dissolved Solids (TDS)
- Total Hardness
- Nitrate
- Chloride
- Sodium

c) Wastewater Quality

Wastewater quality monitoring will be done during the construction phase at the representative locations. The following parameters will be monitored:

- pH
- Dissolved Oxygen
- Total Suspended Solids (TSS)
- Total Dissolved Solids (TDS)
- Alkalinity
- BOD_5
- COD
- Turbidity

d) Noise Levels

The noise level monitoring will be carried out as per monitoring plan at representative locations in the project area.

7.4.2 Operational Phase

a) Air Quality

Air quality monitoring will be done biannually during the operational phase at the representative locations. The following parameters will be monitored:

- CO
- NO_X
- SO_2
- PM_{10}

b) Ground Water Quality

Ground water quality monitoring will be done biannually during the operational phase at the representative locations. The following parameters will be monitored:

- Total Coliforms
- Fecal E.Coli
- Total Colonial Count

- Fecal Enterococci
- pH
- Total Dissolved Solids (TDS)
- Total Hardness
- Nitrate
- Chloride
- Sodium

c) Wastewater Quality

Wastewater quality monitoring will be carried out biannually during the operational phase at the representative locations and the following parameters will be monitored:

- pH
- Dissolved Oxygen
- Total Suspended Solids (TSS)
- Total Dissolved Solids (TDS)
- Alkalinity
- BOD_5
- COD
- Turbidity

d) Noise Levels

The noise level monitoring will be carried out biannually at representative locations in the project area.

7.4.3 Responsibilities for Monitoring and Reporting

The EC will be responsible for environmental monitoring and reporting throughout the construction and operation phases. A monitoring report will be prepared on monthly basis and one comprehensive report will be prepared annually. Contents of the report will include results of environmental monitoring in comparison to the standards for the various parameters, location and sampling time along with recommendations. One report will be submitted during the construction phase to each of the following authorities and institutions: (i) PIEDMC and (ii) PEPA whereas, one report will be submitted to PEPA during the operational phase.

Table 7.2: Budget Estimate for Environmental Monitoring During the Construction and Operation Phases

Components	Parameters	No. of Samples (No. of Samples x Frequency x Year)	Frequency	Responsibility	Duration	Cost (Rs.)
Construction Phase (1 year)						
Air Quality	CO, NOx, SOx, PM_{10}	1x4x1 = 4	After every 03 months	Contractor/ EC	24 hours	1,22,000/-
Ground Water Quality	Total Coliforms, Fecal E. Coli, Total Colonial Count, Fecal Enterococci, pH, TDS, Total Hardness, Nitrate, Chloride, Sodium	1x4x1 = 4	After every 03 months	Contractor/ EC	-	78,000/-
Surface Water Quality	pH, Dissolved Oxygen, TSS, TDS, Alkalinity, BOD_5, COD, Turbidity	1x4x1 = 4	After every 03 months	Contractor/EC	-	66,000/-
Noise Level	-	1x4x1 = 4	After every 03 months	Contractor/EC	24 hours	20,000/-
					TOTAL	**286,000/-**
Operation Phase (1 year)						
Air Quality	CO, NOx, SOx, PM_{10}	1x2x1 = 2	Biannually	PIEDMC	24 hours	61,000/-

Ground Water Quality	Total Coliforms, Fecal E. Coli, Total Colonial Count, Fecal Enterococci, pH, TDS, Total Hardness, Nitrate, Chloride, Sodium	1x2x1 =2	Biannually	PIEDMC	-	39,000/-
Surface Water Quality	pH, Dissolved Oxygen, TSS, Alkalinity, BOD_5, COD, Turbidity	1x2x1 = 2	Biannually	PIEDMC	-	33,000/-
Noise Level	-	1x2x1 = 2	Biannually	PIEDMC	24 hours	10,000/-
TOTAL						**143,000/-**
GRAND TOTAL						**429,000/-**

KEY

EC – Environmental Committee

PIEDMC–Punjab Industrial Estates Development And Management Company

7.6 Environmental Technical Assistance and Training Plan

In order to raise the level of professional and managerial staff, there is a need to upgrade their knowledge in the related areas. The EC should play a key role in this respect and arrange the trainings.

An environmental and social training and Technical Assistance (TA) program is to be carried out before the implementation of the project. Contractor's environmental awareness and appropriate knowledge of environmental protection is critical to the successful implementation of the EMP because without appropriate environmental awareness, knowledge and skills required for the implementation of the mitigation measures, it would be difficult for the Contractor(s) workforce to implement effective environmental protection measures. A suitable training program is proposed to train the Contractor(s) staff who will be involved in the Construction Phase and the professional staff from the client involved at the operational stage of the project.

The PIEDMC will engage TA consultant to manage the environmental training program. The objective of the TA will be, to help in establishment of appropriate systems, and to train senior PIEDMC staff and EC responsible for managing environment, operations, and planning, who can then impart training at a broader level within and outside the PIEDMC (i.e., the training of trainers). The TA consultant will organize training courses for PIEDMC and contractor staff to train them in specialized areas such as air and noise pollution monitoring; develop environment operation manuals in consultation with the PEPA. The details of this training program are presented in **Table 7.7**

Table 7.7: Personnel Training Program/ TA Services

Provided by	Contents	Trainees/Events	Duration
TA consultants/ organizations specializing in environmental	Short seminars and courses on: Environmental laws and regulations, daily	Three seminars for Contractor project staff and PIEDMC	2 days

290

Provided by	Contents	Trainees/Events	Duration
management and monitoring	monitoring and supervision		
TA consultants/ organizations specializing in social management and monitoring	Short seminars and courses on: Social awareness	Three seminars for project staff dealing in Social/lands matters	2 days
TA consultants/ organizations specializing in Occupational, health and safety issues	Short lectures relating to Occupational Safety and Health	Two seminars for contractor's staff	2 days

7.7 Environmental Monitoring, Mitigation and Training Cost

The cost required to effectively implement the mitigation measures is important for the sustainability of the Project both in the construction and operation stages of the Project.

These costs are summarized as below:

Environmental Monitoring Cost	=	429,000/-
Environmental Training Cost	=	100,000/- (lump sum)
Total	=	**529,000/-**

LIST OF ABBREVIATIONS

PIEDMC	Punjab Industrial Estates Development and Management Company
NESPAK	National Engineering Services Pakistan (Pvt.) Ltd.
M-2	Lahore-Islamabad Motorway
PEPA	Punjab Environmental Protection Act
EPA	Environmental Protection Agency
EA	Environmental Approval
EIA	Environmental Impact Assessment
GoP	Government of Pakistan
NEQS	National Environmental Quality Standards
LGO	Local Government Ordinance
EPZ	Export Processing Zones
QAAP	Quaid-e-Azam Apparel Park
WAPDA	Water And Power Development Authority
MGD	Million Gallon per Day
CETP	Combined Effluent Treatment Plant
m	Meter
KVA	Kilo Volt Ampere
SNGPL	Sui Northern Gas Pipe Lines Limited
MS	Mild Steel
PTCL	Pakistan Telecommunication Corporation Limited
DI	Ductile Iron
HDPE	High Density Polyethylene

MI	Mild Steel
PVC	Polyvinyl Chloride
BHU	Basic Health Units
HH	Household
SUPARCO	Pakistan Space & Upper Atmosphere Research Commission

Table 6.1

EIA of Quaid-e-Azam Apparel Park, Sheikhupura

Construction Phase

Sr. No.		Physical Environment					Biological Environment		Socioeconomic Environment						
	Environmental Component / Project Activities	Topography	Soil	Air Quality	Noise & Vibration	Groundwater Quality/Surface Water Quality	Flora	Fauna	Health & Safety for Public and Worker	Disruption of Public Utilities	Employment	Public inconvenience	Cultural/Religious Values	Benefits to Community	Traffic Management
1	Site Clearance	LA	O	LA	MA	LA	HA	MA	MA	LA	B	LA	HA	NA	LA
2	Construction camps	O	LA	O	O	O	LA	LA	LA	NA	O	LA	O	NA	O
3	Movement of construction machinery/vehicles	O	LA	MA	MA	O	MA	MA	LA	O	B	MA	LA	NA	MA
4	Relocation of the Utilities	O	LA	LA	LA	O	O	MA	LA	MA	B	MA	LA	HA	LA
5	Excavation	LA	MA	MA	MA	LA	HA	HA	MA	LA	B	MA	LA	O	LA
6	Earthwork/concretework operations	LA	LA	MA	MA	O	MA	MA	MA	NA	B	LA	LA	NA	LA
7	Operation of batching plants	O	LA	MA	MA	LA	LA	LA	LA	NA	B	LA	O	NA	LA
8	Solid Waste Management	O	LA	LA	O	LA	O	LA	LA	NA	B	LA	NA	MA	O
9	Disposal of Non Reuseable C&D Waste	O	O	LA	O	LA	O	LA	LA	NA	B	LA	NA	MA	O
10	Handling/Storage of fuels/chemicals	O	LA	LA	O	LA	LA	LA	LA	NA	B	NA	NA	NA	O
11	Landscaping and Horticulture	B	B	B	B	NA	B	B	O	NA	B	NA	NA	B	NA

Legend

LA - Low Adverse

MA - Medium Adverse

HA - High Adverse

B - Beneficial

O - Insignificant / no impact

NA - Not Applicable

425 K

Quaid-e-Azam Business Park (QABP)

App no.	Org/Company Name	Business category	Plot no. Allotted
1	M/s. Ocean Plastic Industry	Plastic Manufacturing Unit	149-C
2	M/s. Precision Product Enterprises (Pvt.) Ltd.	Plastic injection moulding	46-A
3	M/s. Snam Pharma	Pharmaceutical	146-D
4	M/s. Selmore Pharmaceuticals (Pvt.) Ltd	Pharmaceutical	14-B
5	M/s. Cosmonutrics Health	Neutraceutical Products	102-D
6	M/s. A.K. Enterprises	Plastic Material Manufacturing	64-D
8	M/s. Obsons Pharmaceuticals	Pharmaceutical	100-D & 101-D
9	M/s. M. Sharif & Sons	Textile	25-D
10	M/s. Intute Corporation	Shoes Manufacturing	143-D
11	M/s. Muwadat Industries (Pvt.) Ltd.	Power/Electric Cables	104-D
12	M/s. Urban Premier Company (Pvt.) Ltd.	Garmetns & Textile	169-B
13	M/s. Chromatex Chemicals (Pvt.) Ltd.	Chemicals	165-B
14	M/s. Urban Premier Company (Pvt.) Ltd.	Cleaning Janitorial Products	170-B
15	M/s. Obro Foods (Pvt.) Ltd.	Food Manufacturing Unit	112-C
16	M/s. Skaaf Foods (Pvt.) Ltd.	Food Manufacturing Unit	72-C
17	M/s. Biotech Packages (Pvt.) Ltd.	Packaging	13-C
18	M/s. Alpha Trading Corporation	Warehouse, workshop & Assembly line for earth moving machinery spare parts	08-A
20	M/s. National Automotive Components (Pvt.) Ltd.	Automotive and agriculture machinery components	34-C

Quaid-e-Azam Business Park (QABP)

App no.	Org/Company Name	Business category	Plot no. Allotted
53	M/s. Build Mark Contractors (Pvt.) Ltd.	Workshop/Warehouse	65-D
55	M/s. TW Textile	Autoparts manufacturing and Warehouse	175-D
56	M/s. Javed Trading co	Auto Parts manufacturing	176-D
58	M/s. Ethmol Chemical	Organic Chemicals	144-D
75	M/s. The Marker's Enterprises	Decals and Emblem Manufacturing	113-C
77	M/s. Borjan (Pvt.) Ltd.	Warehouse	88-B
79	M/s. Canon Home Solutions	Plastic Moulding and Home Appliances	190-B
80	M/s. King Plastic Industries	Plastic Products manufacturing	139-C
81	M/s. Irfan Plastic	Plastic Products manufacturing	138-C
84	M/s. Umair International	Commercial & Residential Lighting, LED Lights	29-A
85	M/s. Lasani Pharma (Pvt.) Ltd.	Pharmaceutical	110-B
86	M/s. Standard Engineering Works (Pvt.) Ltd.	Textile Parts	116-C
87	M/s. Standard Engineering Works (Pvt.) Ltd.	AutoMobile & Textile Products/Parts	117-C
88	M/s. Khurram Brothers	Warehouse	114-C
90	M/s. Amjad Traders	Warehouse	107-C
91	M/s. Friday Traders	Warehouse	108-C
96	M/s. AHS (Pvt.) Ltd.	Footwear Manufacturing	6B-8B

Quaid-e-Azam Business Park (QABP)

App no.	Org/Company Name	Business category	Plot no. Allotted
128	Bin Rasheed Colors & Chemicals Manufacturing Co. (Pvt.) Ltd .	Chemicals	9-C
129	M/s. Precision Product Enterprises (Pvt.) Ltd.	Plastic injection moulding	47-A
130	M/s. Safe Warehouse Solutions (Pvt.) Ltd.		35-C
131	M/s. Ansel's Pharmaceuticals (Pvt.) Ltd.	Pharma	118-B
132	M/s. Kitchen Cuisine (Pvt.) Ltd.	Food Processing Unit	3-B
133	M/s. Arabian Glass (pvt.) Ltd.	Glass Unit	121-B
134	M/s. Silai Industries (SMC-Pvt.) Ltd.		125-B
135	M/s. Minato Enterprises (Pvt.) Ltd.		9-B
136	M/s. FAMs Foods (SMC-Pvt.) Ltd.	Food Processing Unit	124-C
137	M/s. Unexolabs (Pvt.) Ltd.	Pharmaceutical	79-B, 80-B
139	M/s. Innovative Surface Engineering (Pvt.) Ltd.	Engineering Unit	105-D
140	M/s. Sarmik (Pvt.) Ltd.	Flour Mill	126/1-B
141	M/s. Women's Pharmaceutics (Pvt.) Ltd.	Pharmaceutical	14-C
142	M/s. KMB Pharmaceuticals (Pvt.) Ltd.	Pharmaceutical	100-C
143	M/s. Precision Polymer (Pvt.) Ltd.	Polymer Unit	52-B
144	M/s. Pak Tractor Manufacturing Company (Pvt.) Ltd.	Tractor Manufacturing unit	48-B, 49-B, 50-B, 51-B
145	M/s. Organon Feeds (Pvt.) Ltd.	Feed Mill Facility	111-B
146	M/s. Texo Poly Industries (Pvt.) Ltd.	Flexible packaging	4-A, 5-A, 6-A, 7-A
147	M/s. Ishtiaq Steel Corporation	Steel Industry	147-B, 148-B, 149-B, 166-B, 167-B, 168-B
148	Prime Hygine Products		60-A &61-A
149	Poly Pack Films Pvt Ltd	Film Packaging	11D to 16D & 207D to 209D
150	Wapco Lubricants (Pvt) Ltd.	Chemicals	18-C
151	Bin Rasheed Colors & Chemicals Mfg. Co. (Pvt) Ltd.	Chemicals	9-C
152	SinSina Corner Company (Pvt) Ltd.	Comp Packaging	64-A & 65-A
153	YYH Aslak (Private) Limited.	Chemicals	188-B

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY
A Company setup under Section 42 of the Companies Ordinance, 1984 (now Companies Act, 2017)

SUBJECT: **Submission of Petition before OGRA for Grant of Gas Distribution and Sales License for Quaid-e-Azam Business Park, M-2, Motorway, District Sheikhupura**

(Details of Rule No. 4 and Sub Rule 'iii')

The total maximum/peak gas load for QABP is 65 MMCFD as per RLNG Sales Agreement with SNGPL. However, bi-annual demand will be submitted as per actual requirement to SNGPL after evaluating QABP consumers. It is intimated that RLANG sales agreement is based on Take & Pay basis for which bi-annual demand will be estimated carefully and will submit for approval.

PUNJAB INDUSTRIAL ESTATES
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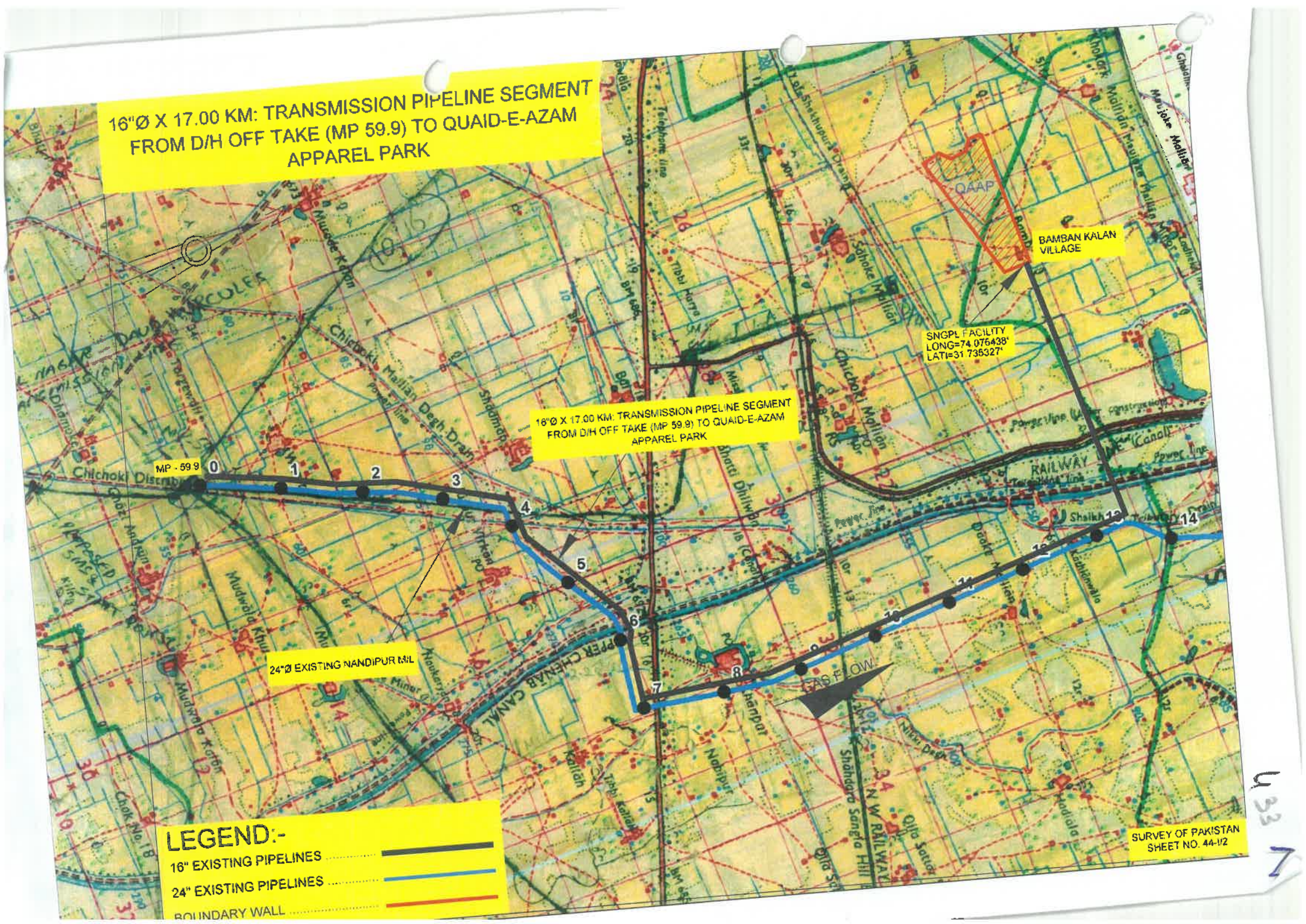
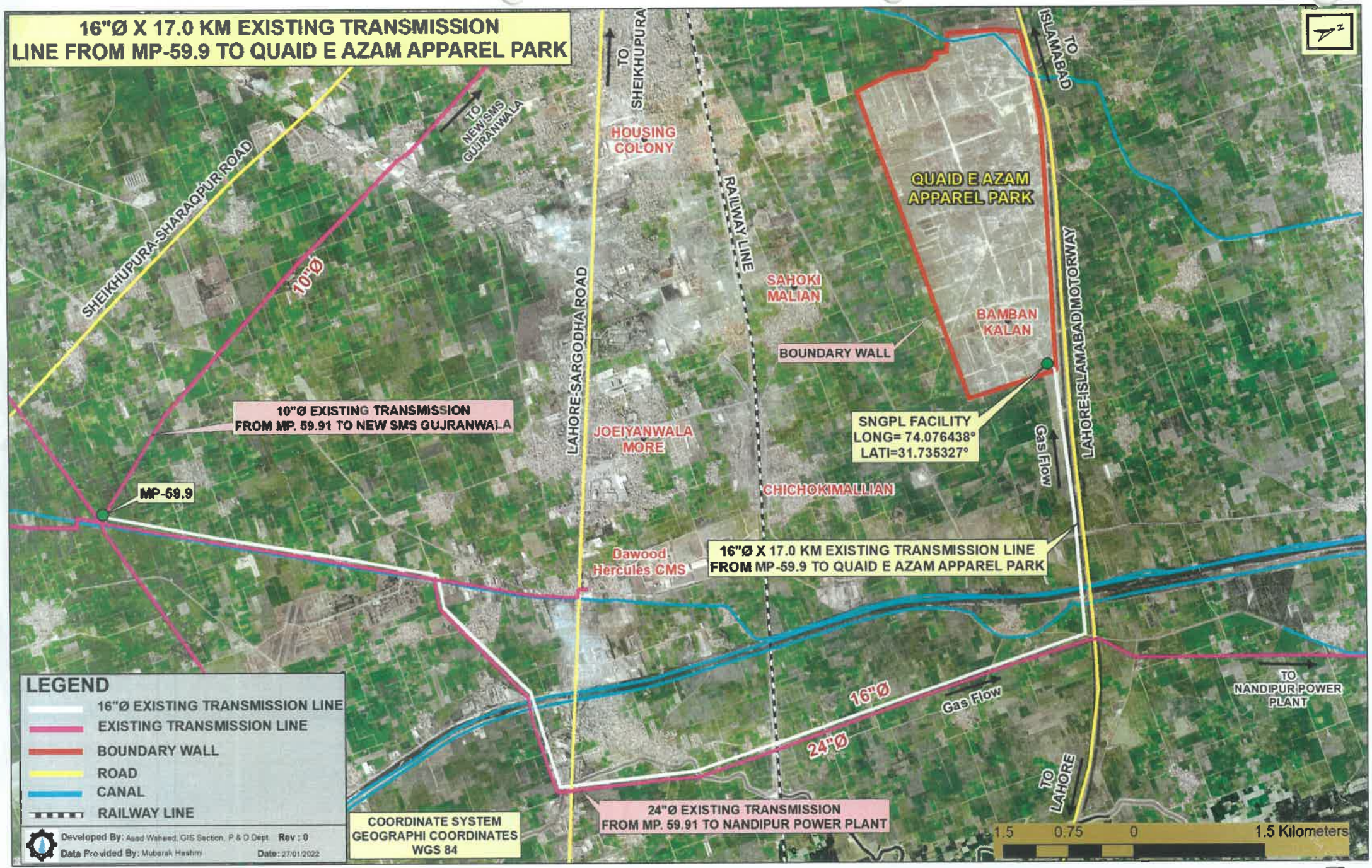
(Details of Rule No. 4 and Sub Rule 'n')

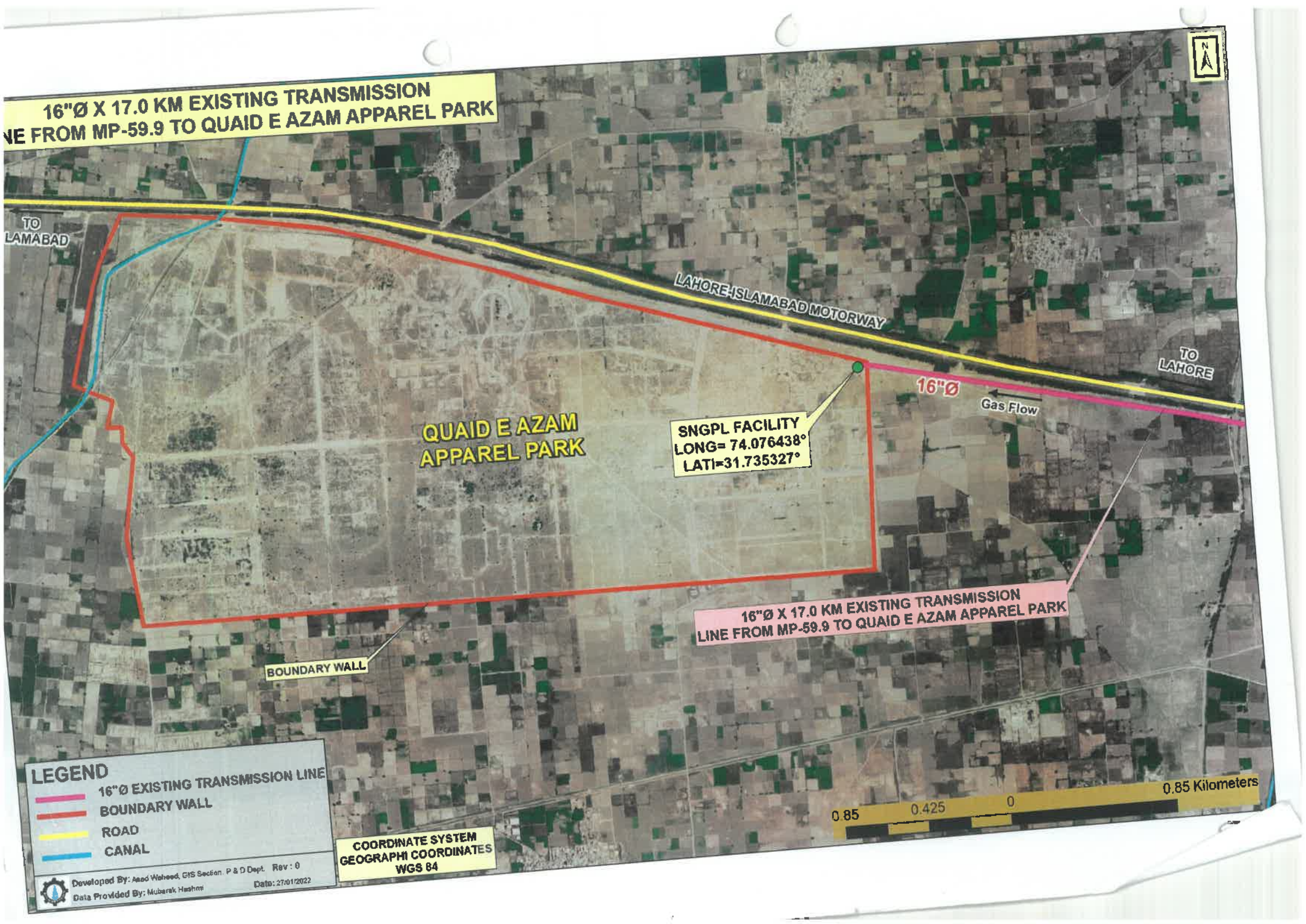
Undertaking

PIEDMC is hereby undertakes that to provide any information and documentation as the Authority may, from time to time, require, including without limitation, supplementary information or documentation required by the Authority to clarify the information contained in application.

Muhammad Nouman Rafique
Chief Engineer
Punjab Industrial Estates
Development & Management Company
Government of Punjab


16"Ø X 17.00 KM: TRANSMISSION PIPELINE SEGMENT FROM D/H OFF TAKE (MP 59.9) TO QUAID-E-AZAM APPAREL PARK
QAAP
BAMBAN KALAN VILLAGE
SNGPL FACILITY
LONG=74.076438'
LATI=31 735327'
16"Ø X 17.00 KM: TRANSMISSION PIPELINE SEGMENT FROM D/H OFF TAKE (MP 59.9) TO QUAID-E-AZAM APPAREL PARK
MP - 59 9
0
1
2
3
4
5
6
7
8
14
24"Ø EXISTING NANDIPUR M/L
GAS FLOW
RAILWAY
UPPER CHENAB CANAL
LEGEND:-
16" EXISTING PIPELINES
24" EXISTING PIPELINES
BOUNDARY WALL
SURVEY OF PAKISTAN
SHEET NO. 44-1/2


16"Ø X 17.0 KM EXISTING TRANSMISSION LINE FROM MP-59.9 TO QUAID E AZAM APPAREL PARK
TO SHEIKHUPURA
TO ISLAMABAD
TO NEW SMS GUJRANWALA
SHEIKHUPURA-SHARAQPUR ROAD
10"Ø
HOUSING COLONY
RAILWAY LINE
QUAID E AZAM APPAREL PARK
LAHORE-SARGODHA ROAD
SAHOKI MALIAN
BAMBAN KALAN
BOUNDARY WALL
LAHORE-ISLAMABAD MOTORWAY
10"Ø EXISTING TRANSMISSION FROM MP. 59.91 TO NEW SMS GUJRANWALA
JOEIYANWALA MORE
SNGPL FACILITY
LONG= 74.076438°
LATI=31.735327°
Gas Flow
MP-59.9
CHICHOKIMALLIAN
Dawood Hercules CMS
16"Ø X 17.0 KM EXISTING TRANSMISSION LINE FROM MP-59.9 TO QUAID E AZAM APPAREL PARK
TO NANDIPUR POWER PLANT
16"Ø
Gas Flow
24"Ø
TO LAHORE
LEGEND
16"Ø EXISTING TRANSMISSION LINE
EXISTING TRANSMISSION LINE
BOUNDARY WALL
ROAD
CANAL
RAILWAY LINE
Developed By: Asad Waheed, GIS Section, P & D Dept. Rev : 0
Data Provided By: Mubarak Hashmi Date: 27/01/2022
COORDINATE SYSTEM GEOGRAPHI COORDINATES WGS 84
24"Ø EXISTING TRANSMISSION FROM MP. 59.91 TO NANDIPUR POWER PLANT
1.5 0.75 0 1.5 Kilometers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Gas Flow
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APPAREL PARK
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ROAD
CANAL
Developed By: Asad Waheed, GIS Section, P & D Dept. Rev : 0
Data Provided By: Mubarak Hashmi
Date: 27/01/2022
COORDINATE SYSTEM
GEOGRAPHI COORDINATES
WGS 84
0.85 Kilometers
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LIST OF ABBREVIATIONS

PIEDMC	Punjab Industrial Estates Development and Management Company
NESPAK	National Engineering Services Pakistan
M-2	Lahore-Islamabad Motorway
TORs	Term of Reference
GIS	Geotechnical Investigation Study
IRSA	Indus River System Authority
EIA	Environmental Impact Assessment
ERS	Electrical Resistivity Survey
DEM	Digital Elevation Model
kVA	Kilo Volt Ampere
MGD	Million Gallon per Day
UNIDO	United Nations Industrial Development Organization
PDSSP	Punjab Development and Social Service Program
IFC	International Finance Corporation
WTP	Water Treatment Plant
m	Meter
OHR	Over Head Reservoir
DG	Diesel Generator
MS	Mild Steel
HDPE	High Density Poly Ethylene
GRP	Glass Reinforced Pipe
u-PVC	unplastisized-Poly Vinyl Chloride
QAAP	Quaid-e-Azam Apparel Park
CETP	Combined Effluent Treatment Plant

SECTION - 1
INTRODUCTION

1.1 GENERAL

The Punjab Government has established Punjab Industrial Estates Development and Management Company (PIEDMC) to achieve orderly, planned and rapid industrialization in Punjab by developing new industrial estates and managing the existing industrial estates in a dynamic and innovative manner with a view to provide turnkey solutions to the prospective entrepreneurs thereby generating economic activity and creating mass employment opportunities. The PIEDMC intends to establish "Quaid-e-Azam Apparel Park" on 1,565 acres area in District Sheikhupura at 38 Km of Lahore-Islamabad Motorway (M-2).

Punjab Industrial Estates Development and Management Company (PIEDMC) has engaged National Engineering Services Pakistan (Pvt.) Ltd. (NESPAK) to provide services to carry out master planning and detailed designing for development of Apparel Park. The main objective of the study is to develop an integrated industrial Park with the objective to create a platform for industries, create mass employment opportunities, skill development of local population and to best utilize the resources to boost the country's economy.

1.2 BACKGROUND AND NEED OF PROJECT

1.2.1 History of Garment Sector in Pakistan

The readymade garment industry started in 1970's in Pakistan. With the passage of time and industrialisation, this industry expanded very rapidly. The majority of the units making cotton fashion garments are

1.2.2 Need of the Project

Pakistan on December 12, 2013 succeeded to secure the long awaited duty-free access to the European markets for four years, by winning Generalized Schemes of Preferences (GSP) Plus status with an impressive count of votes. The GSP Plus status will allow almost 20 percent of Pakistani exports to enter the European Market at zero tariff and 70 percent at preferential rates for four years till 2017. Under the scheme, Pakistan can export most of its Textile and Garment products to 27 European nations at concessionary duty rates or absolutely duty free, making Pakistani products cheaper for European importers.

As a result of the GSP plus status, the Textile and Garment Industry alone is expected to earn profits up to one trillion rupees per year. Garment exports has been declining in Pakistan, as manufacturers and exporters were finding it hard to compete with Sri Lanka and Bangladesh who already had duty-free access to European markets. This special status will provide to Pakistan duty free or preferential duty rate access on 3,500 products to European markets where currently Pakistani Garment exports to the European draw an 11% duty. Pakistan can now export textile goods to European member countries till 2017 without having to pay duties, adding that it would increase exports worth $1 billion, and employment opportunities to about one million people of the country.[2]

An apparel park is an area appropriated and planned estate for the purpose of industrial development. An apparel park would be a specialty industrial area wherein different garment units such as cutting, bleaching, swing/stitching and packaging involved in garment industry would work collectively to minimize wastages and increase production.

[2] "INSIGHT December 13, 2013" A Reprot of TAURUS Securities Limitied a subsidery of National Bank of Pakistan

map showing Sheikhupura District and adjoining districts is presented in Figure 1.1.

Figure 1.1 District wise map Punjab Province

Sheikhupura district has undergone rapid industrialization. In the early sixties this district had limited number of rice husking mills, ice factories and cotton ginning mills. However the situation rapidly changed and large number of industries have sprung up on Lahore-Sheikhupura road, Lahore-Muridke road and Sheikhupura-Faisalabad road.

about 4%-5% of the global total of such exports. It further contributes 10% to the country's GDP. RMG products are exported mainly to the United States of America and the European Union. Bangladesh's garment industry provides employment to about 3.6 million workers out of which 2.8 million are women. [4]

China

China's textiles and apparel industry is a traditional pillar industry in the Chinese economy. Employment in the industry was 19.6 million in 2005, accounting for 14.2 percent of the total manufacturing workforce. The industry consumed 7.3 million tons of domestic natural fibers in 2005, bearing significantly on the livelihood of 100 million farmers.[5]

Since 1995, China has been the world's largest textile and apparel exporter. China's total textile and apparel exports in 2005 amounted to USD $117.5 billion, up 121.6 percent from year 2000. Over the same period, China's trade surplus in textiles and apparel expanded from USD $39.2 billion in 2000 to $ 150 billion in 2012. At the same time, China's share of global trade in textiles and apparel is expected to increase from 15 percent (2012) to 27 percent (2024). [6]

India

India is one of the leading suppliers of readymade garments in USA. It is estimated that India have a market share of 8 percent in garments market in the USA.

India, in particular, is likely to benefit from the rising demand in the home textiles and apparels segment, wherein it has competitive edge against its neighbours. Also, India is rich in traditional workers adept at

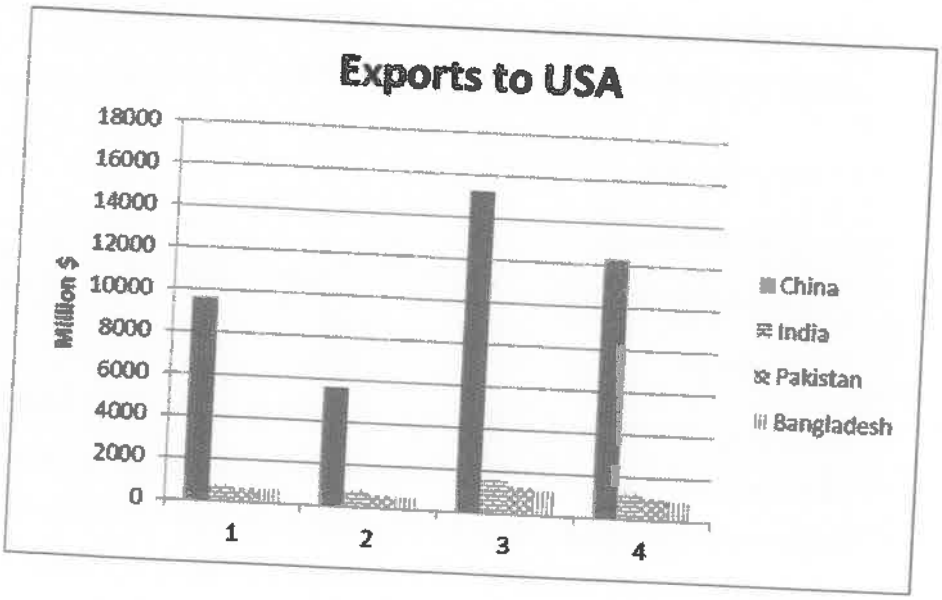
[4] Improving Social compliance in Bangladesh's Ready-made Garment Industry by A. Ferdous
[5] China's Support Programs for selected Industries: Textiles and Apparel by Terence P. Stewart
[6] The Road to 2025:Textile and Apparel Sector Report by Wazir Management Consultants

1.6 LOCAL GARMENT INDUSTRIAL POTENTIAL

Garment manufacturing is the largest source of industrial employment in the country (over 700,000 workers), employing mainly men (90 percent) as sewers, with women working in trimming and packing. There were about 5,000 garment units operating in Pakistan in 2005. Out of them, 12 percent were large scale and 88 percent were small of cottage industries. The total installed capacity was 450,000 sewing machines producing 650 million pieces annually. Most of these garment manufacturing units have fewer than 30 stitching machines. There were 400 units with 30 to 50 machines each, and 600 units with 50 to 300 machines. According to one estimate, 70 percent of these units are in the unorganised sector, producing cotton-made articles. These units do not have modern machinery and use the non-mill made cotton cloth. This may be one of the reasons that the price for Pakistan apparel exports is low compared to other countries.

The production of garments in Pakistan is concentrated mainly in Karachi, Lahore and Faisalabad. Karachi specializes in both knitwear and woven garments, Lahore in knitwear, and Faisalabad in home textiles. The main marketing focus of Pakistani exporters has been the United States and the European Union, originally the dominant quota markets. The trends of Apparel import in United States by different countries is represented in Table 3.1. The other, major importing countries or regions include Canada, the Middle East, and Australia. Most of the Pakistani garment exporters are geared toward supplying department stores and mass-market discount stores, because this market is huge in terms of volume, though prices are low. Only a few garment exporters are able to cater to big brand names of particular fashion labels

[10] Textile and Apparel Industry in Sri Lanka: An Empirical Analysis in a Globalization Setting by Bilesha Weeraratne



1.6.1 Industrial Potential of District Skeikhupura

The city of Sheikhupura is an important industrial centre and its industrial units provide most of the area's employment. The city has attracted major multinationals over the years including ICI, Nestle and Honda.

At present there is no industrial estate in the district. There are about 650 cottage and small/medium/large scale industrial units operating in the district. These comprise rayon and polyester fiber, woolen textile, rice husking, flour mills, cotton textiles spinning and weaving, tanneries, heavy engineering, pharmaceutical, fertilizers, paper and board, assembling of motor cycles and cycles, sugar and ghee mills, ice and cold storage, foundries, steel re-rolling, jute products, steel pipes, glass products, ice cream, chrome pigment, electrical goods, poultry farms, agricultural implements, ceramics, petroleum products, extraction of rich brand oil.

1.7 District Profile of Sheikhupura

District Sheikhupura is bounded on the North by Gujranwala district, on the North-East by Narowal district, on the West by Nankana Sahib district, on the East by Lahore district. Its Southern boundary is formed

1.7.2 METEOROLOGY

Sheikhupura has extreme climate and diverse seasons. The climatic data is recorded and analyzed by the Regional Metrological center Lahore. The average temperatures, wind speed and rainfall data obtained from District Census Report of Sheikhupura District and other sources are discussed below.

1. Temperature

Average monthly data of temperature are presented in Figure 1.1. January is the coldest month with mean maximum and minimum temperatures of 19.8°C and 5.9°C respectively. June is the hottest month with mean maximum and minimum temperatures of 40.4°C and 27.3°C respectively.

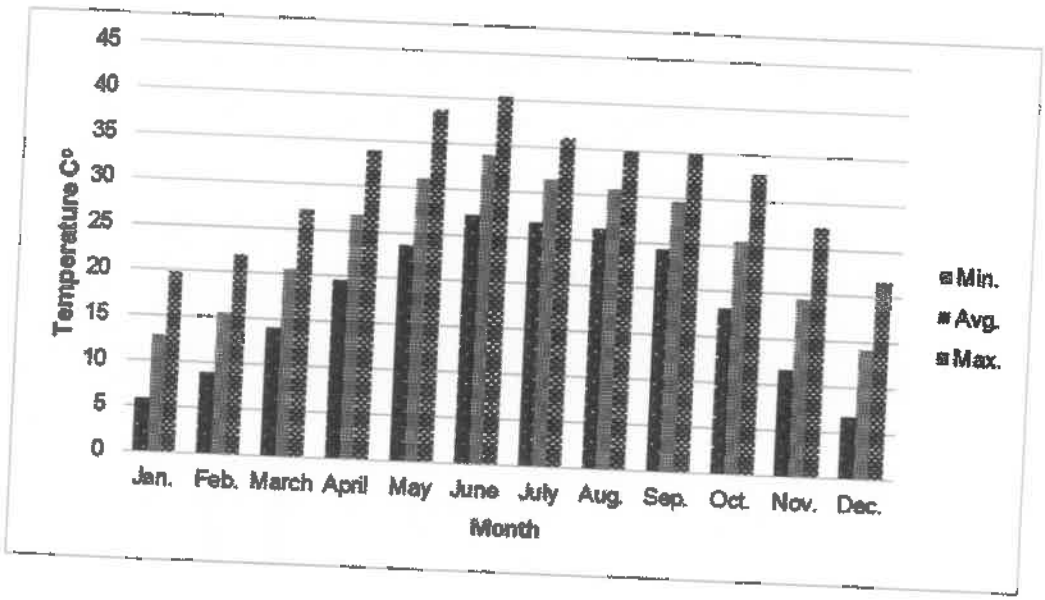


Figure 1.1 Average of Monthly Minimum, Maximum and Average Temperatures

The absolute monthly temperatures are presented in Figure 1.2. The maximum absolute temperature (48.8°C) is in the Month of June while minimum absolute temperature of (0°C) are in the months of January and December.

3. Wind

Typical Wind Speeds vary from 0 Mph to 14 mph, rarely exceed 25 mph in the Sheikhupura district. The highest average wind speed of 7 mph occurs around June 21and the lowest average wind speed of 2 mph occurs around November 21.

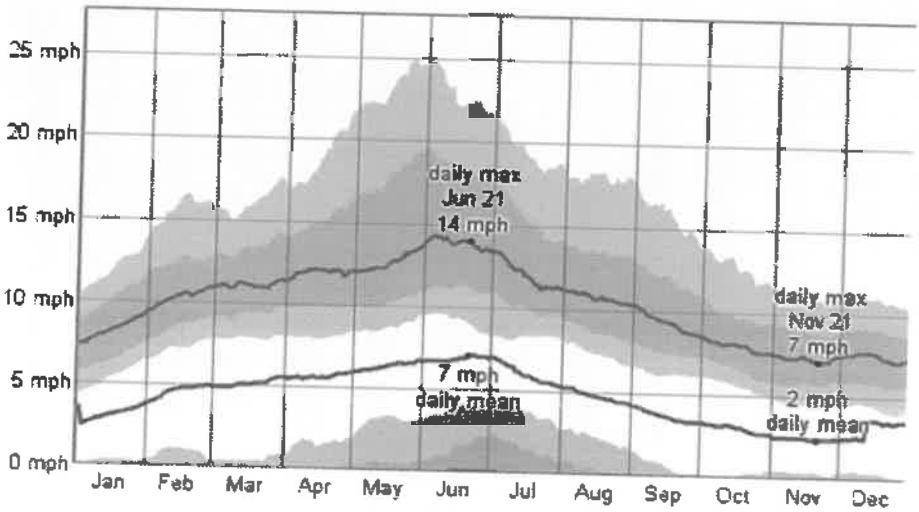


Figure 1.4 Average Wind Speed around the year

The wind direction is highly variable and is not predominantly from any single direction. The wind is least often out of the south (4% of the time) and south west (5% of the time).

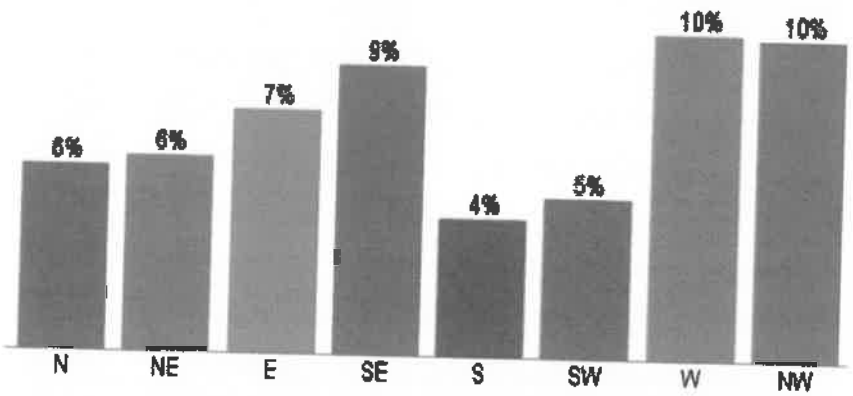


Figure 1.5 Wind direction around the year

- Parks, sports facilities etc.
- Commercial Area
- Vocational Training Centers
- Container Terminal
- Computerized weigh stations
- Petrol Pumps/ CNG stations
- Restaurants
- Motels
- Jamia Masjid

- Detail design for infrastructure works is required for the following:
  - Roads
  - Water Supply
  - Sewerage Collection network & Disposal
  - Storm water Drainage System.
  - Electricity distribution system
  - Street Lighting System
  - Landscaping/Horticulture
- Preparation of Environmental Impact Assessment (EIA) for approval from the Environmental Protection Agency.
- Preparation of engineer estimates of each project components based upon market rates.
- Preparation of engineer estimates of each project based upon market rates.
  i. Preparation of BOQs and tender documents with specifications and construction drawings.
  ii. Assist client in pre-qualification and bid evaluation of contractors.

SECTION 2
STUDIES AND INVESTIGATIONS

2.0 GENERAL

Various studies and site investigations have been carried out in order to assess technical feasibility of the proposed project. These studies/investigations include:

- Topographical survey
- Groundwater study including Electrical Resistivity Survey (ERS)
- Geotechnical investigations

Results of these studies and investigations are discussed in this section.

2.1 GROUNDWATER STUDY

The water demand for Quaid-e-Azam Apparel Park is estimated as 40 cusec (refer Section 5), which is to be fulfilled through groundwater supply. Detailed ground water investigation is essential in order to make final decision of the water supply source selection.

The ground water study report comprises the inventory of existing water supply sources, ERS and design of tubewells. Comprehensive Groundwater Study Report is attached as **Annexure A**.

During the preparation of this report, inventory of selected tubewells located in and around the proposed Apparel Park area has been carried to determine the depth of water table, general design, capacity and water quality of existing industrial and irrigation tubewells. Numerous heavy industries have been developed around the area such as Dawood Herculies, ICI and are consuming lot of groundwater for their products. During the inventory survey, 30 water points such as hand pumps, irrigation wells and deep industrial tubewells were visited. The inventory water points are shown in Figure 2.1.

- Water quality at deeper depths is better than the overlying groundwater.

2.1.2 Results of Water Point Inventory

Chemical Quality of Groundwater

Chemical quality of water from different sources, observed during inventory, is discussed below:

Hand Pumps: Data from 11 hand pumps were collected during the inventory. Depth of all the hand pumps, range from 9 to 30 m. The depth of water table ranges from 4 to 8 m. Electrical conductivity of water varies from 833 to 2209 µS/cm. The TDS values ranges from 717 to 1546 ppm.

Irrigation Tube wells: Data from 17 tube wells were collected during the inventory. Depth of tube wells ranges from 30 to 171 m. The depth of water table ranges from 4 to 8 m. Electrical conductivity of water from irrigation tubewells ranges from 361 to 479 µs/cm. The TDS values ranged from 361 to 1056 ppm.

Industrial Tube Wells: Data from 02 tube wells were collected during the inventory. Depth of tube wells ranges from 49 to 58 m. The depth of water table ranges from 8 to 9 m. Electrical conductivity of water from tubewells ranges from 769 to 847 µs/cm. The TDS values ranges from 538 to 593 ppm.

2.1.3 Electrical Resistivity Survey (ERS)

Layout plan of project area for electrical conductivity survey is presented in Fig. 2.5.

The medium resistivity material shows resistivity values from 21 to 40 ohm-meters is interpreted to represent predominantly fine sand with some silty clay layers with poor quality water. This material is present mostly at varying depth in the study area and due to poor quality water; this is not favorable for groundwater development. This resistivity value material has been observed at VES-1 to VES-7, VES-9, VES-11 to VES-14 and VES-17 to VES-22.

The high resistivity values more than 40 ohm-meters are interpreted to represent predominantly medium to coarse sand with fresh water. This resistivity value material has been observed at all observation points with varying depth except VES-17 and VES-18 in the study area. This type of material is promising for groundwater potential if appropriate thickness and proper recharging is available.

2.1.5 Conclusions of Ground Water Study

a) The Quaid-e-Azam Apparel Park is a part of Upper Rechna Doab. The previous studies indicate that the entire Upper Rechna Doab, in general, is underlain by fresh groundwater. It receives a lot of sub-surface recharge from the piedmont of Kashmir' hills in north east, from the extensive irrigation system i.e. Upper Chenab Canal passing through the area and rainfall. The hydro-geological bore data shows that the underlying strata comprises of sand with alternate layers of clay and silt at places up to a depth of about 1300 feet (which is the depth of the deepest borehole).

b) The area of Apparel Park is a part of Rechna Doab, which had been accommodating SCARP tube wells of capacity ranging from 200 to 400 m^3/hour (2 to 4 cusec) along with irrigation tube wells and industrial tube well in thousands for the period of 30 years.

c) Apparently, there is no groundwater problem in the study area. All the resistivity probes from VES-1 to VES-23 except VES-11, VES-17 and VES-18 are recommended for test drilling up to 150 meter depth or as mentioned in the relevant sections.

i. The physical demarcation of the acquired land has not yet been finalized at site. However the tentative boundary as demarcated by revenue staff f PIEDMC has been observed.

ii. The elevation in the proposed site for the development of the apparel park varies from 209.076 m (S9) to 207.971 m (S2) with a variation in elevation from East to West as -0.8 meters and from North to South as -0.7 meter.

iii. The project area mainly consists of agriculture area along with 27 acres consists of built up area, 5 acres of orchards, 2 acres of dairy farms and 27 acres of fish farms.

iv. A part of seepage drain passes through the site which measures 1.4 Km in length and covers an area of 7.5 acres.

v. There is track of 2 Km within the proposed project area which is currently being used for transportation and it covers an area of approximately 13 acres.

vi. Other topographic features include 117 tube wells, 21 hand pumps, 20,598m of electric lines (11kV and 132 kV), 223 Nos electric poles and 36,063 m of water courses.

2.3 GEOTECHNICAL INVESTIGATIONS

2.3.1 Objective of Geo technical Investigation

The geotechnical investigations were undertaken to meet the following objectives:

i. To delineate the major subsoil types spread over the site area.

ii. To evolve parameters for the preliminary design of foundations of basic infrastructure.

iii. To evolve parameters for the preliminary design of roads.

2.3.4 Seismicity

Probabilistic seismic hazard assessment recently carried out for Pakistan in connection with Pakistan Building Code Seismic Provisions (2007) shows that the project area falls in Zone 2A of Seismic Zoning Map of Pakistan included in the Pakistan Building Code Seismic Provisions (2007). It is recommended that the project structures should be designed to cater for the requirements of Zone 2A after giving due consideration to the foundation soil material.

2.3.5 Laboratory Testing

Selected disturbed and undisturbed soil and water samples collected from the boreholes and test pits were subjected to some or all of the following tests as per laboratory testing program prepared by NESPAK in accordance with latest ASTM, BS or equivalent standard in SOILCON Geotechnical Testing Laboratory, Multan Road, Lahore and Berkeley Associates, Lahore.

- Sieve Analysis and Hydrometer Analysis (ASTM D – 421, 422 or BS 1377 Part 2)
- Atterberg Limits (ASTM D – 4318 or BS 1377 Part 2)
- Natural Moisture Content (ASTM D – 2216 or BS1377 Part 2)
- Unconfined Compression Test (ASTM D – 2166 & BS 1377 Part 7)
- Direct Shear Test (ASTM D – 3080)
- Consolidation Test with swell pressure measurement (ASTM D – 2435)
- Modified AASHTO Compaction (AASHTO T-180)
- 3 Point Soaked CBR Test (AASHTO T-193)
- Sulphate Content (BS 1377 Part 3)
- Chloride Content (BS 1377 Part 3)
- Organic Matter Content (BS 1377 Part 3)
- Completed chemical analysis of water sample (BS 1377 Part 3)

The summary of field and laboratory test results is appended to this Report in **Annexure C** along with test result sheet.

grade soil with CBR value of 7 and 95 % Modified AASHTO should be used .Whereas it would be desirable to use materials with minimum CBR values of 50 % and 80 % for sub-base and base course, respectively. For a roadway to perform well, it is imperative that the subgrade for the roadway should be competent to support the anticipated traffic loads. It is, therefore recommended that the subgrade should be properly prepared to meet the design CBR. In order to meet this requirement, all the areas that will support roadway, should be properly cleared and grubbed by removing any topsoil. Any wet, soft or loose soils pockets should also be replaced with improved soil, as the result of proof-rolling.

For layer thickness and compaction following levels are recommended for various pavement elements.

Material Type	Maximum Compacted Layer Thickness (cm)	Recommended Modified AASHTO Compaction (cm)
Base-coarse	10	100
Sub-base	10	98
Sab-base & general fill		
Upper 30 cm (subgrade)	15	95
30 cm-70 cm (fill)	15	93
Below 70 cm (fill)	15	90

2.3.9 Conclusions and Recommendations

- The overburden soils encountered consist of Lean Clay(CL)/Sandy Lean Clay(CL)/Sandy Silty Clay(CL-ML)/Sandy Silt (ML)/Silty Sand(SM)/Poorly graded Sand with Silt(SP-SM) layers from top of the ground to maximum investigated depth of 20 m.

- Groundwater table was encountered at depth of about 6.50 m in all the boreholes during investigations in March, 2014.

- Materials from Margala quarries can be used for the construction of the aggregate base courses and materials from the local nullahs (if meeting the specification requirement), may be used for use as sub-base. The design CBR for these materials will be governed by the project specifications. However, it would be desirable to use materials with minimum CBR values of 50 and 80 for sub-base and base courses, respectively.

- Coarse and fine aggregate for concrete works may be obtained from Margala and Lawerencepur quarries respectively or as approved by the Engineer, subject to the clearance of alkali-silica reaction (ASR) test. Fine aggregate for concrete works may also be obtained from nearby source after approval by the Engineer, subject to meeting the project specifications.

- Temporary excavations may be carried out at stable slopes as determined by trials at site. However, if excavations have to be made very close to the existing foundation like roads or buildings, suitable excavation support system should be designed.

- The project area falls in seismic Zone 2A therefore, it is recommended that the project structures should be designed to cater the requirements of Zone 2A of seismic provisions (2007) of Building Code of Pakistan.

SECTION 4
ELECTRICAL WORKS

4.0 GENERAL

This section covers the preliminary electrical design and load estimation for the required electrical works for Apparel Park. The existing 132/11 kV grid stations and 132 kV lines present in the vicinity of site are also discussed.

4.1 SALIENT FEATURES:

Salient electrical features which will be provided in the Apparel Park are:

- 3 Separate Grid Stations of 132/11kV
- 132 KV Transmission line
- Overhead Distribution system to economize the system
- 11/0.415kV Distribution transformers
- Area lighting through LED lights

4.2 ELECTRICAL LOADS

Based on the preliminary estimation to cater 100% of the load requirements, minimum of three (03) no. of Grid Stations may be required at different locations in the vicinity of the project as per industrial growth.

However, plot wise estimated industrial electrical load requirements for the project area are tabulated below:

initial stage. Therefore, it is envisaged that during the phase-1 of the project (i.e. for the first 2-3 years), 20-25% of the total estimated load shall be required for the industrial area.

Although the estimated load requirements are much more than what is likely to develop in the first two years of project. However for the first two years, one (01) 132/11kV Grid Station with two (2) No. of 30/40MVA, 132/11kV Power Transformers and provision for one or two additional Transformer/Line Bays shall suffice initial requirements of the project. However, in case PIEDMC succeeds to acquire potential investor(s) for development and colonization of the Apparel Park, then requirement of total load will depend on the development plan proposed by the investor(s).

EXISTING 132/11 kV GRID STATIONS

There are four (04) existing Grid Stations located on Lahore-Sheikhupura road near the project area which are described hereunder:

i) Attabad Grid Station

As per information gathered during meeting with the concerned officials/staff of LESCO, the details of Grid Station are given below:

Total Transformers	3 (T1, T2 & T3)
Space of additional transformers	1 to 2
Spare capacity available (after meeting peak demand)	T1 = 1400 Amp. T2 = 1400 Amp. T3 = 400 Amp. Total = 2100 Amp.

Availability of feeders from Attabad Grid Station can be finalized after formal approval by LESCO.

i. **Trunks Feeders:**

Overhead Osprey Conductor (Triple Circuit)

ii. **11 kV Spurs Network**

11kV spurs network shall be based on double and single circuits on the secondary and tertiary roads of the apparel park.

4.2.2 Phase - 1, 2, & 3 Distribution Transformers (11/0.415kV)

11/0.415kV distribution transformers will be installed to fulfill the electricity demands of Phase 1, 2 and 3.

SECTION - 7
ROADS NETWORK

7.1 GENERAL

Road network plays key role in urban and industrial development. A good road network ensures the efficient mobility and ease of access to any locality.

This section describes about general layout of roads in Quaid-e-Azam Apparel Park (QAAP), design of major arterial roads including geometric and pavement of different road sections.

7.2 DESIGN CRITERIA

Engineering design of roads for the QAAP, Sheikhupura is based on a set of design criteria that represents the best accepted international engineering practices. At the same time, the specific local site conditions are also being considered in the interpretation of these criteria.

It is to be emphasized that engineering design is an integrated process of information collection, analysis, synthesis and evaluation. The ultimate objective of this process is achievement of the desired performance in the constructed facility. As such the design criteria should effectively represent the performance objectives, while satisfying the economic constraints. This may, sometimes result in the need to relax the design criteria to some extent, without actually sacrificing the quality of the Project. Thus the stipulated design criteria are always subject to engineering judgment.

7.3 GEOMETRIC DESIGN

AASHTO standards will be adopted for the design of roads network in QAAP as these standards are commonly used in PAKISTAN.

Design life is the number of years reckoned from the completion of pavement construction and application of traffic load until the time when major maintenance is required so that it can continue to carry traffic satisfactorily for further period.

A design period of 10 years has been adopted which is a normal practice to calculate the traffic load and eventually used for carrying out pavement design.

iii) Cumulative Equivalent Single Axle Loads

Traffic load is converted into Equivalent Single Axle Load (ESALs). ESALs is related to a standard axle of 8.16 tones (18000 lbs), using equivalence factors, which have been derived from empirical studies.

iv) Design CBR

The design of pavement is based on the Subgrade Soaked CBR at 95% Modified AASHTO material for the project. The detail is provided in the Geotechnical Investigations Report attached as **Annexure C.**

v) Design Thickness

The tentative pavement thickness is as under:

Asphaltic Wearing Course	5 cm
Asphaltic Base Course	16 cm
Aggregate Base Course	30 cm
Subbase Course	20 cm
Subgrade CBR	8%

vi) Financial Comparison of Rigid and Flexible Pavement

Tentative Financial comparison of Rigid and Flexible Road pavements shows that cost of rigid pavement is higher than flexible pavement.

Sr. No.	Right of Way (R.O.W)	Cost of Pavement Rs. per Km	
		Rigid	Flexible
1	61m	215,438,872	202,000,000
2	36m	145,328,506	110,000,000
3	25m	106,826,638	100,000,000

7.3.1 Design Speed

Design Speed of 60 KPH has been adopted for Approach roads (61 m R.O.W) to carry out their geometric design. While a design speed of 40 KPH has been adopted for internal Roads with R.O.W of 61 m, 36m & 25 m for main, secondary and tertiary roads.

7.3.2 Design Parameters

Major design parameters for geometric design of proposed roads are described in **Table 7.1.**

Table 7.1 Geometric Design parameters for Roads

Sr. No.	Description	Approach Road	Internal Road
1	Design Speed (KPH)	60	40
2	Stopping sight distance (m)	85	50
3	Passing sight distance (m)	410	260
4	Minimum Curve Radius (m)	135	47
5	Maximum super elevation rate	4%	4%
6	Minimum radius with no super elevation (m)	1310	700
7	Maximum gradient	3%	3%
8	Minimum K (at Crest)	11	4
9	Minimum K (at Sag)	18	9

i) **Cross-Section Elements**

Lane Width (Minimum)

Approach/ Main Road (61 m R.O.W)	=	5.4 m
Secondary Roads (36 m R.O.W)	=	3.6 m
Tertiary Roads / Streets (25 m R.O.W)	=	3.6 m

Cross Slopes

At normal Section of roads	=	2%
Paved Shoulders	=	2%
Paved Footpath	=	2%

Environmental Quality Standards (NEQS) and other relevant guidelines. Furthermore, concerned irrigation department must be taken on board to resolve the matters and get required permissions.

SUI NORTHERN GAS PIPELINES LIMITED
GAS HOUSE, 21 KASHMIR ROAD, P.O. BOX 66, LAHORE (PAKISTAN)

Ref: GMS: 938 (LNG)

November 05, 2020

Mr. Ali Muazzam Syed,
Chief Operating Officer,
Punjab Industrial Estate Development and Management Company,
Commercial Area North, Sundar Industrial Estate,
Sundar Raiwind Road, **LAHORE**
Fax # 042 - 35297207

ESTABLISHMENT OF QUAID-E-AZAM BUSINESS PARK (QABP)
ON M-2 MOTORWAY, SHEIKHUPURA
GAS SALES AGREEMENT

Dear Sir,

Reference your letter No. PIEDMC/QABP/1522 dated 12.10.2020, on the subject cited above.

In this context, we are enclosing herewith the Agreement for supply of RLNG to Quaid-e-Azam Business Park (QABP), on firm basis. You are requested to please sign and return the Agreement, enabling us to proceed further in the matter.

Meantime, we assure you of our best cooperation at all times.

Yours faithfully,
SUI NORTHERN GAS PIPELINES LIMITED

MAJID HUSSAIN
General Manager (BD Corporate)
for **MANAGING DIRECTOR**

Copy to:

- Director General (Gas), Ministry of Energy (Petroleum Division), Islamabad

16/11/2020

Manager Tech, QABP

AM(LT)

17/11

PIEDMC	
CEO	
COO	
CFO / CS	
GM (Admin & HR)	
GM (P&C)	
GM (BD)	
GM (Technical)	
GM (Coord)	
GM (SP)	
PD (QABP)	
Diary No. 6459 Init	
Date 13-11-2020	

S31 GCF

PUNJAB INDUSTRIAL ESTATES
DEVELOPMENT AND MANAGEMENT COMPANY

PIEDMC/QABP/1539
01st March 2021

Mr. Majid Hussain
General Manager (BD)
Sui Northern Gas Pipelines Limited
Gas House, Kashmir Road Lahore

SUBJECT: **PROVISION OF NATURAL GAS/RLNG FOR ESABLISHMENIMENT QUAID-E-AZAM BUSINESS PARK (QABP) ON MOTORWAY M-2, DISTRICT SHEIKHUPURA**

(RLNG SALES AGREEMENT)

Reference: Your letter no. GMS 938 (LNG), dated 05-11-2020 and PIEDMC letter no. PIEDMC/QABP/1535, dated 18-02-2021.

Dear Sir,

This is with reference to above letters and meeting with yourself dated 25-02-2021, regarding the gas sales agreement for above cited project.

Please find enclosed RLNG agreement duly signed by the undersigned and further necessary action at your end, please.

(Ali Muazzam Syed)
Chief Executive Officer

Cc: Chairman-PIEDMC
Mr. Imran Yousaf (SGM-P& D)-SNGPL

RLNG SUPPLY AGREEMENT

THIS RLNG SUPPLY AGREEMENT is made at Lahore, Pakistan on ____, _____, 2021

BETWEEN

SUI NORTHERN GAS PIPELINES LIMITED, a Public Limited Company incorporated under the laws of Pakistan, with its registered office at 21 Kashmir Road, Lahore (hereinafter referred to as the **"Seller"** or **"SNGPL"**, which expression shall, where the context so permits, include its permitted successors and assigns);

AND

PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY, with its registered office at Commercial North, Sundar Industrial Estate, Raiwind Road Lahore, a Company incorporated under the laws of Pakistan and having its registered office at _____ (hereinafter referred to as the **"Buyer"** or the **"Company"**), which expression shall, where the context so permits, include its permitted successors and assigns).

The Seller and the Buyer are hereinafter collectively referred to as the **"Parties"** and individually as a **"Party"**.

WHEREAS:

A. Whereas the Seller owns and operates high pressure transmission and distribution gas pipeline and engages in the business of transmission and distribution of indigenous gas ("System Gas") and regasified liquefied natural gas ("RLNG") in its franchise area.

B. Whereas the GOP is developing Special Economic Zone (SEZ), namely Quaid-e-Azam Business Park (QABP) under China Pakistan Economic Corridor (CPEC) through the Buyer.

C. Whereas the Buyer has been established by the Government of Punjab with the main objective of developing a chain of new industrial estates alongwith upgrading the existing ones and has identified requirement of 65 MMSCFD of RLNG for QABP, SEZ.

D. Whereas pursuant to Special Economic Zones Act, 2012, gas supply is to be provided to a SEZ at the door step of the zone (zero point) as identified by the SEZ.

E. Whereas due to shortage / unavailability of System Gas in the country to meet the demand of downstream sectors, the Buyer has agreed to purchase and the Seller has committed to provide RLNG supply to the Buyer on take or pay basis on the terms and conditions set out in the Agreement.

NOW, THEREFORE, in consideration of the mutual benefits to be derived and the representations and warranties, conditions and promises herein contained, and intending to be legally bound, SNGPL and the Company hereby agree as follows:

ARTICLE I

DEFINITIONS; EFFECTIVE DATE

1.1 Definitions. Unless the context otherwise requires, capitalized terms used in this Agreement shall have the respective meanings given to them below:

"ADP" - As defined in Section 7.3.

"QABP, SEZ" – Quaid-e-Azam Business Park, Special Economic Zone.

"Agreement Year" - A period of twelve consecutive calendar months during the Term of this Agreement, commencing on 1st January and ending on 31st December in the same calendar year, except for the first Agreement Year, which shall commence on the Effective Date and end on 31st December in the same calendar year.

"Atmospheric Pressure" -An absolute pressure of fourteen decimal point sixty-five hundredths pounds force per square inch (14.65lbs/in^2).

"Billing Cycle" - As defined in Section 3.1(a).

"BTU" -The British Thermal Unit, or the amount of heat required to raise the temperature of one avoirdupois pound of distilled water from 59 degrees Fahrenheit to 60 degrees Fahrenheit at Atmospheric Pressure.

"Business Day" - Any Day that banks in Lahore, Pakistan are legally permitted to be open for business. For the avoidance of doubt, Saturday shall be considered to be a Business Day for the purposes of this Agreement.

"Company Allocation" – Maximum quantity of Gas allocated to the Company by GOP being 65 MMSCFD.

"Company Event of Default" - As defined in Section 13.1.

"GOP" - The Government of the Islamic Republic of Pakistan.

"Gross Calorific Value" -The number of BTUs produced by the complete combustion at Atmospheric Pressure of one (1) Standard Cubic Foot of Gas at sixty degrees Fahrenheit (60°F), with excess air at the same temperature and pressure as the Gas and when the products of combustion are cooled to sixty degrees Fahrenheit (60°F) and when the water formed by combustion is condensed to the liquid state and when the products of combustion contain the same total mass of water vapour as the Gas and air before combustion.

"Guaranteed Delivery" – The quantity of Gas as set forth in the relevant ADP.

"Guaranteed Delivery Period" – As defined in Section 2.1(b).

"LNG Supply Agreements" – Upstream agreement(s) that SNGPL has entered into for purchase of LNG/RLNG by SNGPL from the upstream suppliers.

"Loss" -Any and all loss, damage, liability, payment and obligation (excluding any indirect or consequential loss, damage, liability, payment or obligation), and all related expenses (including reasonable legal fees).

"Measurement and Recording Equipment" - As defined in Section 7.2(a).

"MMSCF" - One million cubic feet at Standard Conditions.

"MMSCFD" – One million cubic feet (at Standard Conditions) per Day.

"Month" -A period beginning at midnight (12:00 hours) PST of the first Day of any calendar month and ending at midnight (12:00 hours) PST on the first Day of the next succeeding calendar month and "Monthly" shall be construed accordingly.

"Monthly Take-or-Pay Quantity" - As defined in Section 2.2(b).

"OGRA" - The Oil and Gas Regulatory Authority established pursuant to the Oil and Gas Regulatory Authority Ordinance, 2002 (XVII of 2002).

"Parties" - Both SNGPL and the Company.

"Party" - Either SNGPL or the Company.

"Person" - An individual, corporation, partnership, joint venture, trust, unincorporated

"Competent Authority" – OGRA or the authority or entity duly authorized under the laws of Pakistan to notify, issue, determine or approve the Gas Price or any part thereof.

"Day" - Each twenty-four (24) hour period beginning and ending at 12:00 midnight PST, and "Daily" shall be construed accordingly.

"Delayed Payment Rate" - One month KIBOR plus two percent (2%) per annum, calculated for the actual number of Days which the relevant amount remains unpaid on the basis of a three hundred sixty five (365) Day Year.

"Delivery Point" –The designated zero point of QABP, SEZ.

"Due Date" - As defined in Section 6.3.

"Dispute" - Any dispute, difference or disagreement of any kind whatsoever between SNGPL and the Company in connection with or arising out of this Agreement.

"Effective Date" – The date on which this Agreement comes into force and effect pursuant to Section 1.2.

"Equipment" - The Meter Stations, the Pipeline, the Measurement and Recording Equipment and all associated equipment all owned, installed, operated and maintained by SNGPL as per the terms of this Agreement.

"Force Majeure Event" – As defined in Section 12.1.

"Gas" - Any hydrocarbons or mixture of hydrocarbons and other gases which, at sixty degrees Fahrenheit (60°F) and at Atmospheric Pressure, are predominantly in a gaseous state including without limitation swapped gas/ RLNG from SSGC/LNG terminals, and residue resulting from the processing of gas, together with any other substances produced with such hydrocarbons and any amounts of additives as remain after transmission and processing.

"Gas Payments" - As defined in Section 3.1(a).

"Gas Price" – The price of swapped gas / RLNG applicable to the Company for delivery of Gas to the Buyer, as notified, from time to time, by the Competent Authority. For the avoidance of doubt, it is clarified that the price of swapped gas shall be the RLNG price notified by the Competent Authority.

organization, government or governmental authority or agency, or any other legal entity.

"Pipeline" - The pipelines owned by SNGPL and used to deliver Gas at the Delivery Point.

"Prudent Gas Pipeline Industry Practices" – The internationally accepted good gas industry practices as well as standards, procedures and practices as adopted by American Gas Association and similar organizations such as American Petroleum Institute (API), American Society of Mechanical Engineers (ASME), American Society for Testing and Materials (ASTM) and Gas Processors Association (GPA).

"Psia" - Pounds per square inch, absolute pressure.

"PST"- Pakistan Standard time.

"RLNG"– Regasified LNG.

"Security" -The Security for Guaranteed Deliveries contemplated by Section 5 hereof.

"Site" – means the site of QABP, SEZ.

"SSGC" – Sui Southern Gas Company Limited.

"Standard Conditions" – [Standard Conditions of pressure (14.65 Psia) and temperature (60 deg. F)].

"Term" -As defined in Section 11.

"Year" -Each twelve (12) Month period commencing on January 1.

1.2 Effectiveness of the Agreement

This Agreement shall be effective on the date (the **"Effective Date"**) when all the following conditions have been satisfied:

(a) This Agreement has been duly approved by the Competent Authority.

(b) The internal distribution network in QABP, SEZ has been laid by the Buyer at its own cost and expense and the same is operational.

(c) Commissioning of spur pipeline of 16" dia x 17 kilometers alongwith construction of Meter Stations [SMS (sales metering station) cum CMS (consumer metering station)]

having capacity of 65 MMSCFD has been completed by the Seller at the cost and expense of the Buyer.

SNGPL shall notify the Company in writing of the Effective Date.

ARTICLE II

SCOPE AND QUANTITY; GUARANTEED DELIVERY AND TAKE OR PAY

2.1 Scope and Quantity

(a) The Seller agrees to sell and deliver, and the Buyer agrees to purchase Gas at the Delivery Point in the quantities and at the prices and in accordance with the other terms and conditions of this Agreement. The Seller may swap RLNG with natural gas with SSGC, at Zamzama, Dadu, Sui, Sawan or any other RLNG swap gas delivery point under the swap arrangement and natural gas supplied to the Buyer under this Agreement shall be in lieu of supply of RLNG.

(b) The Guaranteed Delivery Period shall commence on the Day immediately following the Effective Date of this Agreement. SNGPL shall notify the Company in writing regarding the commencement of the Guaranteed Delivery Period. The Guaranteed Delivery Period shall continue until the expiry or termination of this Agreement.

(c) Subject to sub-clauses (d) and (e) below and to the remaining terms of this Agreement, the Gas to be delivered hereunder during the Guaranteed Delivery Period shall be the Guaranteed Delivery. The Buyer agrees that it shall take and, if not taken, pay for at least 66% of the Guaranteed Delivery in accordance with Section 2.2(b) hereunder.

(d) For the avoidance of doubt it is clarified that the sale and delivery obligation of SNGPL under this Agreement during the Guaranteed Delivery Period is contingent upon the required quantity of RLNG being made available to SNGPL in its system under the relevant LNG Supply Agreement(s) pursuant to which SNGPL is supplying RLNG to the Company and if for any reason such supply is not made or is reduced then there will be no obligation on SNGPL to supply hereunder in the event of a total failure of supply or a reduced obligation to supply to be calculated in accordance with the policy of the GOP/SNGPL in case of reduction in supply. The Seller shall designate the LNG Supply Agreement(s) pursuant to which it is supplying RLNG to the Buyer. For the purposes of this Agreement RLNG shall be regarded as being made available to or received by SNGPL in its system if it is received by SNGPL in a Pipeline owned, operated and controlled by SNGPL. SNGPL shall have no obligation to accept or receive RLNG in its

system under any LNG Supply Agreement unless it meets the quality and specification requirements of SNGPL.

2.2 Take-or-Pay and Related Provisions

(a) In order to reflect the back to back nature of the LNG supply chain, the provisions set forth in the designated LNG Supply Agreement(s) pursuant to which SNGPL will be supplying RLNG to the Buyer which impose any obligation on SNGPL (excluding take or pay obligations, payment terms for Gas supplied and Security which are separately dealt with below) shall mutatis mutandis apply to the Buyer.

(b) The Take or Pay Quantity during the Guaranteed Delivery Period is based on sale and purchase of at least 66% of the Guaranteed Delivery in the manner and subject to the terms hereinafter set forth. The Buyer shall take this quantity and if not taken shall be obliged to pay for it. During a Month in the Guaranteed Delivery Period, the Buyer shall take and if not taken pay for at least 66% of the Guaranteed Delivery for that Month (as contained in the ADP) divided by the number of Days in that Month multiplied by the difference between the number of Days in that Month and (i) the number of Days (or fractions thereof) of Force Majeure Events declared by the Seller or Buyer; (ii) the number of Days (or fractions thereof) of non-delivery of Gas by the Seller that Month for any reason, including a breach or default by the Seller or scheduled maintenance undertaken by the Seller (in relation to maintenance, to the extent not already catered for in the ADP).

2.3 No Liability of Seller

For the avoidance of doubt it is clarified that the Gas to be made available to the Buyer under the terms hereof is based on the assumption that RLNG is being made available to the Seller under the designated LNG Supply Agreement(s) pursuant to which it is supplying RLNG to the Buyer or is based on commitment of supply under such LNG Supply Agreement(s). The Seller shall have no liability to deliver Gas under the terms hereof if and to the extent that it fails to receive Gas in its system under the designated LNG Supply Agreement(s) pursuant to which it is supplying RLNG to the Buyer. Moreover, Seller's obligation to deliver Gas may get affected even if it is receiving Gas under the designated LNG Supply Agreement(s) due to operational constraints of SNGPL System e.g. due to failure of any of the major gas fields supplying gas to the Seller's network which results in pressure constraints or reduction in line pack beyond minimum operating limits. In such circumstances, Seller shall not be responsible for non supply of Gas to the Buyer and these events will constitute Force Majeure.

In case the Seller has received Gas in its system under the designated LNG Supply Agreement(s) pursuant to which it is supplying Gas to the Buyer and fails to deliver Gas to the Buyer in unexcused breach of the terms of this Agreement, the liability of the Seller to the Buyer shall under no circumstances whatsoever exceed the cost of the quantity of RLNG that has not been supplied in breach of the terms of this Agreement.

2.4 Title and Risk of Loss

Title to, and property in and the risk of Loss to all quantities of Gas delivered hereunder shall pass from SNGPL to the Company at the Delivery Point.

ARTICLE III

PRICE

3.1 Gas Price

(a) The price to be charged for Gas delivered hereunder shall be the Gas Price which as per the current Applicable Law is to be determined by OGRA. In addition, the Buyer shall be liable to pay by the due date stipulated in the relevant invoice all taxes and other impositions that are included by SNGPL in any invoice. Subject to subsection 3.1(b) below and the other terms and conditions of this Agreement, the Buyer shall pay to the Seller the Gas Price multiplied by the quantity of Gas actually delivered to the Buyer at the Point of Delivery pursuant to the Gas Orders (the "**Gas Payments**"). Bills shall be generated on weekly basis (i.e. after every seven (7) or eight (8) Days period so as to cover the entire calendar Month) (the "**Billing Cycle**"). The Gas Payments shall be paid as set forth in Article VI, provided, however that during the Guaranteed Delivery Period the Seller after close of calendar Month will raise an invoice in respect of Monthly Take or Pay Quantity less the quantities already invoiced on weekly basis in that calendar Month at RLNG price notified by the Competent Authority, if the actual quantity purchased by the Buyer during the immediate preceding Month is less than the Monthly Take-or-Pay Quantity. This invoice will be paid by the Buyer in accordance with Article VI.

(b) The Gas Price for all Gas delivered under this Agreement shall be the price in United States Dollars notified by the Competent Authority from time to time under the applicable law subject to Section 3.2. Any change in the Gas Price shall be effective from the date the revised price is effective as per the notification by the Competent Authority. As long as the Gas Price is notified by the Competent Authority in United States Dollars, the Seller, in order to prepare the invoice in Rupees, shall use the

weighted average selling exchange rate issued by State Bank of Pakistan in respect of the last day of the Billing Cycle and if that day is not a Business Day then the rate of the preceding Business Day shall be used.

3.2 Decontrolled Prices

If the Competent Authority ceases to or does not notify prices for Gas (or ceases to or does not notify prices for Gas that would be applicable to sales of Gas under this Agreement) then any provisional gas price determined by the GOP shall be applicable. If a provisional gas price has not been provided by the GOP, the Buyer and the Seller shall meet to agree on an appropriate Gas Price or methodology or formula for determining the Gas Price for future deliveries of Gas, taking into account the prevailing circumstances at such time. Until such agreement is reached, the Buyer agrees to pay to Seller the amount paid or to be paid by the Seller under the designated LNG Supply Agreement(s) for RLNG provided that if mutual agreement on a new Gas Price is not reached within 60 Days, the Seller may suspend supplies to Buyer hereunder.

ARTICLE IV

REPRESENTATIONS, WARRANTIES AND COVENANTS

4.1 Representations, Warranties and Covenants of the Company

(a) Representations and Warranties.

The Company hereby represents and warrants to SNGPL that:

i) it (A) is a company, duly incorporated and existing under the laws of Pakistan and (B) has, so far as is material to SNGPL, complied fully with all requirements of all applicable laws of Pakistan;

ii) it has all requisite power and authority to conduct its business, to own its properties and to execute, to deliver and to perform its obligations under this Agreement;

iii) this Agreement has been duly authorized, executed and delivered by it and constitutes the legal, valid and binding obligation of the Company including but not limited to the take or pay obligation contained in Section 2.2.

(b) Covenants.

The Company hereby covenants to SNGPL that:

i) it shall so far as is material to SNGPL's rights and obligations under this Agreement at all times comply with all applicable laws of Pakistan;

ii) it shall at its sole cost and expense (A) give all required notices and procure and maintain all licenses, consents and permissions necessary for the performance of its obligations under this Agreement and (B) pay all prescribed fees in connection therewith;

iii) it shall bear all costs and expenses in respect of construction and commissioning by the Seller of spur pipeline of 16" dia x 17 kilometers alongwith all costs and expenses in connection with construction of Metering Stations [SMS (sales metering station) cum CMS (consumer metering station)] having capacity of 65 MMSCFD;

iv) it shall provide land measuring 175' x 275' for the construction of Metering Stations [SMS cum CMS]by the Seller at the Delivery Point, free of cost;

iv) it shall render, at the sole expense of SNGPL subject to the terms of this Agreement, all assistance requested by SNGPL as is reasonable under the circumstances and is within its power to enable SNGPL to obtain all such consents required from time to time under the laws of Pakistan to enable SNGPL to discharge its obligations to the Company hereunder.

4.2 Representations and Warranties of SNGPL

SNGPL hereby represents and warrants to the Company that:

i) it is duly incorporated and existing under the laws of Pakistan and has, so far as is material to the Company, complied fully with all applicable laws of Pakistan and has all requisite power and authority to conduct its business, to own its properties (including the Equipment) and to execute, to deliver and to perform its obligations under this Agreement; and

ii) this Agreement has been duly authorized, executed and delivered by it and constitutes the legal, valid and binding obligation of it.

ARTICLE V

SECURITY

5.1 Security

(a) Prior to the Effective Date, the Company shall provide to SNGPL and maintain at all times standby letters of credit ("**Security**") in an amount equivalent to at least Thirty (30) Days of RLNG deliveries based on the current ADP prevailing at the relevant time. Such Security shall be furnished in such form as required by SNGPL and from such bank as required by SNGPL.

(b) The Security shall (i) be maintained during the Guaranteed Delivery Period; (ii) be adjusted accordingly in case the Gas Price is changed by the Competent Authority; and (iii) returned to the Buyer within thirty (30) Days after expiration or termination of this Agreement, net of any amounts lawfully due to the Seller.

(c) No supply of Gas hereunder will be made in the absence of the Buyer providing and maintaining the Security contemplated by this Section 5.1.

(d) In the event that the Buyer fails to pay any amount payable to the Seller when due, the Seller shall be entitled to draw or collect such amounts from the Security.

(e) In the event that the Security is not replaced, replenished or renewed to the satisfaction of the Seller at least ten (10) days prior to the date on which it is scheduled to expire or the Security is not adjusted accordingly (following encashment or in the event that the Gas Price is changed by the Competent Authority to account for such change within the period prescribed by the Seller), then without prejudice to any other rights or remedies available to the Seller under this Agreement, the Seller shall be entitled to suspend deliveries of Gas.

ARTICLE VI

INVOICING AND PAYMENT

6.1 Billing

The Seller's bills for the supply of Gas during a Billing Cycle, including any adjustments under Section 6.7, shall be furnished to Buyer on or after the first Business Day following each Billing Cycle. Invoices for Monthly Take-or-Pay Quantity shall be billed Monthly in arrears.

6.2 Delivery of Bills

All bills duly sent by the Seller in accordance with the notices provision hereof shall be considered prima facie evidence of delivery of bills to the Buyer by the Seller.

6.3 Posting and Payment

The Buyer shall pay all bills pertaining to Gas consumption and Monthly Take-or-Pay Quantity delivered in terms of Section 6.1 within three (3) Business Days from the day of issuance of the bill (the "**Due Date**"). For the avoidance of doubt, it is clarified that there shall be no right of set off of whatsoever nature available to the Buyer in any circumstances.

6.4 Method of Payment

Payment shall be made to the Seller in Lahore, Pakistan at the Seller's designated bank in the designated account of the Seller, on or before the Due Date; provided that, in the event that payment in the manner identified above is not possible, delivery by the Buyer of a cheque or a bank draft drawn on a scheduled bank in favour of the Seller at a designated office of the Seller shall be deemed to be an acceptable form of payment, subject to its realization within due date. In the event that the cheque is not realized within the Due Date, the Delayed Payment Rate will be levied on the Buyer accordingly. The name of the bank and the account number of the Seller shall be provided by the Seller along with the Seller's first bill and shall be considered standing instruction until changed in writing by the Seller.

6.5 Late Payment Surcharge

If payment of any bill rendered by the Seller to the Buyer is not made by the Due

Date, a late payment surcharge calculated at the Delayed Payment Rate shall be applicable on any outstanding amount.

6.6 Suspension of Deliveries

If the Buyer fails to make the bill payment by the Due Date, then the Seller shall in addition to its other rights and remedies, be entitled to (a) make drawdown on the Security equivalent to the amount shown in the invoice along with the late payment surcharge at the Delayed Payment Rate, or (b) suspend the supply of Gas by giving three (3) Days written notice of suspension to the Buyer, which notice shall specify the amount which has not been paid; provided that the Seller shall not suspend the supply of Gas if the requested amount is paid within three (3) Days, and provided further that if the Seller suspends the supply of Gas, the Seller shall resume the supply of Gas within twenty four (24) hours of receiving payment of such unpaid amount, together with late payment surcharge thereon and security shortfall, if any, plus the Seller's prevailing reconnection charges.

6.7 Estimated Billing

In case the meter installed in the Measuring Station cannot be read due to any reason other than availability of the Seller's personnel, the Seller shall submit provisional bills based on the ADP for the period the meter could not be read. The Seller shall adjust provisional bills based on estimated consumption against actual meter reading obtained subsequently but in no event later than the next scheduled Billing Cycle and give credit/debit, as the case may be, to the Buyer of the difference, if any. The Buyer shall pay such bills within the Due Date mentioned herein and the Seller shall adjust any refund against future charges for Gas supplied.

6.8 Billing Errors

After the bills have been furnished and/or paid, if the Seller or the Buyer within one (1) Year after posting of any bill discovers any manifest error, omissions or discrepancies in any such bills due to any reason whatsoever, the Seller or the Buyer shall bring such discrepancies to the notice of the other and the Parties shall agree to adjust the bills accordingly. Any mistake in the bills or meter reading (unless accepted by the Seller) shall not entitle the Buyer to withhold payment of the bills by the Due Date.

ARTICLE VII

DELIVERY, MEASUREMENT AND ADP

7.1 Commencement of Deliveries

Subject to delivery and maintenance of the Security contemplated by the terms hereof, supplies shall commence on the Day following the Effective Date.

7.2 Gas Measurement and Recording

(a) SNGPL shall own, install, operate and maintain, upstream of the Delivery Point, such measurement and recording facilities as may be reasonably required to measure and record Gas delivered by SNGPL at the Delivery Point (the **"Measurement and Recording Equipment"**).

(b) For the purposes of measuring and recording the Gas quantities delivered at the Delivery Point and its specifications, the standards, methods and procedures outlined in Schedule D shall be applicable and binding throughout the Term of this Agreement.

7.3 ADP. The Parties agree that there shall be an annual delivery programme ("ADP") which shall be an annual plan agreed between the Parties for delivery of Gas to the Site for the relevant Agreement Year. The ADP quantity for each Agreement Year shall be nominated by the Buyer provided that the quantity cannot under any circumstances exceed the Company Allocation. The ADP shall, in addition to other requirements of this Agreement, be prepared taking account of outages and maintenance requirements including outages and maintenance requirements pertaining to the LNG regasification terminal and SNGPL Pipeline/Equipment.

The Buyer shall provide the draft ADP, for the subsequent Agreement Year, to the Seller at least one hundred and eighty (180) Days prior to the commencement of the relevant Agreement Year. Provided that the ADP for the first Agreement Year shall be provided at such time before the Effective Date as the Parties may mutually agree. In case the Seller is agreeable to the ADP, it shall provide confirmation to the draft ADP to the Buyer in writing within thirty (30) Days of submission of draft ADP by Buyer. For the avoidance of doubt, it is clarified that the ADP shall be broken into daily, monthly and weekly delivery schedules. In case the Buyer does not submit draft ADP in a timely manner, it shall be deemed that the ADP quantity for the next Agreement Year shall be equal to the ADP quantity for the previous Agreement Year.

ARTICLE XI

DISPUTE RESOLUTION

11.1 Resolution by Parties; Discussion Periods. In the event that a Dispute arises between the Parties, representatives of each of the Parties having full authority to settle the Dispute shall attempt in good faith to settle such Dispute by mutual discussions within a period of thirty (30) Days after the date that the disputing Party gives written notice of the Dispute to the other Party. If such Dispute cannot be resolved within such time period, either Party may refer the same to arbitration under the terms of Section 11.2.

11.2 Arbitration. (a) Any dispute arising out of or in connection with this Agreement or relating to its validity or enforceability that has not been resolved following the procedures set forth in Section 11.1 shall be finally settled by arbitration under the Arbitration Act, 1940. The arbitration shall, unless otherwise agreed by the Parties, be conducted in Lahore, Pakistan and the reference will be to a sole arbitrator.

(b) Binding Effect. Each Party hereby agrees to be bound by any final decision or award of any arbitrator duly appointed under this Section 11.2.

(c) Language of Arbitration. The language of any arbitration under this Agreement shall be English.

ARTICLE XII

FORCE MAJEURE

12.1 Definition of Force Majeure Event. A "Force Majeure Event" shall mean any event or circumstance or combination of events or circumstances that is beyond the reasonable control of a Party and that on or after the date of this Agreement materially and adversely affects the performance by such affected Party of its obligations under or pursuant to this Agreement; provided, however, that such event or circumstance or combination of events or circumstances shall not constitute a "Force Majeure Event" hereunder to the extent that it or such material and adverse effect could have been prevented, overcome or remedied in whole or in part by the affected Party through the exercise of diligence and reasonable care, is being understood and agreed that reasonable care includes acts and activities in performance by the Parties of their respective obligations under this Agreement, which acts or activities are reasonable in light of the likelihood of such event, the probable effect of such event if it should occur and the likely efficacy of such protection measures. Without limiting the generality of the foregoing, "Force Majeure Events" hereunder shall include each of the following events and circumstances, but only to the extent that each satisfies the above requirements:

(a) any act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, revolution, riot, insurrection, civil commotion, act or campaign of terrorism, kidnapping or sabotage;

(b) revocation of Company Allocation by GOP;

(c) radioactive contamination or ionizing radiation originating from a source in Pakistan or resulting from another Force Majeure Event;

(d) any strikes, works to rule or go-slows that extend beyond the Site, and are widespread or nationwide;

(e) uncontrollable events including:

(A) lighting, earthquake, tsunami, drought, flood, torrential rain, storm, cyclone, typhoon, or tornado;

(B) fire, explosion or chemical contamination;

(C) epidemic or plague;

(f) rupture of pipeline for any reason.

12.2 Exclusion. Notwithstanding anything contained herein and in Section 12.1, it is agreed between the Parties that for no reason whatsoever will inadequacy of funds for either Party be considered as a Force Majeure Event.

12.3 Notification Obligations. (a) Occurrence Etc. If by reason of a Force Majeure Event a Party is wholly or partially unable to carry out its obligations under this Agreement, the affected Party shall (i) give the other Party notice of the Force Majeure Event as soon as practicable, but in any event, not later than the later of forty-eight (48) hours after the affected Party becomes aware of the occurrence of the Force Majeure Event or six (6) hours after the resumption of any means of providing notice between the Company and SNGPL, and (ii) give the other Party a second notice, describing the Force Majeure Event in reasonable detail and, to the extent that can be reasonably determined at the time of the second notice, providing a preliminary evaluation of the obligations affected, a preliminary estimate of the period of time that the affected Party will be unable to perform such obligations and other relevant matters as soon as practicable, but in any event not later than seven (7) Days after the initial notice of the occurrence of the Force Majeure Event and its cause(s) and providing or updating information relating to the efforts of the affected Party to avoid and/or to mitigate the effect(s) thereof and estimates, to the extent practicable, of the time that the affected Party reasonably expects it will be unable to carry out any of its affected obligations due to the Force Majeure Event.

(b) Cessation. The affected Party shall provide notice to the other Party of (i) the cessation of the Force Majeure Event, and (ii) its ability to recommence performance of its obligations under this Agreement, in each case as soon as possible and in any event not later than seven (7) Days after the occurrence of (i) and (ii) above.

(c) Failure to Give Notices. Failure by the affected Party to give written notice of a Force Majeure Event to the other Party within the forty-eight (48) hour period or six hour period required by Section 12.3(a) shall not prevent the affected Party from giving such notice at a later time; provided, however, that in such case the affected Party shall not be excused pursuant to Section 12.5 for any failure or delay in complying with its obligations under or pursuant to this Agreement under the notice required by Section 12.3(a) has been given. If said notice is given within the forty-eight (48) hour period or six hour period required by Section 12.3(a), the affected Party shall be excused for such failure or delay pursuant to Section 12.4 from the date of commencement of the relevant Force Majeure Event.

12.4 Duty to Mitigate. The affected Party shall use all reasonable efforts to mitigate the effects of a Force Majeure Event, including the payment of all reasonable sums of money by or not behalf of the affected Party in light of the likely efficiency of the mitigation measures.

12.5 Delay caused by Force Majeure and Termination. (a) Excused Obligations. So long as the affected Party has at all times since the occurrence of the Force Majeure Event complied with the obligations of Section 12.4 and continues to so comply, then (i) the affected Party shall not be liable for any failure or delay in performance its affected obligations (other than an obligation to make a payment), it being understood that in no event shall inadequacy of funds be considered a Force Majeure Event under his Agreement) under or pursuant to this Agreement during the existence of a Force Majeure Event ; provided, however, that no relief shall be granted to the affected Party pursuant to this Section 12.5 to the extent that such failure or delay would have nevertheless been experienced by the affected Party had the Force Majeure Event not occurred.

(b) Termination. Where the effects of a Force Majeure Event exist for a period of two hundred and seventy (270) Days or more, then either Party may terminate this Agreement by issuing a Termination Notice.

12.6. For the avoidance of doubt, a Force Majeure Event preventing or restricting the Buyer from taking or using Gas or excusing any other obligation of the Buyer hereunder shall not excuse the Buyer from paying for the Monthly Take-or-Pay Quantity.

ARTICLE XIII

DEFAULT AND TERMINATION

13.1 Company Events of Default – Termination by SNGPL. Each of the following events (each, a "**Company Event of Default**"), if not cured within the time permitted (if any), shall give rise to the right on the part of SNGPL to terminate this Agreement forthwith by notice to the Company:

(a) Misrepresentations. Any statement, representation or warranty made by the Company herein shall prove to have been incorrect, in any material respect, when made or when deemed to have been made or repeated, and such incorrect statement, representation or warranty shall have a material adverse affect on the Company's ability to perform its obligations under this Agreement.

(b) Material Breach. Any breach by the Company of this Agreement (other than a breach of its payment obligations), which breach shall not have been remedied within thirty (30) Days after notice from the SNGPL stating that a material breach of the Agreement has occurred that could result in the termination of such Agreement, identifying the material breach in reasonable detail, and demanding remedy thereof.

(c) Failure to Post or Renew the Security. Failure of the Company to post, maintain, renew or replenish any Security contemplated by the terms hereof within forty five (45) Days of the date required.

(d) Payment Default(s). Absolutely without prejudice to any other right or remedies available to SNGPL under this Agreement, any default(s) by the Company in the making of any payment(s) required to be made by it hereunder within forty five (45) Days from the stipulated due date.

13.2 Remedies Cumulative. The exercise of the right of a Party to terminate this Agreement does not preclude such Party from exercising other remedies, which are provided herein, or are available at law. Remedies are cumulative and the exercise, or failure or exercise, one or more of them, by a Party shall not limit or preclude the exercise of, or constitute a waiver of other remedies by such Party.

ARTICLE XIV

MISCELLANEOUS PROVISIONS

14. 1 Amendment. This Agreement may not be amended except in writing, signed by duly

authorized representatives of each of the Parties.

14.2 Entire Agreement. This Agreement constitutes the entire agreement between the Parties hereto with respect to the subject matter hereof. All prior written or oral understandings, offers or other communications of every kind pertaining to the subject matter hereof are hereby abrogated and withdrawn.

14.3 Governing Law, Language; This Agreement and the rights and obligations hereunder shall be interpreted, construed and governed by the laws of Pakistan. The language for the purpose of interpreting and administering this Agreement shall be English.

14.4 Notices. (a) Address and Addresses. Except as otherwise expressly provided in this Agreement, all notices or other communications to be given or made hereunder shall be in writing, shall be addressed for the attention of the persons indicated below and shall either be delivered personally or sent by reputable courier, registered or certified mail or by e mail and facsimile. The addresses for service of the Parties and their respective facsimile numbers, e mail addresses shall be:

If to the Company:

_____
_____
_____
Attn: _____
Telephone: _____
Facsimile: _____

If to Sui Northern Gas Pipeline Limited
21 Kashmir Road P.O. Box 56 Lahore 54000 Pakistan
Attn: Managing Director
Telephone: _____
Facsimile: _____

14.5 No Waiver.

(a) No waiver by either Party of any default or defaults by the other Party in the performance of any of the provisions of this Agreement:

(i) shall operate or be construed as a waiver of any other or further default

or defaults whether of a like or different character; or

(ii) shall be effective unless in writing duly executed by a duly authorized representative of such Party.

(b) Neither the failure by a Party to insist on any occasion upon the performance of any term, condition or provision of this Agreement nor any delay or other indulgence granted by one Party to the other shall act as a waiver of such breach or acceptance of any variation or the relinquishment of any such right or any other right hereunder.

14.6 Survival. Expiration or termination of this Agreement shall not relieve either Party of any obligation that by its nature should survive such expiration or termination, including promises of indemnity and confidentiality.

14.7 Assignment. No assignment or transfer (including the grant or creation of any security interest or lien) by a Party of this Agreement or such Party's rights or obligations hereunder shall be effective without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed.

14.8 Successors and Assigns. This Agreement shall be binding upon, and inure to the benefit of the Parties hereto and their respective successors and permitted assigns.

14.9 Confidentiality. (a) Confidential Materials. Each Party and its contractors, consultants, and agents shall hold in confidence all documents and other information, whether technical or commercial, supplied to it by or on behalf of the other Party. Neither Party nor any contractor, consultant, or agent of either Party, shall, except as required by law or appropriate regulatory authorities, publish or otherwise disclose any documents or information or use any documents or information for its own purposes other than as may be required to perform a Party's obligations under this Agreement. A Party seeking confidential treatment for a document shall so indicate by marking the document "confidential."

(b) Exceptions. This Section 14.9 shall not apply to:

(i) information in the public domain otherwise than by breach of this Agreement;

(ii) information already lawfully in the possession of the receiving Party prior to receipt of the information from the other Party; and

(iii) information lawfully obtained from a third Person who is free to divulge the information to any other Person, which was not obtained under any obligation

(ii) information already lawfully in the possession of the receiving Party prior to receipt of the information from the other Party; and

(iii) information lawfully obtained from a third Person who is free to divulge the information to any other Person, which was not obtained under any obligation of confidentiality to such third Person.

14.10 Counterparts. This Agreement may be executed in two or more counter parts, all of which shall be considered one and the same Agreement and each of, which shall be deemed as original.

IN WITNESS WHEREOF, the Parties have entered into this Agreement as of the date first above written.

SUI NORTHERN GAS PIPELINES LIMITED

By: _____

Title: Managing Director

PUNJAB INDUSTRIAL ESTATE DEVELOPMENT AND MANAGEMENT COMPANY

By: Ali Muazzam Syed

Title: Chief Executive Officer-PIEM

Punjab Industrial Estates Development and Management Co. (Govt. of Pakistan) PIEDMC CEO

Witness: _____

Name: _____

CNIC: _____

Witness: _____

Name: _____

CNIC: _____

List of Schedules

A – Gas Allocation Letter

B – Delivery Point

C – Format of Security

D – Standards, Methods, Procedures etc., for measuring and recording Gas

Material Type	Maximum Compacted Layer Thickness (cm)	Recommended Modified AASHTO Compaction (cm)
Base-coarse	10	100
Sub-base	10	98
Sab-base & general fill		
Upper 30 cm (subgrade)	15	95
30 cm-70 cm (fill)	15	93
Below 70 cm (fill)	15	90

9. Water supply system will be provided to the QAAP to supply water to industries and other amenities. Following table shows different types of water requirements in Apparel Park.

Sr. No.	Description	Area (Acres)	Estimated Population (persons)	Industrial Criteria Value		Domestic Criteria Value (gpcd)	Average Water Demand (Gal/d)		
				Value	Units		Industrial	Domestic	Total
1	Dry/ Apparel Industry	702.5	140,505	3,600	G/a/d	20	2,529,090	2,810,100	5,339,190
2	Wet/ Textile Industry	234.2	46,835	45,000	G/a/d	20	10,537,875	936,700	11,474,575
3	Administration & Public Buildings	172.8	1,728	20	gpcd	-	34,564	-	34,564
4	Apartments	8.0	27,878	10	gpcd	40	278,784	1,115,136	1,393,920
5	Hospitals	71.0	3,000	100	gpbd	20	20,000	56,000	76,000
6	Parks	121.0	500	18,005	G/a/d	20	2,178,581	10,000	2,188,581
7	Fire Demand	-		75	L/s	-	-	-	1,425,400
								Gal/day	21,932,230
							Total average water requirement	Cusec	40.75*

Note: 40 cusecs average water requirement has been adopted for further calculations and design purpose

Groundwater resources are sufficient to provide the above quantity of water and groundwater quality is good in general. Following options of water supply system have been considered:

- Fill and Draw Method
- Direct Pumping
- Pumping with Balancing Reservoirs

day demand are proposed. The capacity of each OHR's will be 150,000 gallons. For primary, secondary and tertiary networks 200, 150 and 100 mm dia. pipes are proposed respectively. Centrifugal pumps have been proposed. HDPE pipes have been proposed for water supply network based on several advantages as deliberated in Section -5. Phasing of water supply works is given in following Tables:

Phase (Year)	Pumping Machinery	No. of Tube Wells
2014-2015	25% of Water Demand (16 Cusec)	4
2015-2016	25% of Water Demand (16 Cusec)	4
2016-2017	50% of Water Demand (28 Cusec)	7

Phase (Year)	Over Head Reservoir (OHR's)	No. of OHR's
2014-2015	25% of Total Capacity	4
2015-2016	25% of Total Capacity	4
2016-2017	25% of Total Capacity	6

10. Wastewater and stormwater collection and disposal are mandatory to avoid environmental nuisance and safe other infrastructure facilities in Apparel Park. Different options of wastewater and stormwater flow estimations have been considered based on prevailing criteria, guidelines and practices (Section-6). Option based on the optimal and rational wastewater flows have been selected. 100 % stormwater flow for the industrial premises and 1 in/hr rainfall intensity for road drainage have been considered in this option and total wastewater flow comes out to be 6.23 m^3/s (220 cusec). Partially combined system have been proposed mainly in the QAAP for collection of peak wastewater and a significant part of stormwater generated in the area.

For collection of stormwater of large/main roads (61 & 37 m ROW), separate stormwater collection system will be designed. Different options for selection of rainfall intensities are considered (Section-6). Option based on rainfall intensity against 2-year return period have

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been used in this option and total design stormwater flow have been estimated 4.62 m^3/s (163 cusecs).

Industrial wastewater as well as stormwater coming in the industrial/institutional premises will be collected in the roadside sewers/conduits. Lateral sewers will also receive the stormwater of the lateral roads. All this contaminated wastewater will be collected and pumped through wastewater disposal station near Combined Effluent Treatment Plant (CETP). Treated effluent will be preferably disposed of into seepage drain. Excess effluent will either be disposed of in UCC or re-used for irrigation in nearby agriculture land.

Separate stormwater drainage system is provided in the central medians of the main roads to cater for runoff generated from rainfall on the main roads. This rainwater will be discharged into the proposed artificial lake located at South-West corner of the Apparel Park. The overflow of the lake will be collected in a Stormwater Disposal Station to pump water into seepage drain/UCC. Both Wastewater and Stormwater Disposal Stations will be interconnected to economize the operation of disposal stations.

Detailed analysis of pipe/conduit material is carried out keeping in view carrying capacities and other parameters (Section-6). However, RCC sewers have been proposed for the portion of wastewater lines where dia. up to 1830 mm are sufficient and for larger dia. requirement, underground conduit are proposed. Five (05) trunk wastewater lines are proposed. Following table shows the sizes of the trunk wastewater lines

Sr. No.	Description		Ultimate Design Capacity		Length (m)	Dia. (mm)/ Size (mm x mm)
			m^3/s	cusec		
1	Trunk Line - A	Sewer	-	-	3300	610 – 1520
		Conduit	6.2	220	1765	3000 x 4000
2	Trunk Line - B	Sewer	1.3	46	2465	610 - 1370
3	Trunk Line - C	Sewer	1.0	33	2125	460 - 1220
4	Trunk Line - D	Sewer	1.63	51	2270	530 - 1520
5	Trunk Line - E	Sewer	0.6	17	1260	530 - 910

The wastewater is proposed to be treated to comply with the prevailing effluent quality standards prescribed in National Environmental Quality Standards (NEQS) of Pakistan. Considerations for the possible reuse of the treated effluent (i.e. irrigation or landscape watering etc.) shall also be evaluated. Furthermore, if the wastewater is to be re-used for irrigation, water quality guidelines of Food and Agriculture Organization (FAO) and World Health Organization (WHO) need to be implied.

11. Project may pose significant environmental impacts which need to be studied in detailed and mitigation measures shall be adopted to avoid/minimize those impacts. Impacts related to wastewater disposal, land acquisition, air pollution and waste disposal may be significant. A detailed Environmental Impact Assessment (EIA) Report need to submitted as per Punjab Environment Protection Act, 2012 (Amended).

12. Summary of the capital cost of various infrastructure works of the proposed QAAP is presented in following Table. Total capital cost is estimated to be Rs. 22,524 million.

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Sr. No.	Description	AMOUNT (Rs.)
A	**APPROACH AND INTERNAL ROADS NETWORK (ASPHALTIC)**	
1	Approach Roads (from Motorway and Lahore-Sheikhupura Road)	1,625,612,699
2	Internal Roads Network (61m, 36m and 25m R.O.W)	4,343,947,842
	Total (A)	**5,969,560,542**
B	**ELECTRICAL WORKS**	
1	Transmission Line (5 km)	5,000,000
2	Grid Station (132/11kV) (3 No.)	1,500,000,000
3	11 kV Distribution Network and Road Lighting System including 11/0.415kV Distribution Transformers	1,550,000,000
	Total (B)	**3,055,000,000**
C	**WATER SUPPLY NETWORK (4 cusec)** Tubwells, Overhead Tanks, HDPE Distribution Network, Metering and Appurtenances.	987,958,307
	Total (C)	**987,958,307**
D	**PARTIALLY COMBINED WASTEWATER COLLECTION SYSTEM** R.C.C Sewers (upto 1830mm dia) and Conduits	771,285,254
	Total (D)	**771,285,254**
E	**STORM WATER DRAINAGE SYSTEM ALONG MAIN ROADS (61m and 36m R.O.W)** R.C.C Drains including Artificial Lake	1,072,460,777
	Total (E)	**1,072,460,777**
F	**COMBINED WASTEWATER & STROMWATER PUMPING STATION** Brick Masonry Circular Wells with core Walls (Civil, Mechanical and Electrical Works)	1,468,889,805
	Total (F)	**1,468,889,805**
G	**PROVISIONAL ITEMS**	
1	Land Cost (1565 Acre)	3,315,000,000
	i) Land Acquisition	1,000,000,000
	ii) Resettlement of Population	2,500,000,000
2	CETP (30 Acre)	1,000,000,000
3	Interchange (1 No.)	200,000,000
4	Landfill Site (9 Acre)	148,000,000
5	Boundary wall and Main Gate	150,000,000
6	Sui Gas	10,000,000
7	PTCL	100,000,000
8	Land Scaping	20,000,000
9	PIEDMC Admin office	100,000,000
10	Project Management Cost (2 Years)	
	Total (G)	**8,543,000,000**
	GRAND TOTAL (A+B+C+D+E+F+G)	**21,868,154,686**
	CONTINGENCIES @ 3% OF PROJECT COST	**656,044,641**
	GRAND TOTAL	**22,524,199,326**
	Rs. in Million	**22,524**

SECTION 6

WASTEWATER AND STORMWATER COLLECTION AND DISPOSAL SYSTEM

6.0 GENERAL

Safe collection and disposal of industrial/domestic wastewater and stormwater are the vital infrastructure components of the Quaid-e-Azam Apparel Park (QAAP). The primary purpose of providing wastewater/stormwater collection system is to efficiently and safely collect contaminated water, thereby preventing disease transmission and nuisance, and transmit it to treatment works without loss or contamination of the surrounding environment. Requirement of such a collection system becomes vital when dealing with an industrial estate/park.

The main objective of the present section is to propose a workable, technically sound, sustainable and financially viable solution for the provision and development of wastewater and storm water collection system. This section covers planning and preliminary designing of wastewater/stormwater collection systems and components. Design criteria has also been briefly discussed.

The wastewater collection system of QAAP will be designed for the ultimate wastewater flows generated in the developed park encompassing an area of 1,565 acres.

6.1 WASTEWATER COLLECTION SYSTEMS

Following types of systems are commonly used for collection of wastewater from urban and industrial areas:

i. Separate System
ii. Combined System
iii. Partially Combined System

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Separate System

This system consists of separate collection networks i.e. independent pipes/conduits for both wastewater and stormwater generated in a developed area. Peak wastewater/sewage generated in the industrial establishments, commercial areas, public amenities etc. is conveyed through lateral and trunk sewers/conduits up to wastewater treatment plants (WWTP) and treated for subsequent disposal generally into a water body. Stormwater collected on the roads, open areas and roofs is separately collected in the stormwater conduits/drains and disposed of into water bodies or stored for re-use purposes. Separate system is easy to operate but capital and O&M cost is larger. This system provides excellent drainage of the area in case of heavy rainfall of up to 5 years return period in general. This system is mostly adopted in the developed countries.

Combined System

In this system a single/combined collection network i.e. pipes/conduits is used to convey both the wastewater and stormwater generated in a developed area. As the system is designed for peak sewage flows and stormwater of 2-5 year return period, therefore significantly larger sizes of the pipes/conduits are provided to accommodate both types of flows, which results in substantial increase in the capital cost. This system also provides excellent drainage of the area, however, the construction and O&M is relatively difficult. Furthermore, in case of rainfall all the contaminated water in excess of the capacity of WWTP shall be disposed of into the water body without treatment. Combined system is not encouraged now a days and separate system is preferred for several advantages.

Partially Combined System

Partially combined system consists of a collection system which is designed to convey peak wastewater flow and a part of stormwater generated in a developed area. This system is provided to economize

the capital cost of wastewater and stormwater collection system in the developing countries. In the case of heavy rainfall, the stormwater in excess of the capacity of partially combined system impounds on the roads and in depression areas and drain out with time. The part of stormwater to be taken in the design of the collection network is generally defined by relevant local authorities keeping in view the previous experiences.

For QAAP, partially combined system is proposed for the collection of industrial, commercial and domestic wastewater and stormwater collected in the premises. However, separate stormwater drains have been proposed for the drainage of stormwater of the mains roads. The proposed system is discussed later in this Section.

6.2 COMPONENTS OF WASTEWATER AND STORMWATER COLLECTION SYSTEMS

Following are the main components of a wastewater and stormwater collection system

6.2.1 Interception Works

In the case of circular sewers, wastewater from the houses and commercial and industrial areas etc. is intercepted through manholes provided at suitable distances in the collection network. However, in case of open and closed channels, the wastewater line from the house or industry may be connected to the drain. Vertical or horizontal gratings with inlet boxes are provided which are connected to drains or manholes.

6.2.2 Conveyance Network

Lateral (smaller) sewer pipes or drains are used to collect the wastewater and stormwater directly from the interception points and they convey water up to sub-main or main/trunk sewers or drains. As the wastewater and stormwater are conveyed under gravity flow, therefore, pipes or drains are sloped towards final disposal point. To raise hydraulic

grade line, the wastewater/stormwater is pumped through a disposal/pumping station. Conveyance network of the QAAP will consist of sewers, wastewater conduits and stormwater drains. Detailed project plan is discussed later in this section.

6.2.3 Inspection Chambers/Manholes

Manholes are generally provided in the sewer pipes at suitable distances for connection of lateral lines and inspection and maintenance purposes. For closed drains, inspection chambers are provided for removal of sludge and maintenance works. Inspection chambers are proposed for the closed drains of QAAP.

6.2.4 Disposal Station

In plain areas, the trunk wastewater line(s) go well below the natural surface level (NSL) at the end and wastewater/stormwater is pumped through a pumping/disposal station to dispose of into WWTP or surface water body. A disposal/pumping station is generally composed of a collection well and pumps with suction and delivery pipe lines.

6.2.5 Combined Effluent/Wastewater Treatment Plant

Domestic and industrial wastewater contain variety of pollutants which contaminate the receiving water body and cause threat to human and aquatic life. Therefore it is imperative to remove these pollutants through WWTP to meet the effluent standards. When WWTP treats a mixed industrial wastewaters from a variety of industries as well domestic wastewater, it is commonly called as Combined Effluent Treatment Plant (CETP).

6.2.6 Outfall Drain/Mains and Receiving Water Body

Outfall drain or pipes are required to convey the treated effluent from CETP up to receiving water body through gravity or pumping. Downstream uses of the receiving water body shall be evaluated. Seepage Drain and Upper Chenab Canal (UCC) are potential water

bodies for disposal of treated effluent. Seepage drain is passing near the proposed CETP however UCC is passing at 2.5 km. Detailed discussion of the potential disposal options is provided later in this Section.

6.3 DESIGN CRITERIA

Design criteria for wastewater collection system of the Quaid-e-Azam Apparel Park has been adopted by considering numerous local and international wastewater guidelines and standards. The design criteria for major components of wastewater system are discussed in this section:

6.3.1 Design Flows

Partially Combined Sewer/Drains

Wastewater drains shall be designed on the following flows:

i. **Average Wastewater Flow (A):** This is the average wastewater flow and shall be 80% -90 % of the industrial, commercial and domestic water use.

ii. **Peak Wastewater Flow (B):** This is the maximum wastewater flow (Peaking Factor x A) used for the hydraulic design of drains/pipes, disposal station, CETP and other components. Peaking factor of 2.0 is proposed for QAAP.

iii. **Stormwater Flow of Industrial/Institutional Premises (C):** An allowance of stormwater will be considered in the partially combined wastewater drains which shall be equivalent to the peak wastewater flow

iv. **Stormwater Flow of Lateral Roads (D):** Allowance of stormwater of the lateral/smaller roads shall be calculated as per rational formula and rainfall intensity shall be 1 in/hr.

v. **Total Wastewater Flow (T):** Total wastewater flow shall be the sum of all the above flow (T = A+B+C+D) and wastewater drains shall be designed on this total wastewater flow.

Stormwater Drains

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The capacity of stormwater drains for road drainage shall be calculated according to Rational Method, which relates the flow to the rainfall intensity, the tributary area, and a coefficient, which represents the combined effects of ponding, percolation and evaporation. The Rational Formula is given below:

$$Q = CIA$$

Where:-

Q	=	Discharge in cusecs
C	=	Runoff coefficient
I	=	Rainfall intensity in inch/hour
A	=	Drainage area (Road Area) in acres

Runoff Coefficient (C)

The run-off coefficient will depend on the built up area, type of pavement, type of soil and ambient moisture conditions. The run-off coefficients shall vary from open to thickly populated area. **Table 6.1** below shows the run-off co-efficient for various surfaces. For calculating the storm water runoff the cumulative values of C are taken for different areas depending upon the topography of the areas.

Table 6.1 Runoff Coefficients for Different Type of Surfaces

Type of Surface	Run off Coefficient
Water tight roof surface	0.70 - 0.95
Asphaltic cement streets	0.85 - 0.90
Portland cement streets	0.80 - 0.95
Brick paved driveways and walks with tightly cemented joints	0.75 - 0.85
Brick paved driveways and walks with un-cemented joints	0.70 - 0.80
Inferior block pavement with un-cemented joints	0.40 - 0.50
Lawns, sandy soil 2.0% slope 2-7% slope > 7% slope	 0.15 - 0.30 0.05 - 0.10 0.10 - 0.15
Lawns, heavy soil 2.0% slope	

Type of Surface	Run off Coefficient
2-7% slope > 7% slope	0.13 - 0.17 0.18 - 0.22 0.25 - 0.35
Business Downtown area Neighborhood area	 0.70 - 0.95 0.50 - 0.70
Residential (Urban) Single family area Multi units, detached Multi units attached	 0.30 - 0.50 0.40 - 0.60 0.60 - 0.75
Residential (Suburban) Apartment area	 0.25 - 0.40
Industrial Light Heavy	 0.50 - 0.70 0.60 - 0.90
Parks, cemeteries	0.10 - 0.25
Playgrounds	0.20 - 0.35
Railroad yards Unimproved areas	 0.20 - 0.40

Rainfall Intensity (I)

The rainfall data for 50 years (1947-1998) collected from Pakistan Meteorological Services was compiled by NESPAK and used for Improvement of Sewerage and Drainage Systems of this Project. Rainfall intensity duration curves for 2, 5 & 10 years return period have been developed. The intensity-duration-frequency curves (IDF Curves) are shown in **Figure 6.1**.

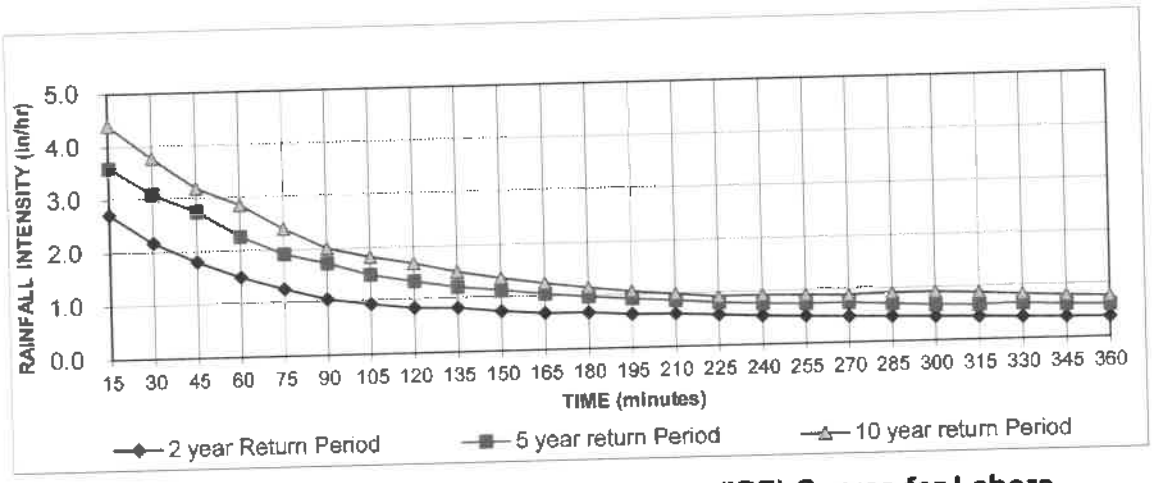

Figure 6.1 Rainfall Intensity-Duration-Frequency (IDF) Curves for Lahore

6.3.2 Design Period

i) Civil works — 25 years

ii) Machinery — 15 years

Sufficient area for the disposal station should be acquired to accommodate further extension for next 40 years.

6.3.3 Hydraulic Design Equation

Following Manning's equation will be used to carry out hydraulic design and set longitudinal slope of the sewers/drains:

$$V = \frac{1}{n} R^{2/3} S^{1/2}$$

Where,

V	=	Flow velocity in m/sec.
R	=	Hydraulic Radius in meters
S	=	Slope of the Drain
n	=	Manning's Coefficient of Roughness

Design Velocity

Considering the topology of subject area, longitudinal slopes have been maintained to ensure the permissible limits of self-cleansing velocities (0.75 m/s to 2.5 m/s). The permissible limits of self-cleansing velocity ensures suspension of solids whilst avoiding drain bed erosion.

Manning's Coefficient

Manning's coefficient of 0.013 - 0.015 shall be used for Reinforced Cement Concrete (RCC) sewers/drains.

6.3.4 Pipe/Drain Materials

Selection of a viable pipe material is based on the capital cost to be incurred on the installation of collection network, design life and operation and maintenance expenditure. In view of the above factors the following pipe materials have been considered:

- RCC Sewer Pipes
- RCC Drains/Conduits
- Glass Reinforced Plastic (GRP) Pipes
- High Density Polyethylene (HDPE) Pipes

Each material has its own advantages and disadvantages which are summarized in **Table 6.2**. RCC sewer pipes are most commonly used successfully for local sewerage schemes. GRP and HDPE pipes are relatively less common due to larger capital cost and unavailability especially for larger diameters. Covered wastewater drains/conduits have been used in the industrial estates already developed by PIEDMC.

For financial comparison of the above mentioned conduits/pipe, capital cost of pipes including laying of these pipes/conduits have been considered. Equivalent hydraulic sizes of these pipes/conduits for carrying 25 cusec wastewater flow are computed and capital cost of laying is compared for 100 m running length. The cost comparison of the above options is presented in **Table 6.2**.

Table 6.2 Comparison of Different Types of Pipes/Conduits used for Wastewater Conveyance

Sr. No.	Evaluation Criteria	RCC Sewer Pipes	RCC Drains/Conduits	GRP Pipes	HDPE Pipes
1	Available Length of one Piece	2.4 m	Precast conduits up to 1.8 m length are common. In-situ Casting of longer lengths is common.	6 or 12m	6 or 12m
2	Diameters/Sizes Available	225 to 1830 mm	Can be casted in any required size	300 to 2600 mm	Available up to 630 mm
3	Type of Joint	Bell & Spigot Joint, Tong & Grove Joint	Expansion Joint with Sealant	Bell & Spigot Joint, Sleeve Joint, Flange Joint	Butt fusion welding process.
4	Weight	Heavy	Heavy	Light	Light
5	Handling	Difficult due to heavy weight	Precast conduits are difficult to handle due to heavy weight. In-situ casting is easy but time taking	Easy mobility and installation	Easy mobility but jointing requires trained labour
6	Roughness Coefficient	0.011-0.013	0.011-0.013	0.008-0.01	0.011
7	Corrosion resistance	Subject to H_2S corrosion due to acids, highly septic sewage and by highly acidic wastewater.	Subject to H_2S corrosion due to acids, highly septic sewage and by highly acidic wastewater.	Highly corrosion resistant	Highly corrosion resistant
8	Structural Life	More than 30 years	More than 40 years	More than 50 years	More than 50 years

Sr. No.	Evaluation Criteria	RCC Sewer Pipes	RCC Drains/Conduits	GRP Pipes	HDPE Pipes
9	Local Availability	Easily available	Easily available/castable	Larger diameters are manufactured on special orders or imported	Larger diameters are manufactured on special orders or imported
10	Requirements of Special Equipment for Jointing	Not required	Not required	Not required	Equipment for Butt fusion welding is required
11	Previous Local Experience	Commonly practiced and successful under many local circumstances for urban sewerage schemes	Commonly practiced when RCC sewer dia. above 72" is required. It is successful for both urban and industrial developments. Used in industrial estates of PIEDMC.	Rarely used for gravity sewer flows in local projects.	Smaller diameters up to 27" have been successfully used in local projects. Larger diameters are not common.
12	Operational Problems	Cleaning is difficult. Industrial effluent may erode and deteriorate the strength and cause crown-failures. Repairing is difficult	Cleaning is relatively easy and repairing work is easier	Resistant against chemicals of industrial effluents and lesser operational problems	Resistant against chemicals of industrial effluents and lesser operational problems

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Table 6.2 Cost Comparison of Different Types of Pipes/Conduits

Sr. No	Flow (ft^3/s)	Corresponding Sewer Size (mm)	Installation Cost (Rs./100 ft)				
			Sewer Size			R.C.C. Drain	R.C.C Conduit
			R.C.C Sewer Pipe	GRP Pipe	HDPE Pipe		
1	9.29	610	868,674	1,441,508	4,074,860	3,542,957	N/A
2	28.58	1070	2,301,650	3,872,321	14,002,934	5,023,067	3,850,276
3	150.37	2500	N/A	N/A	N/A	10,196,456	8,734,085

Above Table indicate that RCC sewer is significantly cheaper than other pipe/conduit options both 610 and 1070 mm sewer diameters. As sewer dia. equivalent to 2500 mm is not available in the local markets, therefore, comparison of cost cannot be carried out. However, from the difference of cost of 1070 mm sewer, it can be inferred that maximum diameter manufactures in the market i.e. 2500 mm will also be fairly cheaper than any other option. Keeping in view the satisfactory performance of RCC sewers at a reasonably good price, it has been recommended to use RCC sewer for the diameters up to 2500 mm and RCC conduits where larger sizes i.e. more than 2500 mm is required.

6.3.5 Minimum Sizes of Drain

Minimum size of sewer shall be 460 mm. Minimum size of the sewer shall be Minimum sizes (width) of lateral drains shall be based on ease of manual cleaning, while for trunk/larger drains minimum width shall be based on ease of mechanical cleaning methods.

6.3.6 Spacing of Manholes/Inspection Chambers

For RCC sewers, the guidelines for manhole spacing shall be abstracted from following Table.

Size of sewer (mm)	Spacing (m)
225	1641
310	3281

Size of sewer (mm)	Spacing (m)
380	4922
460	6562
530-610	8203
690 - 1070	9843
1220-1520	13124
Above 1520	16405

For lateral and trunk drains inspection chambers shall be provided at each 30 m distance. Furthermore, inspection chambers shall also be provided at each sharp turn.

6.3.7 Drains/sewer Crossings of Other Utilities

Efforts shall be made to minimize the drain/sewer crossings. Wherever needed, the comparison shall be made between the cost of lowering the drain/sewer and syphon structures and economical shall be selected.

6.3.8 Ventilation

Ventilation of sewers/conduits is necessary and at least one ventilating shaft shall be provided with inspection chambers/manholes within each 150 m.

6.4 DESIGN WASTEWATER AND STORMWATER FLOW

6.4.1 Options for Design Flow of Partially Combined Wastewater Sewers/Conduits

Wastewater sewers and conduits will be designed for the peak wastewater flow, and stormwater of the industrial/institutional premises and tertiary/smaller roads. Comparison of six (06) different options for design wastewater flow and hydraulic sizes of a hypothetical conduit and construction cost corresponding to each hydraulic are presented in **Table 6.3**. Peak wastewater flow depends upon the consumption of water in industries, commercial centers, apartments etc. Average wastewater flow is assumed to be 80% of the water demand and peaking

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factor of 2.0 have been used for calculation of peak wastewater (1.85 m^3/sec). Two options of stormwater generated within premises of industrial/institutional boundary area have been considered. First, 100% of the peak wastewater flow and second, 50% peak wastewater flow. For lateral roads drainage, three (03) options have been considered based on different rainfall intensities. First option is based on rainfall intensity against 2-yr return period using IDF curve, second as 0.5 inch/hr and third as 1.0 inch/hr rainfall intensity.

6.4.2 Options for Design Flow of Separate Stormwater Drains

As discussed earlier separate stormwater drains have been proposed for collection of stormwater of the main roads (61 m & 36 m ROW). Calculation of total design stormwater is carried out using rational method for different rainfall intensities as discussed in previous section (6.4.1). These flows are given in **Table 6.4**.

Table 6.3 Comparison of Different Design Wastewater Flow Options and Unit Costs of Corresponding Conduit Sizes

Sr. No.	Description	Design Flow					Hydraulic Sizes of Wastewater Conduit		Unit Construction Cost of the Wastewater Conduit (Rs./Rm)
		Peak Wastewater Flow (m^3/sec)	Allowance of Stormwater for Industrial Premises (m^3/s)	Allowance of Stormwater for Tertiary Roads (m^3/s)	Total Design Flow		Bed Width (m)	Depth (m)	
					(m^3/s)	Cusecs			
1	Option-1	1.85	1.85[a]	5.94[c]	9.64	340	5.3	2.4	174,081
2	Option-2	1.85	1.85[a]	1.27[d]	4.96	175	3.8	1.8	89,832
3	**Option-3**	**1.85**	**1.85[a]**	**2.54[e]**	**6.23**	**220**	**4.3**	**2.0**	**116,392**
4	Option-4	1.85	0.92[b]	5.94[c]	8.71	307	5.0	2.3	156,994
5	Option-5	1.85	0.92[b]	1.27[d]	4.04	142	3.5	1.5	72,948
6	Option-6	1.85	0.92[b]	2.54[e]	5.31	187	4.0	1.8	95,821

a: Stormwater flow equal to 100% of peak wastewater flow as per WASA, Lahore Design Criteria
b: Stormwater flow equal to 50% of peak wastewater flow as per PDSSP Design Criteria
c: Stormwater flow against 2-yr return period rainfall intensity
d: Stormwater flow against 0.5 in/hr rainfall intensity as per PDSSP design criteria
e: Stormwater flow against 1.0 in/hr rainfall intensity

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Table 6.4 Comparison of Different Design Storm Flow Options and Unit Costs of Corresponding Drain Sizes

Sr. No.	Description	Total Design Flow		Hydraulic Sizes of Stormwater Drain		Unit Construction Cost of the Stormwater Drain (Rs./Rm)
		(m^3/s)	Bed Width (m)	Bed Width (m)	Depth (m)	
1	Option-1: 2-Year Return Period Rainfall using IDF curves	4.62	163	3.8	1.6	83,325
2	Option-2: 0.5 in/hr Rainfall Intensity	2.47	87	2.8	1.2	44,611
3	Option-3: 1 in/hr Rainfall Intensity	4.94	174	3.8	1.8	89,221

6.4.3 Selection of Design flows

For design of partially combined sewers/conduits, although, option-1 provides maximum capacity in the collection system by taking more allowance for stormwater but the hydraulic sizes (5.3m x 2.4m) and unit cost (174,081 Rs./Rm) are on the higher side also. On the other hand, Option-5 is most economical but the smaller hydraulic sizes may cause excessive delays in drainage of stormwater during heavy rains. Therefore, option-3 have been selected based on the optimal and rational wastewater flows, drain sizes and construction cost (116,392 Rs/Rm). 100 % stormwater flow for the industrial premises and 1 in/hr rainfall intensity for road drainage have been considered in this option and total wastewater flow comes out to be 6.23 m^3/s (220 cusec).

For design of separate stormwater drains, option-1 have been selected for the design of stormwater drains. Rainfall intensity against 2-year return period have been used in this option. Total design stormwater flow is 4.62 m^3/s (163 cusecs). Hydraulic sizes and unit cost (83,325) of the stormwater drain against this flow are optimal and lie between the other two options.

As the wastewater collection system is designed by taking stormwater allowance equivalent to peak wastewater flow (section 6.5.3), therefore,

duration and depth of stormwater at different rainfall intensities need to evaluate against the wastewater and stormwater flows selected above. The evaluation of stormwater stagnation is provided below.

6.4.4 Analysis of Stormwater Stagnation

Duration and depth of stormwater need to be evaluated to avoid the damages caused by slow drainage of stormwater in the QAAP. **Table 6.5** provide summary of the computed duration and depth of stormwater stagnation for the proposed collection system (section 6.5.3) at different return period of rainfall.

Table 6.5 Stormwater Stagnation Duration and Depth at Different Return Periods

Sr. No.	Rainfall Return Period	Stagnation Duration (Hrs)	Stagnation Depth (Inch)
1	2-Year	0.00	0.00
2	5-Year	3.00	1.28
3	10-Year	4.00	2.96

It is anticipated that stagnation of stormwater against 2-year return period rainfall is unlikely. However, stagnation of 3 hour and 4 hour is predicted for the 5 year and 10 year return period rainfall respectively and the corresponding water depth will be 1.28 and 2.96 inches respectively. Therefore, it seems that system will perform better in most of the wet weather conditions except extreme rainfall intensities which may come once in 5 years or more.

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6.5 PROJECT PLANNING FOR WASTEWATER AND STORMWATER COLLECTION SYSTEMS

6.5.1 Project Plan

Figure 6.2 is depicting the conceptual plan of proposed sewerage and drainage system in the QAAP. Partially combined system is being proposed mainly for both industrial/domestic wastewater and stormwater collection or tertiary roads. In this system, industrial wastewater as well as stormwater coming in the industrial/institutional premises will be collected in the roadside sewers/conduits. Lateral sewers will also receive the stormwater of the lateral roads. All this contaminated wastewater will be collected and pumped through wastewater disposal station near Combined Effluent Treatment Plant (CETP). Treated effluent will be preferably disposed of into seepage drain. Excess effluent will either be disposed of in UCC or re-used for irrigation in nearby agriculture land.

Separate stormwater drainage system is also provided in the central medians of the main roads to cater for runoff generated from rainfall on the main roads. This rainwater will be discharged into the proposed artificial lake located at South-West corner of the Apparel Park. The overflow of the lake will be collected in a Stormwater Disposal Station to pump water into seepage drain/UCC. Both Wastewater and Stormwater Disposal Stations will be interconnected to economize the operation of disposal stations.

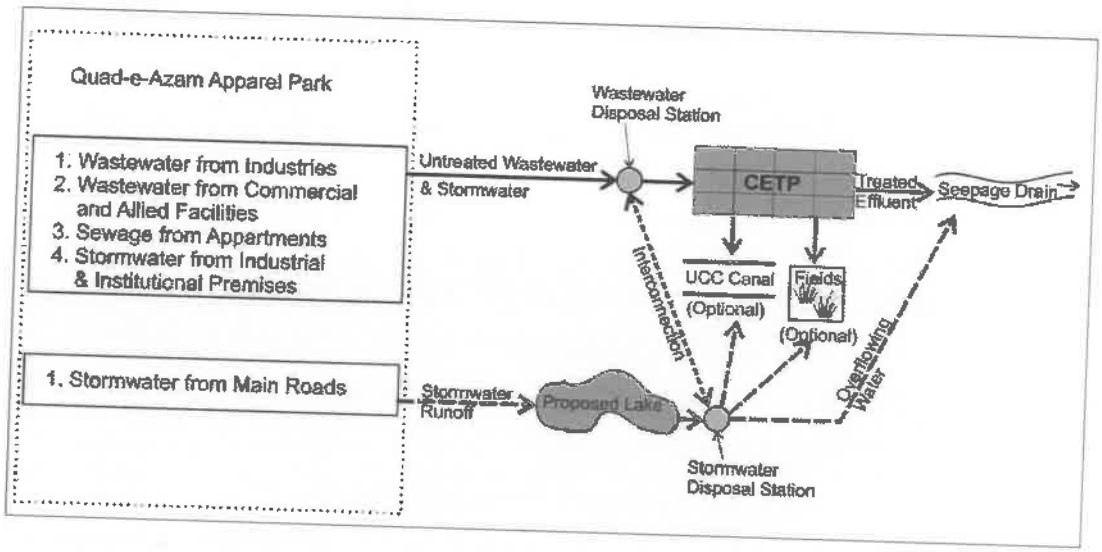

Figure 6.2 Conceptual Diagram of Proposed Wastewater and Stormwater Collection system in the QAAP

6.5.2 Project Phasing

Development of wastewater and stormwater collection system (sewer/conduits/drains) shall be competed side-by-side with the road infrastructure. Furthermore, civil infrastructure of the disposal stations shall be completed with other developmental works. However, the installation of the pumping machinery shall follow the extent of development of industrial units. Following phasing is proposed for the installation of pumping machinery of total 220 cusec average capacity of wastewater disposal station:

- Phase-1 Year 2015 : Pumping Machinery for 25 % wastewater flow (55 cusec)
- Phase-2 Year 2016 : Pumping Machinery for 25 % wastewater flow (55 cusec)
- Phase-3 Year 2017 : Pumping Machinery for 50 % wastewater flow (110 cusec)

Following phasing is proposed for the installation of pumping machinery of total 163 cusec average capacity of stormwater disposal station

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- Phase-2 Year 2015 : Pumping Machinery for 25 % wastewater flow (41 cusec)
- Phase-3 Year 2016 : Pumping Machinery for 75 % wastewater flow (122 cusec)

6.5.3 Preliminary Design of Wastewater Collection System

Summary of Preliminary Design of Wastewater Collection is described below refer **Annexure F** for Drawings and **Annexure E** for detail calculations.

Partially Combined Sewers/Conduits

Five (05) trunk sewers/conduits (A - E) of varying cross-sections have been proposed for QAAP as shown in **Figure 6.3**. Sewers/conduits will be provided on both sides of each road. Overall direction of wastewater flow will be from South-East towards North-West corner where both wastewater disposal station and CETP are located. Lateral sewers e.g. A1, C2.2 E3.1 etc. have been proposed to collect wastewater from outlets drains of industrial/commercial establishments and stormwater of the lateral/smaller roads. These lateral lines will join with the trunk sewer/conduit. Trunk conduit will convey wastewater to the wastewater disposal stations.

Design capacities of the sewers/conduits have been computed as per the criteria established in section 6.3.1. Ultimate design flows of the trunk wastewater sewers/conduits are given in **Table 6.6**.

Table 6.6 Ultimate Design Flows of the Trunk Wastewater Sewers/Conduits

Sr. No.	Description	Ultimate Design Capacity	
		m^3/s	cusec
1	Trunk Line - A	6.2	220
2	Trunk Line - B	1.3	46
3	Trunk Line - C	1.0	33
4	Trunk Line - D	1.63	51
5	Trunk Line - E	0.6	17

Brief summary of sizes of trunk sewers/conduits is provided in **Table 6.7**. Most of the part of Trunk line A will be RCC sewer, as shown in **Figure 6.3,** while for remaining length, sewer dia. above 1560 mm will be required and, therefore, underground conduit is proposed. However, the Trunk Lines B, C&D will be constructed as RCC sewers throughout the running length. Ventilating shafts will be provided both in sewers and conduits to release the noxious gases well above the ground level.

Table 6.7 Summary of the Sizes of Trunk Sewers/Conduits

Sr. No.	Description		Length (m)	Dia. (mm)/ Size (mm x mm)
1	Trunk Line - A	Sewer	3300	610 – 1520
		Conduit	1765	3000 x 4000
2	Trunk Line - B	Sewer	2465	610 - 1370
3	Trunk Line - C	Sewer	2125	460 - 1220
4	Trunk Line - D	Sewer	2270	530 - 1520
5	Trunk Line - E	Sewer	1260	530 - 910

Wastewater Disposal/Pumping Station

Wastewater disposal station will pump all the wastewater collected through wastewater drains/conduits. Disposal station will mainly consist of wet-wells to receive and store wastewater and adjacent dry-well to install pumping machinery. Screening chamber is also provided before wet-well to remove larger suspended and floating matter in the wastewater. Wastewater from pumping station will be pumped into the CETP for treatment. Layout of the wastewater disposal station is provide in **Figure 6.4**. Phasing of the development of disposal station is already discussed in Section 6.6.2. Summary of the design of disposal station is provided in **Table 6.8**.

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Table 6.8 Design Summary of Wastewater Pumping Station

Sr. No.	Parameter	Unit	Value
1	Total Design Flow	m^3/s	6.23
		cusecs	220
2	No. of Wet Wells	No.	4
3	Dia. of each Wet Well	m	14.0
4	Working Depth of wet well	m	2.0
5	Detention Time	min	2
6	Total Pumping Capacity including 33% standby requirement.	m^3/s	8.29
		cusecs	293
7	Total No. of Pumps	No.	12
8	Head of each Pump	m	11.0
9	No. of Working Pumps of 25 cusecs capacity	No.	9
10	No. of Standby Pumps of 25 cusecs capacity	No.	3
11	**Total No. of Pumps in Phase-1**	**No.**	**3**
12	No. of Working Pumps of 25 cusecs capacity in Phase-1	No.	2
13	No. of Standby Pumps of 25 cusecs capacity in Phase-1	No.	1
14	**Total No. of Pumps in Phase-2**	**No.**	**3**
15	No. of Working Pumps of 25 cusecs capacity in Phase-2	No.	2
16	No. of Standby Pumps of 25 cusecs capacity in Phase-2	No.	1
17	**Total No. of Pumps in Phase-3**	**No.**	**6**
18	No. of Working Pumps of 25 cusecs capacity in Phase-3	No.	5
19	No. of Standby Pumps of 25 cusecs capacity in Phase-3	No.	1
20	Dia. of force main	mm	1000
21	No. of Force Mains	No.	6
22	Length of Each Force Main	m	300

6.5.4 Preliminary Design of Stormwater Drainage System

Summary of Preliminary Design of Stormwater Drainage Sytem is described below refer **Annexure F** for Drawings and **Annexure E** for detail calculations.

Stormwater Drains

Three (03) trunk stormwater drains (A, B&C) have been proposed in the middle of major roads (61 m ROW) to collect and convey the stormwater of roads only. Layout of the stormwater drains is given in **Figure 6.5**. Lateral stormwater drains e.g. C1, B2 etc. are proposed on tertiary/smaller roads (3 m ROW) which will join the trunk stormwater drains. Trunk stormwater drains will convey the stormwater to artificial lake proposed on North-West corner of the QAAP for recreational purposes. Overflow of the lake will be collected and pumped through a stormwater disposal station.

Design capacities of the drains have been computed as per the criteria established in section 6.3.1. Ultimate design capacities of the trunk stormwater drains are given in **Table 6.9**.

Table 6.9 Ultimate Design Capacities of the Trunk Stormwater Drains

Sr. No.	Description	Ultimate Design Capacity	
		m^3/s	cusec
1	Stormwater Drain - A	3.14	110
2	Stormwater Drain - B	0.9	31
3	Stormwater Drain - C	1.5	54

Brief summary of sizes of trunk stormwater drains is provided in **Table 6.10.** These drains will be open RCC drains passing in the middle of main roads. A screening chamber will be provided at the end of trunk stormwater drain entering into the artificial lake to remove the floating matter.

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Table 6.10 Summary of the Sizes of Trunk Stormwater Drains

Sr. No.	Description	Length (m)	Width (m)
1	Stormwater Drain - A	4560	1.0 – 3.0
2	Stormwater Drain - B	1060	1.0 – 2.0
3	Stormwater Drain - C	1290	1.0 – 1.75

Stormwater Disposal Station

Stormwater disposal station will pump all the stormwater overflowed from the artificial lake. This disposal station will mostly functional during and after the rainfalls. Like wastewater disposal station, this disposal station will also consist of wet-wells and dry-wells. However, to economize the system, standby arrangement is not recommended for stormwater disposal station due to infrequent use. However, both disposal stations have been interconnected to optimize the operations. Layout of the stormwater disposal station is given in **Figure 6.4**. Phasing of the development of disposal station is already discussed in Section 6.6.2. Summary of the design of disposal station is provided in **Table 6.11**.

Table 6.11 Design Summary of Wastewater Pumping Station

Sr. No.	Parameter	Unit	Value
1	Total Design Flow	m^3/s	4.62
		cusecs	163
2	No. of Wet Wells	No.	3
3	Dia. of each Wet Well	m	10.9
4	Working Depth of wet well	m	2.0
5	Detention Time	min	2.0
6	Total Pumping Capacity including 33% standby requirement.	m^3/s	6.14
		cusecs	217
7	Total No. of Pumps	No.	9
8	Head of each Pump	m	14.0
9	No. of Working Pumps of 25 cusecs capacity	No.	7
10	No. of Standby Pumps of 25 cusecs capacity	No.	2
11	**Total No. of Pumps in Phase-1**	**No.**	**2**
12	No. of Working Pumps of 25 cusecs capacity in Phase-1	No.	1
13	No. of Standby Pumps of 25 cusecs capacity in Phase-1	No.	1
14	**Total No. of Pumps in Phase-2**	**No.**	**7**
15	No. of Working Pumps of 25 cusecs capacity in Phase-2	No.	5
16	No. of Standby Pumps of 25 cusecs capacity in Phase-2	No.	2
17	Dia. of force main	mm	1000
18	No. of Force Mains	No.	4
19	Length of Each Force Main	m	300

6.5.5 Combined Effluent Treatment Plant (CETP)

In order to fulfill the requirement of safe disposal of collected wastewater as per Punjab Environmental Protection Act (PEPA) (Amended), 2012 a CETP is proposed. The CETP shall be designed to provide at least secondary level treatment. The process design of proposed CETP shall

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be designed for average wastewater flow generated in the QAAP. Due to limitation of space within the boundaries of QAAP, mechanical wastewater treatment such as Activated Sludge Process (ASP), Oxidation Ditch (OD) etc. shall be adopted.

Effluent Characteristics

The wastewater shall be treated to comply with the prevailing effluent quality standards prescribed in National Environmental Quality Standards (NEQS) of Pakistan given in **Annexure G**. Considerations for the possible reuse of the treated effluent (i.e. irrigation or landscape watering etc.) shall also be evaluated. The permissible NEQS values of important pollutants are reproduced in **Table 6.12**. Furthermore, if the wastewater is to be re-used for irrigation, water quality guidelines of Food and Agriculture Organization (FAO) and World Health Organization (WHO) shall be followed as given in **Table 6.13 & 6.14** respectively.

Table 6.12 Permissible Concentrations of Conventional Pollutants in Wastewater Discharges NEQS, 2000

Sr. No.	Parameter	NEQS Value
1	Temperature (°C)	< 30
2	pH	6 -9
3	Biological oxygen Demand (BOD) (mg/L)	<80
4	Chemical Oxygen Demand (COD) (mg/L)	<150
5	Total Suspended Solids (TSS) (mg/L)	<200

Table 6.13 FAO Guidelines for Interpretations of Water Quality for Irrigation

Potential Irrigation Problem	Units	Degree of Restriction on Use		
		None	Slight to Moderate	Severe
Salinity *(affects crop water availability)*[2]				
EC_w	dS/m	< 0.7	0.7 – 3.0	> 3.0
(or)				
TDS	mg/l	< 450	450 – 2000	> 2000
Infiltration *(affects infiltration rate of water into the soil. Evaluate using EC_w and SAR together)*[3]				
SAR = 0 – 3 **and EC_w** =		> 0.7	0.7 – 0.2	< 0.2
= 3 – 6 =		> 1.2	1.2 – 0.3	< 0.3
= 6 – 12 =		> 1.9	1.9 – 0.5	< 0.5
= 12 – 20 =		> 2.9	2.9 – 1.3	< 1.3
= 20 – 40 =		> 5.0	5.0 – 2.9	< 2.9
Specific Ion Toxicity *(affects sensitive crops)*				
Sodium (Na)[4]				
surface irrigation	SAR	< 3	3 – 9	> 9
sprinkler irrigation	me/l	< 3	> 3	
Chloride (Cl)[4]				
surface irrigation	me/l	< 4	4 – 10	> 10
sprinkler irrigation	me/l	< 3	> 3	
Boron (B)[5]	mg/l	< 0.7	0.7 – 3.0	> 3.0
Trace Elements (see Table 21)				
Miscellaneous Effects *(affects susceptible crops)*				
Nitrogen (NO_3 - N)[6]	mg/l	< 5	5 – 30	> 30
Bicarbonate (HCO_3)	[f]			
(overhead sprinkling only)	me/l	< 1.5	1.5 – 8.5	> 8.5
pH		**Normal Range 6.5 – 8.4**		

Table 6.14 Microbial Quality of Effluent of WWTP required to be

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achieved for Treated Wastewater Reuse, WHO 2006[1]

Type of irrigation	Option	Guideline Effluent E. coli per 100 ml	Notes
Unrestricted	A	$\leq 10^3$	Root crops
	B	$\leq 10^4$	Leaf crops
	C	$\leq 10^5$	Drip irrigation of high-growing crops
	D	$\leq 10^3$	Drip irrigation of low-growing crops
	E	$\leq 10^1$ or $\leq 10^0$	Verification level depends on the requirements of the local regulatory agency
Restricted	F	≤104	Labour-intensive agriculture (protective of adults and children under 15 years of age)
	G	$\leq 10^5$	Highly mechanized agriculture
	H	$\leq 10^6$	Pathogen removal in a septic tank

6.6 EXISITNG WASTEWATER COLLECTION AND DISPOSAL PRACTICES IN PROJECT AREA

As most of the area is agriculture, therefore no planned wastewater collection and disposal system exists in the nearby vicinity. Untreated wastewater of the residential areas e.g. Bamban Kalan is disposed of in open fields which causes environmental nuisance and health risks for the residents. Following two major water bodies have been identified for disposal of treated wastewater/stormwater generated in the Apparel Park:

i. Seepage Drain
ii. Upper Chenab Canal (UCC)

These water bodies are shown in **Figure 6.5**.

[1] Safe Use of Wastewater, Excreta and Greywater, Volume I Policy and Regulatory Aspects, WHO, Geneva, 2006

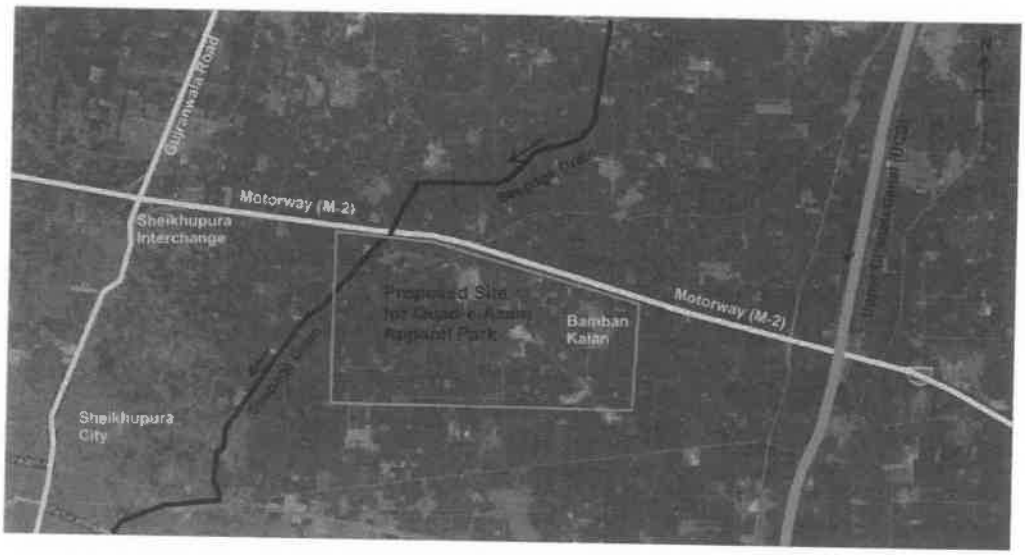

Figure 6.5 Location of Seepage Drain and Upper Chenab Canal (UCC)

6.6.1 Seepage Drain

Seepage drain serve the purpose of collection of seepage water from the agriculture fields or water logged area and transport it up to a safe disposal point. A seepage drain passes through the project site which may be used for disposal of wastewater and storm water generated in the Apparel Park. Length of the seepage drain is more than 50 km and it mainly serves the agriculture area of District Sheikhupura and falls in Qadirabad-Balloki (QB) Link Canal near Bhikki Village. QB link Canal starts from Qadirabad Headworks at River Chenab and ends at upstream of Balloki Headworks at River Ravi. Design capacity of the QB link canal is 18600 cusec but it is never operated on the full design capacity.

As most of the water logged area in the district has been reclaimed so the seepage drain remains almost dry at upstream of the Sheikhupura City. However, more than 90 cusec of untreated wastewater from the Sheikhupura City is discharged into this drain on the average.

Within District Sheikhupura, the design capacity of the seepage drain varies from 59 cusec to 400 cusec near QB Link Canal. Near Sheikhupura city the design capacity of the drain is 362 cusecs. Design

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bed width varies from 7 ft (2.1m) to 20 ft (6.0m) and hydraulic depth varies from 3.8 ft (1.1m) to 6.7 ft (2.0m). However, the existing cross-section of the drain has been deteriorated due to erosion and the drain needs remodeling.

As discussed earlier in this section, about 220 cusecs of the wastewater flow and 163 cusecs of storm water, making total of 383 cusecs, will be generated in the QAAP during rainy season, therefore the capacity of the seepage drain has to be increased through remodeling or some other disposal point should fulfill the requirement especially during rainy season.

Furthermore the seepage drain is passing through the North-West corner of the project site, therefore, there will be need to realign the seepage drain. These matters must be resolved in coordination with the related Govt. authorities/departments.

6.6.2 Upper Chenab Canal (UCC)

UC canal (UCC) is passing in the West of project site at about 2.5 km distance towards East (Lahore). Wastewater and stormwater of the QAAP may also be disposed of into this drain completely or partly.

UCC off takes from the River Chenab at the Marala Barrage and irrigates areas of Rachna Doab in the districts of Sialkot, Gujranwala, Sheikhupura, Hafizabad and Lahore. Original design of capacity of the canal was about 12000 cusec which was increased to 17000 cusec in year 1951. This canal transfers about 7500 cusec of water to River Ravi. Discharge capacity of UCC near project site is about 8900 cusec. UCC receives untreated wastewater of some urban areas like Sharaqpur.

In addition to above two disposal options, wastewater/stormwater may be reused for irrigation in nearby agriculture area. However, in any case, wastewater needs to be treated in accordance with National

7.5 GENERAL RECOMMENDATIONS

The geotechnical investigations revealed that soil consist of Lean Clay, Sandy Lean Clay & Sandy Silty Clay. For the construction of the sub grade soil with CBR value of 7 and 95 % Modified AASHTO should be used. Whereas it would be desirable to use materials with minimum CBR values of 50 % and 80 % for sub-base and base course, respectively. For a roadway to perform well, it is imperative that the subgrade for the roadway should be competent to support the anticipated traffic loads. It is, therefore recommended that the subgrade should be properly prepared to meet the design CBR. In order to meet this requirement, all the areas that will support roadway, should be properly cleared and grubbed by removing any topsoil. Any wet, soft or loose soils pockets should also be replaced with improved soil, as the result of proof-rolling.

For layer thickness and compaction following levels are recommended for various pavement elements.

Material Type	Maximum Compacted Layer Thickness (cm)	Recommended Modified AASHTO Compaction (cm)
Base-coarse	10	100
Sub-base	10	98
Sab-base & general fill		
Upper 30 cm (subgrade)	15	95
30 cm-70 cm (fill)	15	93
Below 70 cm (fill)	15	90

SECTION 9
COST ESTIMATE

9.0 GENERAL

This section of the report presents the summary and basis of rough cost estimate for the provision of infrastructure facilities in Quaid-e-Azam Apparel Park (QAAP).

9.1 ESTIMATED CAPITAL COST

In this section summary of rough capital cost for the provision of infrastructural facilities in QAAP has been presented. The capital cost is tentative and based on the preliminary design of infrastructure including roads, electricity, water supply and wastewater system and provisional costs for utilities like CETP, Landfill, Suigas, PTCL etc. for which design is not carried out by NESPAK.

Table 9.1: Summary of Rough Cost Estimate for QAAP

Sr. No.	Description	AMOUNT (Rs.)
A	**APPROACH AND INTERNAL ROADS NETWORK (ASPHALTIC)**	
1	Approach Roads (from Motorway and Lahore-Sheikhupura Road)	1,625,612,699
2	Internal Roads Network (61m, 36m and 25m R.O.W)	4,343,947,842
	Total (A)	**5,969,560,542**
B	**ELECTRICAL WORKS**	
1	Transmission Line (5 km)	5,000,000
2	Grid Station (132/11kV) (3 No.)	1,500,000,000
3	11 kV Distribution Network and Road Lighting System including 11/0.415kV Distribution Transformers	1,550,000,000
	Total (B)	**3,055,000,000**
C	**WATER SUPPLY NETWORK (4 cusec)**	
	Tubwells, Overhead Tanks, HDPE Distribution Network, Metering and Appurtenances.	987,958,307
	Total (C)	**987,958,307**

SECTION 10
CONCLUSIONS AND RECOMMENDATIONS

This section briefly provides conclusions and recommendations of the draft feasibility study of Quaid-e-Azam Apparel Park (QAAP). These conclusions and recommendations are based on the detailed studies and findings presented in the previous section of this Report which are summarized:

1. The development of QAAP on 1565 acre land near Sheikhupura City is a part of continuous effort of PIEDMC for development and widening apparel industry network in entire Punjab and in order to exploit the maximum potential related to this industrial sector by utilizing the opportunities of Generalized Schemes of Preferences (GSP) plus. As a result of the GSP plus status, the Textile and Garment Industry alone is expected to earn profits up to one trillion rupees per year.

   There were about 5,000 garment units operating in Pakistan in 2005. According to one estimate, 70 percent of these units are unorganised. These units do not have modern machinery and use the non-mill made cotton cloth. This may be one of the reasons that the price for Pakistan apparel exports is low compared to other countries.

   An apparel park would be a specialty industrial park wherein different garments units may work collectively to minimize wastages and increase production. The establishment of such an industrial park would not only provide an integrated platform for the segregated garment industry but would also become a training and development hub for the local population.

2. Proposed site for development of QAAP is located in District Sheikhupura at 40 Km from Lahore city adjacent to Lahore-Islamabad Motorway (M-2) near Sheikhupura Interchange. At present there is no industrial estate in the district. There are about 650 small to large scale scattered industrial units operating in the district. Proposed location has

20,598m of electric lines, 223 Nos electric poles and 36,063 m of water courses.

5. Detailed field geotechnical investigations including bore-hole and test-pits were carried out to assess the suitability of soil conditions for development of proposed Apparel Park followed by laboratory testing of soil samples. The following conclusions are drawn:

   a. The overburden soils encountered consist of Lean Clay(CL)/ Sandy Lean Clay(CL)/Sand Silty Clay(CL-ML)/Sandy Silt (SM)/Poorly graded Sand with Silt (SP-SM) layers from top of the ground to maximum investigated depth of 20 m.

   b. Groundwater table was encountered at depth of 6.50 m in all the boreholes during investigations in March, 2014.

   c. It is recommended to support the lightly loaded structures on strip foundations at a minimum depth of 1.5 m below NSL and other infrastructures on square and mat foundation at a minimum depth of 1.5 m and 2.5 m respectively below NSL.

   d. The net allowable bearing pressure for strip/square foundations have been discussed in Section-2 for different widths. Similarly the net allowable bearing pressure for mat foundation has also been discussed in Section-2.

   e. The confirmatory geotechnical investigation will be required for structure specific foundation design.

   f. The subsurface soils contain moderate chemical concentrations. Therefore, it is recommended to use Sulphate Resistant Cement (SRC) in all the construction below NSL.

   g. If weak/soft soil is encountered at the excavation base level, further excavation and replacement with select fill is recommended. This select fill should be compacted in layers appropriate to the type and size of compaction equipment, to at least 75 % relative density or 95 % of modified Proctor dry density, as appropriate.

6. Town Planning of QAAP aim to attain an utmost standard in apparel industry for the targeted group of industrial population. As this industrial project is the first of its nature in Pakistan, the planning parameters relate to the international standards. The public service facilities have been provided based on two-tier approach. The selection of approach revolves around the time taken (15 – 20 min.) and the distance covered to walk up to the provided facility. Following are the major aspects of town planning:

- Distinct zones of various industries.
- Location and allocation of various amenities, and public facilities.
- Hierarchical vehicular network.
- A huge hospital area along with Residential Area for Industrial workers.

Three (03) options for landuse distribution have been presented in Section-3. However, the following option is recommended for the further preliminary design of infrastructure works.

Sr. No.	Category	Land Use Distribution	
		Area (acres)	Area (%age)
1	Industrial Areas	974	62.22%
2	Hospital (incl. apartments, schools and Vocational Training Institutes)	79	5.05%
3	Roads	243	15.58%
4	Open space	133	8.50%
5	Administrative, Public, Utilities & Commercial Buildings	136	8.68%
	Total	**1565**	**100**

The grid iron pattern has been opted for layout of project site. The apparel park has the flexibility to accommodate a range of industry and business types. Lot sizes are sufficient to provide reasonable site area for buildings, maneuvering, car parking, storage and landscaping, commensurate with the industrial activity. Sizes of Industry have been categorized on the basis of function of industries, client and

25. Safety harness - leather or terylene belt with shoulder straps, or Safety belt attached to a safety line which is not longer than 2m (6ft 6in) and is securely anchored, above the belt height, to a suitable strong point or fixture.
26. Employers must provide access when the scaffold platforms are more than 2 feet (0.6 meters) above or below a point of access.
27. Direct access is acceptable when the scaffold is not more than 14 inches (36 centimeters) horizontally and not more than 24 inches (61centimeters) vertically from the other surfaces.

The following standards covering ladders shall be compiled with:

1. Ladders are constructed from four basic materials: aluminum, glass fiber, reinforced plastic or steel. Industry recognizes three general classes of ladders:

   Industrial: Heavy duty; for users requiring not more than a 250-pound (113-kilogram) load capacity for maintenance, construction, or heavy-duty work.

   Commercial: Medium-duty; for users requiring not more than a 225-pound (102-kilogram) load capacity for painting or other medium-work.

   Household: Light-duty; for users requiring not more than a 200-pound (91-kilogram) load capacity for general household use.
2. Use of portable ladders should be restricted to when:
   a) It is impossible or impracticable to use other safer means of access.
   b) The ladder is not required to exceed the maximum height of 10m (33 ft) between landings (in all cases It should be supported to prevent any undue sagging).

4. Scaffolds must not be placed in proximity of power lines or energized equipment unless special precautions are taken.
5. Scaffolding components from different manufacturers shall not be assembled together.
6. Personnel on scaffolds exposed to overhead hazards shall be provided with overhead protection.
7. Workbenches shall not be used as scaffold platforms.
8. Mobile scaffold casters and wheels shall be locked with positive wheel and/or wheel and swivel locks, or equivalent means, to prevent movement of the scaffold while the scaffold is used in a stationary manner.
9. Manual force used to move the scaffold shall be applied as close to the base as practicable, but not more than 5 feet (1.5 m) above the supporting surface.
10. Employees shall not be allowed to ride on scaffolds.
11. Platforms shall not extend outward beyond the base supports of the scaffold unless outrigger frames or equivalent devices are used to ensure stability.
12. In the case of putlog scaffolding, i.e. scaffolding secured to a wall, it is necessary to ensure that the wall, which is to support the scaffolding, is strong enough to carry the load. Never support the Scaffolding with railing.
13. Where scaffolds and platforms are erected above walkways or work areas, the space between the toe board and railing should be screened and the hazardous area below barricaded off and warning signs posted.
14. The standard prohibits the use of cross braces as a means of access.
15. Portable ladders must not be used in high winds.

26. When using an extension or straight ladder, be sure that it is the proper length to extend to the desired height. Ladders used to reach a walking surface or roof must extend at least 36 inches (92 centimeters) above the landing.
27. Never stand on the top three rungs of a straight ladder.
28. When adjusting the length of an extension ladder, make sure the locking device is fully secured before using the ladder.
29. A straight ladder should be placed with a pitch of 75-1/2 degrees with respect to the horizontal (one foot at base for every four feet of length to top support).
30. Aluminum or wet-wood ladders should not be used near open wiring, exposed circuits, or for electrical welding, since they are excellent conductors of electricity. Reinforced plastic ladders have excellent insulating properties for this kind of use.

and calling for emergency assistance when required.

The safety representative is the qualified person who evaluates the hazards, prescribes required equipment and precautions and issues the Confined Space Entry Permit

Confined Space Entry Hazard

Both animal and plant life require oxygen to live. One of the primary hazards of entering confined Spaces is oxygen deficiency. When oxygen is present in concentrations less than 19.5% the atmosphere is said to be oxygen deficient.

Oxygen can also be present in concentrations that are too high. Oxygen in concentrations greater than 23% is too oxygen rich and can cause combustible materials to ignite very quickly.

Oxygen deficiency can be caused by several processes:

Consumption: oxygen is used up by the person who is in the confined space and turned into carbon dioxide.

Displacement: denser materials push the oxygen out of the occupied space.

Reaction: oxygen is reacted with other materials and make other compounds.

CO_2

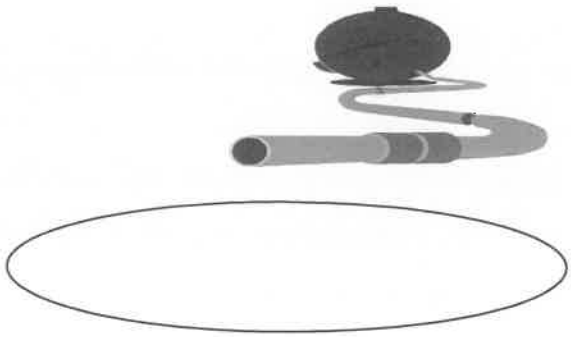
After oxygen is delivered to body organs and used by organ cells, it reacts with carbon to make carbon dioxide. Red blood cells carrying carbon dioxide turn blue. Carbon dioxide is carried back to the lungs by the red blood cells and exhaled into the surrounding atmosphere

O_2

The human body requires oxygen to carry out cellular metabolism. Oxygen is brought in through the lungs and transported to cells of body organs by the red blood cells. When blood is rich in oxygen it turns red

Given a fixed amount of oxygen as you would have in a confined space, respiration of oxygen causes carbon dioxide to increase. When oxygen decreases to less than 19.5%. The atmosphere is said to be oxygen deficient, putting occupants of the confined space at risk of losing consciousness and death

Processes which operate by the principle of combustion use up oxygen much faster than the human respiration. Products of combustion vary with the fuel that is present and the temperature of the combustion



Many confined space entries involve a complex set of exposures to mechanical, electrical, pressure and chemical hazards.

CONFINED SPACE ENTRY REQUIREMENT

The entry of a confined space begins with a Confined Space Entry Permit. Location and Description of Confined Space:

Reason for Entry

Permit Issued to (Name of Company/Organization / Department)

The permit system requires that a qualified safety representative visit the work location and evaluate the conditions under which entry will be made.

Each process hazard to which the entrant may be exposed, adjacent operations or processes, and scheduled activity are reviewed. For each hazard identified, countermeasures are detailed on the Confined Space Entry Permit.

The safety representative tests the space for hazardous concentrations of known harmful substances, such as hydrogen sulfide, carbon monoxide, and flammable liquid or gas.
The concentration of oxygen is measured at the same time.

If concentrations of materials are found to be at harmful levels, the confined space must be ventilated to remove them before entry.

Fresh outside air is blown into the space to dilute and remove contaminants, and supply oxygen.

Should the concentration of contaminants remain at harmful levels, respirators may have

Hand Protection	**yes**	**no**
Foot Protection	**yes**	**no**
Weather Protection	**yes**	**no**
Ground Fault Interruption	**yes**	**no**
Lockout of Hazardous Energy Sources	**yes**	**no**

Entrants must constantly monitor the confined space for toxic gases, oxygen, and combustible gases. Entrants will be issued a personal monitor to wear for this purpose.
Entrants must leave the confined space when the monitor alarm is activated. It is the attendant's responsibility to see that the entrant leaves the space during an alarm.
Should conditions develop which require extrication, and the entrant cannot get out of the confined space on their own, the attendant must call for emergency assistance at once!

The attendant should attempt to remove the entrant from the confined space using tripods, hoist, and lifelines. Attendants are NOT TO ENTER CONFINED SPACES. Lethal hazards may be present within the confined space. Only properly equipped and trained emergency rescue personnel may enter confined spaces to make rescues.

CONFINED SPACE ENTRY HAZARDS CAN INCLUDE

- presence of toxic substances
- Insufficient oxygen, or too much oxygen engulfment
- presence of combustible gases and liquids

Weather Protection	**yes**	**no**
Ground Fault Circuit Interrupters	**yes**	**no**
Lockout of Hazardous Energy	**yes**	**no**

Required countermeasures are determined by a qualified safety professional.

Once the required countermeasures are in place, a permit is issued by the safety representative and the confined space may be safely entered. Should an emergency arise during the entry, the attendant notifies an emergency response team and attempts to extricate the entrant

Required countermeasures are determined by a qualified safety professional. Once the required countermeasures are in place, a permit is issued by the safety representative and the confined space may be safely entered. Should an emergency arise during the entry, the attendant notifies an emergency response team and attempts to extricate the entrant.

Confined spaces are required to be labeled. Some spaces may have been overlooked. Contact your safety representative when in doubt. It is up to you to obey signs and to follow permit procedures before entry.

The supervisor of a confined space entry should be contacted for any equipment necessary to complete the task at hand. Safety Representatives are responsible for answering questions about the confined space entry permit, countermeasures, sampling methods, and instrumentation.

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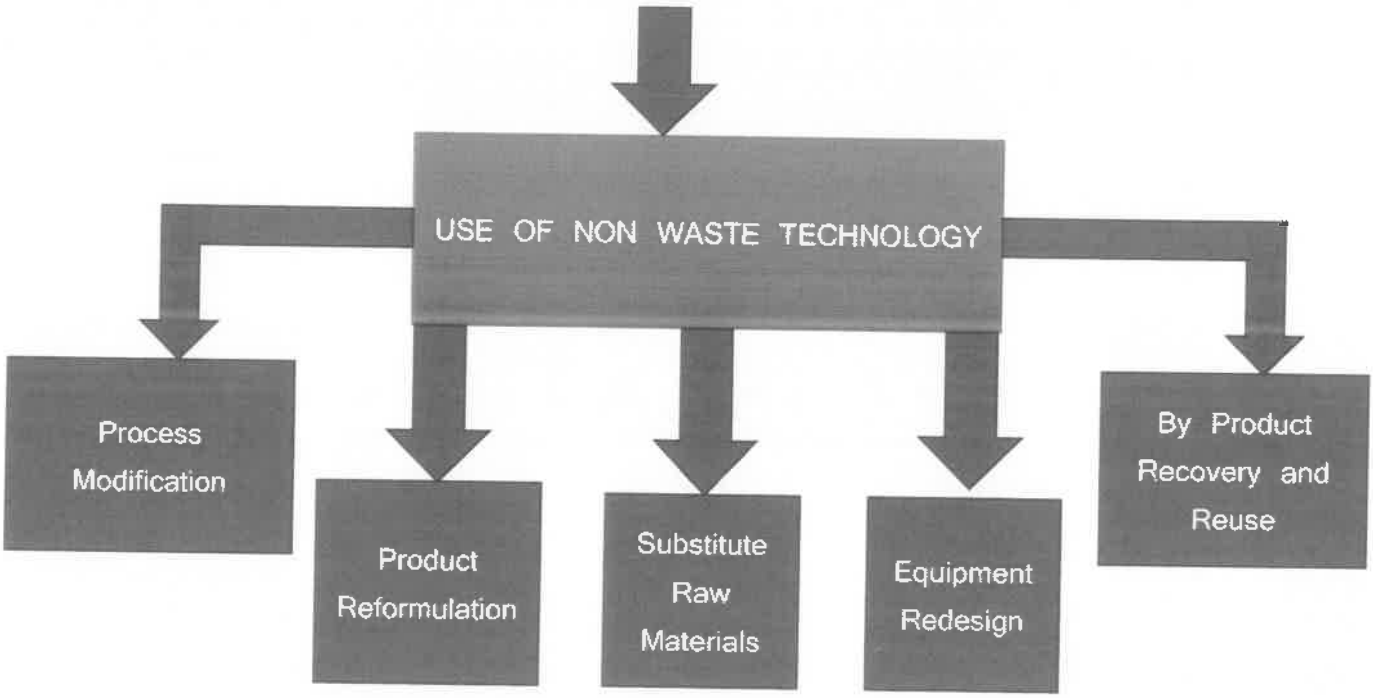
ENVIRONMENT MANAGEMENT PLAN OF QABP

Prepared by: Mr. Zeeshan Ali / Professional Engineer / PEC No.4664


USE OF NON WASTE TECHNOLOGY
Process Modification
Product Reformulation
Substitute Raw Materials
Equipment Redesign
By Product Recovery and Reuse

Following are the Pakistan's Legislations

- The Factories Act 1934
- Punjab Factories Rules 1978
- West Pakistan Shops & Establishments Ordinance 1969
- West Pakistan Shops & Establishments Rules 1969
- Hazardous Occupations Rules 1963 & 2015
- The Workmen Compensation Act 1923
- The Punjab Restriction on Employment of Children Act 2016
- Punjab OSH Law (Approved by Cabinet on 23rd Nov2018)

SAFETY PERFORMANCE INDICATORS

Lost time Rate (LTR) = this is equivalent to the number of Work related lost time accidents per 100 employees

$$\textbf{LTR} = \frac{\text{No of Lost - Time Accidents} * 200000}{\text{Total Number of Hours Worked}}$$

Total Accident Rate = **TAR** = This is equivalent to the total number of work –related accidents (with and without lost time) per 100 employees

$$\textbf{TAR} = \frac{\text{No.of Total accidents} * 200000}{\text{Total Number of Hours Worked}}$$

Accident Severity Rate = this is equivalent to the number of lost work days per 1000 hours Worked

$$\textbf{ASR} = \frac{\text{No. of lost days due to work related lost time accidents} * 1000}{\text{Total Number of Hours Worked}}$$

ENVIRONMNET PERFORMANCE INDICATORS

- Energy Consumption = MWh/Year/person
- Water Consumption = Metric Tons /Year/Person
- Paper Consumption = Kg/year /person

PURPOSE:

To provide an effective approach for continuous HSE Awareness and training.

SCOPE:

It Covers all Industrial Plots of the QABP which will be in Production.

1. HSE Department of QABP will Nominate a HSE Staff as a Focal Person for Safety Talks
2. Focal Person will Develop the Safety Talks and take approval from the HOD of HSE Department
3. Focal Person will also develop a What's App Group of all the Residents of QABP and Telecast that Safety Talk on that Group for the Awareness of the Residents of the QABP.on different Health Safety & Environment Topics.
4. Focal person of HSE Department will also maintain the record of the safety talks .
5. HSE related topics will be given in class room as per Annual Training schedule Prepared by the HSE Department of QABP.
6. Attendance and Pictures will be taken by the Training Team of the HSE Department of QABP.

PURPOSE:

The purpose of this procedure is to ensure the safety of our pipe line network and ultimate gas losses from ruptures as a result of the activities carried out by outside (third party) agencies, Company's internal departments and sabotage activities. This procedure defines the mechanism to secure approval from regulatory agencies for operational activities. This procedure is applicable to Distribution department (PIEDMC- QABP).

HSE Department / Management Representative (MR) shall ensure that the procedure is developed and revised when need arises. Concerned Head of Department (HOD) shall ensure that the system is in place.

HSE Nominated Focal Person shall ensure that the procedure is implemented in true spirit and all the resources are available and operate Distribution network at approved MAOP. Lay Distribution network in accordance with design drawings as per standards. Install pressure regulators at Domestic / Commercial and industrial consumers as per standards **B 31. 8**

BCD or Engineering Department of QABP responsible for the communication of the below listed points to the outside agencies.

No Objection Certificate (Undertaking) (PEDMC) in writing shall be filled / communicated to outside agency before the execution of the job. In case of any damage to (PIEDMC-QABP) pipeline network the outside agency shall bear the expenses due to pipeline damage and subsequent gas loss. FIR may be registered in case of pipeline damage or Pilferage.

Prior to execution of any job at Right of Way or PIEDMC acquired land, the outside (third party) agency shall intimate PIEDMC and apply for ***No Objection Certificate (Undertaking) For QABP.***

Demarcation of existing buried gas pipelines shall be the responsibility of QABP

Record of **Gas Safety Management Activity Performa (QABP-GPR017-F001)**
All communications in connection with NOC, and specifically those with the relevant regulatory agencies, shall be undertaken in conformance with procedure

PERMIT TO WORK SYSTEM

COLD WORK PERMIT

All repair, maintenance, modification or construction work, whether mechanical, electrical or civil which does not involve/result in a source of ignition and does not involve Vessel Entry, can be described as cold work and requires Cold Work Permit. Typical examples are as follows

- Repair, removal or installation of equipment/machinery/valves etc.
- Opening/closing of flanges/manholes/covers for any purpose.
- Construction/excavation.
- Electrical jobs on dead circuits.

VESSEL ENTRY:

After necessary isolation, depressurizing, venting, purging, displacing inert gas with air and arranging ventilation following should be checked before issuing work permit.

- If the vessel had contained inflammable material it should be checked for explosivity to ensure that it is gas free.
- Vessel should be checked for oxygen to ensure that it contains more than 20%.

Following special precautions should also be taken for vessel entry.

- If oxygen content in the vessel is less than 20%, Fresh Air Mask/Supplied Air Mask should be used.
- Forced circulation of fresh air should be arranged.
- Standby rescue watch should be arranged at the entrance of vessel.
- Only 24 volt light with safety cage should be used inside the vessel.
- Depending on the surrounding conditions, explosivity and oxygen readings should be repeated on hourly basis.
- Work shall be suspended and people called out of the vessel if at any stage the explosivity increases or oxygen reading falls below the prescribed limits.

- **ISOLATION / PURGING / FLUSHING:**

Cold work requires closing of all isolation valves on lines connected to the equipment to be repaired. After proper isolation, the equipment should be completely drained/depressurized using drains and

Two different types of work permit formats are provided. Depending upon the nature of the job, the Cold Work Permit format (light green) or the Hot Work/ Vessel Entry Permit format (red) should be used.

Separate work permit should be issued for each specific job. However if a major repair, modification or construction work, spread over several days has to be carried out at a specific location (within the operating area), which can be distinctly isolated/roped-off, a Blanket Work Permit may be issued on a daily basis using the relevant format depending upon the nature of the jobs. Site Supervisor / Technician should not start the job until he receives a properly filled out work permit.

Issuing Authority will personally ensure that:

- The area is safe for carrying out the specific job.
- The equipment is electrically disconnected and the relevant switches have been tagged.
- All valves are closed and tagged and the equipment has been depressurized, purged and flushed.
- In case of excavation, the underground cables/pipes have been identified and isolated.
- In the case of hot work, explosivity test has been carried out (After Explosivity Meter is available) and a fire extinguisher/fire hose has been arranged.
- In case of vessel entry, oxygen test is done (After Oxygen Meter is available), ventilation and lighting is arranged and someone has been assigned at the entrance.

The Issuing Authority should fill out each item on the work permit accurately and should also specify the usage of any protective equipment required. The Work Permit should typically be received by the supervisor of the Technician, however where such a position does not exist, the Work Permit should be received directly by the Technician.

The card copy of the permit will be handed over to the Technician who will display it conspicuously at the job site.If the work is not started or is stopped for any period due to safety considerations,

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- Smoking outside areas designated for the purpose.
- Tampering with equipment.

- Employees must be properly clothed while at work, for example, loose clothing, dangling sleeves, neckties, etc., must not be worn when working in the operating areas.
- Employees should observe all regulatory signs at all times.
- Employees must follow prescribed job/operating procedure for carrying out various jobs.
- Employees should use proper tools required for the job.
- Any person present in or passing through an area must observe the rules applicable in that area.
- Equipment must not be operated unless all guards are in place.
- Guards should always be reinstalled immediately after maintenance/servicing of a machine.
- Employees should keep clear of suspended loads, or work being performed at elevations.
- Safety interlocks must not be bypassed except by written permission of supervision.
- Only authorized personnel may operate plant equipment.
- In the areas where Work Permit system is effective, proper work permit must be obtained before commencing any kind of maintenance work.
- All installations / equipment's / doors / machinery / must be labelled.

HOUSE KEEPING, FIRE PREVENTION & CONTROL

- Good housekeeping standards must be maintained at all times.
- Each employee must clean up his job area at the end of the day or when the job is completed.
- Materials must not be placed where it will obstruct doors, aisles, passageways, stairs, platforms, ladders and Fire Fighting equipment.
- Material should not be left where it will create tripping hazard.
- Clean up any spills promptly.
- Fire Fighting equipment must not be moved from designated location unless there is an emergency.
- Employees must know the locations of fire extinguishing equipment and know how to use it effectively.

- Cylinders shall not be dropped, struck against or permitted to strike each other violently. Damage to the cylinder or its valve could result in disastrous jet propulsion of the cylinder.
- Cylinders shall never be moved without first removing the regulator.
- Caps shall always be put on cylinders when the cylinders are not in use or are being transported.
- Oxygen cylinders should be handled properly so that oil, grease or any other readily combustible substance does not come in contact with oxygen.
- All cylinders shall be tested as per manufacturer's recommendation / NFPA / EN Codes.
- Do not use compressed air for any purpose other than for which it is intended.
- Never use compressed air to blow off dust from your clothes or body. This can cause skin or other injuries.
- Do not clean machines and work benches with compressed air, use a brush or vacuum cleaner.
- Make sure that your compressed air tools, hoses and fittings are working properly. If not, report the fault to your Incharge.
- Do not leave hoses lying around for others to trip over.

CNG CYLINDERS OF VEHICLES:

- Use only the approved brands, imported, seamless brand New CNG cylinders manufactured as per **NZS 5454-1989 standard**. Purchase and install it from the CNG Stations authorized/ licensed by OGRA.
- Get CNG cylinder test certificate from the CNG licensee after conversion of vehicle to CNG.
- Get vehicle's CNG system inspected **at least once in a year** from trained personnel available at CNG Stations for examination of the cylinder, piping CNG kit, all components, leakage testing as well as performance of the CNG system to ensure its safe operation.
- Never ask for refueling beyond the allowable maximum pressure of **200 Bars** under any circumstances. In case any CNG station is found dispensing CNG at excess pressure, it may be reported to OGRA for strict action against the station to ensure public safety.
- Do not smoke during refueling in the vehicle.
- Ensure that the CNG cylinder installed in the vehicle is within the periodic test life, **which is 5 years**. In order to determine the validity of the cylinders,

- Lights, traffic indicators, wind screens and wipers to be in working order. Regularly clean wipers with a damp cloth.

- No vehicle shall be used on the public highway unless:
  - The driver is in possession of a valid driving license.
  - The vehicle is licensed for use on public highway and equipped with number plates at rear and front, and complies with the Government Road Traffic requirements.
- Always obey the speed limits; driving too fast is the No. 1 cause of accidents.
- Motorcyclists should use the lane designated for lesser speed. Horseplay or high speed on motorcycles is very dangerous leading to serious accidents.
- Overtaking should not be done at cross-roads, corners or other dangerous points.
- All road signs shall be observed and specific applicable rules should be followed
- Drivers and passengers must wear seat belts or safety helmet in case of motorcycles.
- No vehicle shall be driven into an area where explosion or fire risk exists such as operating areas of Compressor Stations, unless specifically authorized to do so through a work permit.
- Before reversing a vehicle, the driver shall take particular care to ensure that there is no obstruction in the path.
- Reflectors must be present on back of welding plants / compressors.
- Valid and approved Vehicle Fitness Certificate must be present in vehicles.
- The best advice is to avoid driving in bad weather (Rain, Fog, Snow etc), if it is still important to drive follow the safety instructions given below:

Driving Safety in Rain;

a. Drive in the tyre prints of the car ahead. During rain, a car / motorcycle is riding on a thin layer of water between the tyres and the road. The water in tyre prints has already been displaced, so the tyres get better road grip.

b. If in a skid, do not brake heavily, jerk the steering wheel or panic. Turn steering wheel into the direction of the skid and gently brake.

c. Ensure that the wipers are working properly. Drivers in accident say they couldn't see because their wipers smeared their windshields on a rainy day.

handling characteristics of 4WD vehicles as possible, tyre chains should be installed on all four tyres.

d. Make sure the chains are suitable for the wheel diameter and tyre size of the vehicle. If possible, practice fitting the chains in good conditions, so that you understand how to fit the chains and won't be placed in a difficult situation in bad weather conditions.
e. Tyre pressure should be 25 PSI or higher when using chains. Tyre manufactures recommend that cars with radial tyres shouldn't travel faster than 40 km/h when fitted with chains. Stop and check the tension of the chains after driving about 200 meters.

HOISTING AND RIGGING

- Hoisting and rigging equipment must be checked for any defects prior to use. Any defects found should be reported immediately to the supervisor.
- All power driven hoists must be operated by qualified personnel.
- Power hoists must be properly installed and anchored to prevent movement when operating and to prevent the hoists from slipping.
- During hoisting operation, all personnel must stay clear of loads and no one should be beneath the load or boom.
- Guy lines must not be attached to equipment, pipelines, tanks, or other supports for anchoring unless waiver is obtained from an authorized person.
- Slings, rope, cable, and chain must be properly protected from sharp edges before taking a strain. Care must be exercised to prevent kinks in cables or ropes.
- Standard hand signals must be used when directing hoisting operations.
- The signal man should always stay in clear view of hoist or crane operator, and at a safe distance away from the load being lifted or hoisted.
- Hoisting of personnel must only be done in a protective working cage, wearing of safety belt is mandatory.

HEAVY MOBILE EQUIPMENTS

- The driver must possess a valid driving license.
- Loads must be secured while being transported. A warning mark must be used on any load that extends beyond the sides, front, or rear of a vehicle.
- When a truck is being loaded or unloaded by a crane or power shovel, all occupants must dismount from the truck and stand clear of the load.
- Riding on crane blocks or crane loads is prohibited.

- Electrically powered office machines must be correctly installed. Electric cords and plugs should be examined regularly and should be replaced if damaged or worn.
- Repairs to office machines must not be attempted by unauthorized personnel.
- Damaged furniture should be repaired immediately.
- Know what to do in case of fire. Know your building evacuation plan.
- The office should be adequately lighted including all stairways, corridors, etc. Lighting should be arranged to avoid dark shadows in access ways.
- Many accidents have been caused by people tilting their office chair too far backwards.
- Avoid use of pins for fastening papers. Use paper clips or staples.
- To avoid cuts, pickup paper at the corners and not at the sides.
- Employees should not walk about carrying pens, pencils knives, or scissors with points exposed.
- Do not use waste-basket as an ash-tray.
- If work has to be done at a height, office chairs, boxes etc. should not be used as a make shift arrangement. Proper step ladder or a step stool should be used.
- Heavy objects should not be placed on top of almirahs or other high shelves.
- Before leaving office after work all appliances should be switched off and plugs disconnected from the mains.

ENVIRONMENTAL PROTECTION

- Make sure that the limits of National Environmental Quality Standard (NEQS/ PEQS) are not exceeded with regards to effluents, emissions and noise.
- The construction of any new project should only be commenced after conducting the Initial Environmental Examination/ Environmental Impact Assessment (IEE/ EIA) and securing permission from the respective provincial Environmental Protection Agency (EPA).
- General principles of energy conservation must be followed.
- All gas turbines, power generating units and other fuel consuming equipment's should be operated at high fuel efficiencies.
- Switch off AC and turn off the lights if you are leaving the room for extended period.
- When buying new electrical equipment, make sure it is energy–efficient, e.g. energy star for computers, energy saver bulbs, etc.

	Punjab Industrial Estate Development And Management Company	DOC. #: PIEDMC-QABP-HSE/MANL-001	
	HSE MANUAL	Issue No.1	Issue Date

ROUTINE SAFETY AUDITS

PURPOSE:

The purpose of this procedure is to focus primarily on unsafe Acts which accounts for 94% of accidents and unsafe conditions and their rectification.

SCOPE:

	Punjab Industrial Estate Development And Management Company	DOC. #: PIEDMC-QABP-HSE/MANL-001	
	HSE MANUAL	Issue No.1	Issue Date

QABP) for all types of company owned / hired; vehicles / abnormal vehicles, welding plants and Pumps

Abnormal Vehicles:

Abnormal vehicles are those vehicles defined by the site which need special consideration by virtue of their size, weight or the fact that they are capable of being extended outside their normal envelope. Examples of Abnormal Vehicles are:

- Mobile Cranes / Vehicles that have lifting facilities
- Heavy Vehicles
- Vehicles specially designed to carry skips and other containers
- Excavators & Dozers

Mobile Cranes

All vehicles equipped with jib equipment whether fixed or telescopic and capable of lifting loads by hoisting a block and hook system including heap arms mounted on Lorries.

Heavy Vehicles

Heavy Vehicles (including abnormal load) other than cranes are vehicles which exceed any one of the following:

a. Gross Weight of 44 tones
b. Length of 16.5 meters
c. Width of 2.9 meters
d. Height of 4.2 meters

Vehicles specially designed to carry skips and other containers

a. Prime mover with Trolley
b. Fork Lift Trucks
c. Pipe Layers etc.

Excavators & Dozers

An **Excavator** is an engineering vehicle consisting of an articulated arm (boom, stick), bucket & cab mounted on a pivot (a rotating platform) atop an undercarriage with tracks or wheels.

A **Dozer** includes a blade and all associated structural elements, normally mounted in front of a self-propelled machine for scrapping and pushing materials through forward motion of the machine.

Escort:

- The documents (including logbook) of vehicle are complete and available with the driver / operator.
- The driver / operator are given safety briefing / training of defensive driving courses on weekly basis.
- The vehicle emission and the noise test for the Company and the hired vehicle are carried out on annual basis.

Maintenance Supervisor shall maintain the preventive maintenance program that shall be applied to all Company owned vehicles / abnormal vehicles, welding plants and compressors in accordance with the manufacturer's specification and keep record in maintenance tracking system.

Concerned contractor shall be responsible for respective hired vehicles / abnormal vehicles, welding plants and compressors preventive maintenance program covering all mechanical and safety aspects.

Driver / Operator shall be trained, competent / certified and responsible for condition and operation within safe limits of respective vehicles / abnormal vehicles, welding plants .HSE department will review & update the procedures

PROCEDURE:

Transport / Maintenance supervisor shall ensure that all the requirements for the vehicles / abnormal vehicles, welding plants and compressors have been fulfilled.

Executive / In-charge shall ensure that the necessary precautionary measures have been adopted as mentioned in the Vehicle/ Heavy Mobile Equipment Fitness Certificate (PIEDMC-HPR-007-F-001) and Welding Plant / Fitness Certificate (PIEDMC-GPR-007-F-002).

Fitness Certificates shall be filled for each company owned / hired vehicle / abnormal vehicle, welding plant and compressor by the concerned executive with the help of concerned supervisor. Concerned executive will acquire approval from concerned HSE executive prior to its operation.

All company owned / hired; vehicles / abnormal vehicles, welding plants shall be operated after approval of HSE department.

Valid and approved Fitness Certificate is to be kept in respective vehicle / abnormal vehicle, welding plant and compressor.

Expired Fitness Certificates is to be kept in Record by concerned department for 6 months. Fitness Certificates of vehicle/ abnormal vehicle, welding

It shall be ensured that gantry cranes and associated equipment are fit for use.
All lifts shall be made slowly to remove all slack from the hoist ropes.
Before lifting or traversing the load, operator shall ensure that the slings, shackles, rings and any other lifting accessories are carefully inspected for their integrity and correctly applied.
Never start the trolley or bridge motions until the load is of the ground and will safely pass by, or over, floor equipment or obstacles.
Always start and stop the crane slowly so as to avoid excessive swinging of load.
Ensure that all loads hoisting is made with the hoist ropes in the vertical position. Never pick up loads that may swing out of control or can create side pull on the crane.
Loads that are unsafe should never be moved. Long extended loads should have a tag line attached to keep the movements under control.

Preventive Maintenance of Vehicle / abnormal vehicle, welding plant and compressors:

A preventive maintenance program shall be applied to all company owned Vehicles / abnormal vehicles, welding plants and compressors as per concerned departmental manual and proper record is to be kept on standard formats by respective department.
Hired Vehicle / abnormal vehicle, welding plant and compressors that stays with the company will also follow this program covering all mechanical and safety aspects.
HSE department shall inspect preventive and maintenance record on as when required basis.

Focal Person:

Focal Person is overall responsible for implementation of this procedure in true spirit.

Admin department:

Admin Incharge of respective site shall ensure following;

Area is designated and identified for waste disposal as per Solid Waste Management Procedure and arrangements for further disposal of this waste are adequate.
Sanitation activities performed by the worker are supervised at all times and any discrepancy from the standards is communicated to the contractor for corrective action (in writing) and HSE department for reference.
Monthly visits to canteens and kitchenettes shall be carried out by the representative of Focal Person, In-charge Admin / HSE Engineer and write observations on **Check list for Food Handling Sites and Food Handlers (PIEDMC (QABP)-HPR-012 -F001**).
Arrange post sickness absence examination by the Company Doctor of those food handlers who have to rejoin food handling area after having treatment for Typhoid, hepatitis and any other gastro intestinal diseases.
Notify HSE Focal point and HSE Department immediately if suspect any discrepancy from the guidelines and detect any occupational and communicable diseases.
Ensure through sanitation supervisor that garbage and refuse heaps are not found at areas other than the designated areas.
Ensure that adequate numbers of sanitary workers are engaged for sanitation.
Ensure that this procedure is communicated to all sanitary contractors and workers and the procedure and contractor HSE statement is made part of the documents when engaging the sanitary Contractors.
Ensure that food handling site is being maintained by contractor as per requirement of **General cleaning of food handling site requirement (PIEDMC(QABP)-HPR012-F002).**

Line the trash bins/cans and drums with recyclable disposable plastic bags on daily basis and shall also clean and wash the bins on daily basis.
Wear his uniform / PPEs at all the time during his duty hours.
Daily clean and wash (if required) the floor/ carpeted walls/ toilet rooms/ rest rooms/ washing facility/ urinals/ trash cans/ garbage drums/ halls/ hall ways and open spaces.
Place / dispose waste in the area of his duty at designated place (s) and shall not throw the waste at an isolated place and near important installations.
Do not come to duty under affect of any alcohol, drugs and prohibited substances and if reported by somebody shall be discharged from duties.
Abide by all the health, safety and environment rules communicated to him during training sessions.
Do not involve in any security related issues and out of law activities at the site.

HSE Department:

HSE department shall be responsible for the following:

Monitor food handling site (s) under his domain on monthly basis and report anomalies to HSE Focal Person and HSE Head Office (if required).
Provide technical advice and guidance to all departments on potential risks associated with housekeeping, sanitation workers, food handlers and food handling sites.
Provide counselling and training whenever the need arises.
Review and update the procedure.

HSE SITE COMMITTEE:

HSE Site committee shall consist of In-charge Admin, HSE Engineer and any other Sectional Head (s) as nominated by HSE Focal Person.
HSE Focal Person and HSE site committee shall be responsible for overall monitoring of HSE activities and HSE performance at Site.

sub area offices or other areas and frequency should be at least Twice in a fiscal year.

HSE Site Committee Member shall carry out Housekeeping inspections as per annual schedule approved by HSE Focal Person.

HSE Site Committee shall promptly submit Housekeeping Inspection Report to HSE Focal point duly signed by each committee member. Each Housekeeping inspection report shall be discussed as an agenda point in HSE Site Committee Meeting.

Safety guidelines mentioned in HSE Procedure 'General Safety Management' (PIEDMC-HPR-004) should be considered while performing Housekeeping inspections.

RECORD KEEPING:

Daily Cleaning and Waste Disposal Checklist For Sanitation Staff (PIEDMC-HPR--F003) shall be signed by the department/HOD in charge on daily basis to avoid poor sanitary status at offices, workshops, food handling areas, store yards, pipes yards, scrap yards and other locations and shall be sent to HSE Department on monthly basis. Record shall be kept by Admin department for one year.

The purpose of this procedure is to ensure the provision of safe drinking water to all the employees at workplace

SCOPE:

It is applicable at all the sites of **(PIEDMC- QABP)**

FOCAL PERSON:

The Focal Person shall ensure the continuous provision of potable water at all the areas of its domain.

LOGISTIC SUPPORT:

The Logistic Support department at site shall ensure potable water arrangements according to the requirements and general instruction laid down in this procedure.

The Logistic Support Department shall arrange for drinking Water Quality test as per frequency requirement.

HSE DEPARTMENT:

HSE department shall analyse data of Water Quality Status, water filters replacement and water tanks cleaning and disinfection of all the sites including Sub Areas and Customer Services Canters.

The drinking water at any site shall not be declared fit to drink until the water quality report of the respective site is declared fit by HSE Department.

The HSE Department with the help of the Focal Person shall raise awareness about drinking water safety and its conservation throughout the Company.

REQUIREMENTS:

Potable water quality tests of all the sites are required to be carried out to ensure safe drinking water supply to all PIEDMC sites/offices:

Water quality testing is done to ensure safe drinking water and its frequency shall be on annual basis.

The samples shall not be taken by PIEDMC employees, these shall preferably be collected by the testing laboratory representatives. Two samples shall be taken, one from the source and the other from tap after filtration. For all drinking water points where filtration units are installed, Chemical analysis of drinking water quality test shall be done only before water filtration while microbiological analysis shall be done both before and after filtration. Following sequence is to be adopted:

the access distance as short as reasonable, and making the water station inviting by using ice and shade.
An adequate supply of potable water shall be provided at all places of employment.
Portable containers used to dispense drinking water shall be capable of being tightly closed, and shall be equipped with a tap.
Water shall not be taken out by dipping hands in drinking water containers.
On construction sites without any running water, potable water dispensers/coolers shall be provided.
For employees working in the heat, provision shall be made for cooling the drinking water during the hot weather by effective means and arrangements shall also be made for its continuous and un interrupted supply.
Any container used to distribute drinking water shall be clearly marked as "Drinking Water Container" and shall not used for any other purpose.
All Drinking Water points shall be legibly marked "Drinking Water Point" in a language understood by the majority of the workers.
The common drinking cup is prohibited unless cleaned and washed.
Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.
In case of non-potable water results due to microbiological analysis, follow the following procedure:

- Search for any leakage of water pipes leading to contamination.
- Clean the water storage tanks and disinfect with chlorine tablets (33mg Tab for 20 liters of water and 3.3grams chlorine tab for 500 gallon of drinking water reservoir).
- Change water filters.
- Carry out water quality tests.
- If results are still non-potable, then alternative arrangement is to be made through installation of water filtration plants or using any alternate potable water source.

Outlets for non potable water, such as water for industrial or firefighting purposes only, shall be identified by signs, to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes.

(ultra violet lamp) after three months or whenever drinking water is having any un pleasant taste or on any fault.

After changing the filters tighten the plastic cover properly, after replacing the filters check its operation especially the ultra violet lamp through its blinking light.

The point where water filter is placed shall be legibly marked as "Drinking water point" in a language under stood by the majority of workers.

Do not forget to switch off water filters and water coolers after office hours for its effective operation.

The change dates shall be marked on a plastic sign board next to filters, also stating due date for change.

Water filters shall be changed on and as per required frequency. Record shall be maintained on water filter change log **(PIEDMC-QABP)** and copies of it shall be sent to HSE department, this record will be retained for a period of two year.

Reverse osmosis filtration plant water filters cartridges, membrane replacement and membrane sanitization and cleaning shall be done as per R.O Plant manufacturer specifications.

General Safety Management

CHANGE RECORD

Issue No.	Issue Date	Change Description	Prepared by		Reviewed by		Approved by	
			Sign	Date	Sign	Date	Sign	Date
01	01-10-07	Initial release						
02	20-05-09	2nd release due to changes of standard version						
03	30-01-14	3rd release due revision in procedure						
04	02-08-16	4th release due revision in clauses 4.0 and 5.4						

1.0 PURPOSE

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- Guards should always be reinstalled immediately after maintenance/servicing of a machine.
- Employees should keep clear of suspended loads, or work being performed at elevations.
- Safety interlocks must not be bypassed except by written permission of supervision.
- Only authorized personnel may operate plant equipment.
- In the areas where Work Permit system is effective, proper work permit must be obtained before commencing any kind of maintenance work.
- All installations / equipments / doors / machinery / must be labeled.

5.2 HOUSE KEEPING, FIRE PREVENTION & CONTROL

- Good housekeeping standards must be maintained at all times.
- Each employee must clean up his job area at the end of the day or when the job is completed.
- Materials must not be placed where it will obstruct doors, aisles, passageways, stairs, platforms, ladders and Fire Fighting equipment.
- Material should not be left where it will create tripping hazard.
- Clean up any spills promptly.
- Fire Fighting equipment must not be moved from designated location unless there is an emergency.
- Employees must know the locations of fire extinguishing equipment and know how to use it effectively.
- Only dry powder and carbon dioxide (CO_2) should be used to extinguish an electrical fire. Water is hazardous because it is a conductor of electricity and for this reason can not be used on an electrical fire.
- Know your specific duties as per fire fighting procedure.
- Partially used or empty extinguishers must be recharged promptly.
- At all times know the exact location of exits by which you can leave an area.
- Switch off engines and engine driven equipment when refueling vehicles.

5.3 ELECTRICAL SAFETY

- Only authorized and qualified personnel are permitted to perform work of an electrical nature.
- As far as possible, electricians should avoid working on electric equipment which is energized.
- Before the start of an electrical job, the circuit breaker or isolating device should be switched off and tagged.
- Live circuits should be handled carefully despite presence of protective insulation.
- The authorized employees performing electric work should use rubber gloves and have their sleeves rolled down.

- Get vehicle's CNG system inspected **at least once in a year** from trained personnel available at CNG Stations for examination of the cylinder, piping CNG kit, all components, leakage testing as well as performance of the CNG system to ensure its safe operation.
- Never ask for refueling beyond the allowable maximum pressure of **200 Bars** under any circumstances. In case any CNG station is found dispensing CNG at excess pressure, it may be reported to OGRA for strict action against the station to ensure public safety.
- Do not smoke during refueling in the vehicle.
- Ensure that the CNG cylinder installed in the vehicle is within the periodic test life, **which is 5 years**. In order to determine the validity of the cylinders, approach to nearest CNG Station or Hydro Carbon Development Institute of Pakistan (HDIP's) office. In case the cylinder requires testing contact nearest HDIP testing labs.

5.6 POWERED TOOLS

- Check cords for mechanical damages prior to use. Defective cords may cause serious electric shocks, painful burns or even can be fatal.
- Keep both the number and length of extension cords to a minimum.
- Do not lay cords across aisles and traveling areas since it creates tripping hazards.
- Keep cords away from heat and chemicals. Damaged cords are no longer water resistant. The insulation can absorb water resulting in a short circuit.
- Electric hand tools which are not explosion proof should never be used in an explosive environment.
- Goggles or face shields should be worn when using electric hand tools.
- Before using, the tools must be checked for any defects and returned if found defective.
- Users are not allowed to perform any repair to pneumatic and electrical hand tools, unless authorized to do so.
- Only skilled technicians are allowed to renew grinding wheels.
- Maximum speed of a grinder should not be exceeded, wherever specified.
- Excessive force which may result in jamming of the grinder should be avoided. This can cause cracks and breakage of the wheels which may seriously injure the user.
- While using jack hammer make sure the chisel used is properly secured. Care should be taken to limit the chips from flying by using portable shields.
- Safety guards must be used with grinders.

5.7 WELDING SAFETY

- Welder should ensure that his working area is not wet.
- Welder must be wearing proper clothing.

- Valid and approved Vehicle Fitness Certificate must be present in vehicles.
- The best advice is to avoid driving in bad weather (Rain, Fog, Snow etc), if it is still important to drive follow the safety instructions given below:

Driving Safety in Rain;

a. Drive in the tyre prints of the car ahead. During rain, a car / motorcycle is riding on a thin layer of water between the tyres and the road. The water in tyre prints has already been displaced, so the tyres get better road grip.
b. If in a skid, do not brake heavily, jerk the steering wheel or panic. Turn steering wheel into the direction of the skid and gently brake.
c. Ensure that the wipers are working properly. Drivers in accident say they couldn't see because their wipers smeared their windshields on a rainy day.
d. Reduce speed and maintain sufficient distance in between vehicles so that safe distance is maintained in case of emergency stop. Fog creates a visual illusion of slow motion when vehicle may actually be speeding.
e. Be aware of the spray coming from passing and oncoming vehicles. It may blind the driver temporarily, so anticipate this by increasing the speed of the wipers.
f. Never drive through deep water on a flooded road. If drive through deep puddles, gently press the brake a couple of times afterward to dry the brakes.
g. Use the right edge of the road or painted road markings as a guide.

Driving Safety in Fog;

a. In thick fog, drive with reduce speed and crack open window and listen for traffic you cannot see. Never drive with just parking/ fog lights on.
b. Drive with lights on low beam. High beams will only be reflected back off the fog and actually impair visibility even more.
c. Be cautious, fog can become thicker without warning and without being noticed until it is too late to react.
d. Know how to defrost the car. Before turning on the defroster and blower, move the heat control to "hot" and allow the engine to warm up first. If the windshield starts to fog on the inside, open a side window slightly and turn the defroster to a higher speed. Use air conditioner, if possible, to reduce humidity and moisture collecting on the window.

Driving Safety in Snow;

a. Tyre chains are recommended during snow storm, packed snow on roads or when tyres grip on road reduces or when it became difficult to control the vehicle.
b. Tyre chains should always be carried in the trunk during the appropriate times of the year and only mounted on the vehicle when required by driving conditions or required by law.

- During hoisting operation, all personnel must stay clear of loads and no one should be beneath the load or boom.
- Guy lines must not be attached to equipment, pipelines, tanks, or other supports for anchoring unless waiver is obtained from an authorized person.
- Slings, rope, cable, and chain must be properly protected from sharp edges before taking a strain. Care must be exercised to prevent kinks in cables or ropes.
- Standard hand signals must be used when directing hoisting operations.
- The signal man should always stay in clear view of hoist or crane operator, and at a safe distance away from the load being lifted or hoisted.
- Hoisting of personnel must only be done in a protective working cage, wearing of safety belt is mandatory.

5.11 HEAVY MOBILE EQUIPMENTS

- The driver must possess a valid driving license.
- Loads must be secured while being transported. A warning mark must be used on any load that extends beyond the sides, front, or rear of a vehicle.
- When a truck is being loaded or unloaded by a crane or power shovel, all occupants must dismount from the truck and stand clear of the load.
- Riding on crane blocks or crane loads is prohibited.
- Operators must not leave crane cabs without disengaging the clutch and engaging all safety locks.
- Cranes with long boom must be secured against high winds.
- Crane booms and booms on the motorized equipment must not be operated closer than six feet from live high voltage overhead electrical wires.
- Operators must check wire ropes daily.
- Safety switches should not be bypassed.
- Controls of the crane should be tested for proper working.
- Machine load rating should never be exceeded.
- Do not use hoist line around load, always use certified wire slings.
- When a driver leaves his vehicle, the hand brakes must be set. Whenever possible, equipment must not be left unattended while the motor is running.
- Vehicles must not be reversed until the operator has checked to see if the way is clear. If unable to see behind his vehicle, the operator must enlist the aid of another person to act as a guide while backing-up.
- Before doing any work under a vehicle, it must be properly blocked. Jacks are not adequate.
- Reverse horn must be functional.
- Truck cranes must be properly blocked and be on firm footing before lifting a heavy load with a low boom. Employees must stand clear of the crane's swing and keep out from under suspended loads.
- Forklift operators should ensure that:
    - Load is not in raised position during travel.

- Any damage to personal protective equipment must be brought to the attention of supervisor.
- Employees who are issued Uniforms by the Company should wear them while on duty.
- Employees who are issued Safety Shoes by the Company should wear them while on duty.
- Contract employees should also wear all specified personal protective equipment in the designated areas.

5.14 ENVIRONMENTAL PROTECTION

- Make sure that the limits of National Environmental Quality Standard (NEQS) are not exceeded with regards to effluents, emissions and noise.
- The construction of any new project should only be commenced after conducting the Initial Environmental Examination/ Environmental Impact Assessment (IEE/ EIA) and securing permission from the respective provincial Environmental Protection Agency (EPA).
- General principles of energy conservation must be followed.
- All gas turbines, power generating units and other fuel consuming equipments should be operated at high fuel efficiencies.
- Switch off AC and turn off the lights if you are leaving the room for extended period.
- When buying new electrical equipment, make sure it is energy–efficient, e.g. energy star for computers, energy saver bulbs, etc.
- The concept of 3R's for waste management must be followed. As for as possible all kinds of waste must be "Reduced", "Reuse" and "Recycled".
- Avoid wastage of paper. Use recycled paper whenever possible.
- Collect recyclable trash such as paper, newspapers, plastic bottles and soda cans in separate containers to facilitate economic recycling.

5.15 OTHERS

- Handling of pyrophoric dust, which is encountered at different stages of pipelines operations, should be handled in a very careful manner to avoid auto ignition in atmosphere.
- Employees should familiarize themselves with the proper techniques of lifting and carrying objects.
- Employees should not attempt to move furniture or lift other heavy objects which are beyond their strength.

6.0 REQUIREMENT OF ENVIRONMENT, HEALTH AND SAFETY STANDARDS:

6.1. OHSAS 18001:2007, Element 4.1

7.0 RELATED DOCUMENTATION

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	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Daily Attendance Sheet for Occupational Health for Dispensaries / Sick Bay.	Issue #	Issue Date
		Page 1 of 1	

Sr. No.	Name/ Deptt.	Presenting Complaint	Diagnosis	Treatment	Category: Occupational / Non Occupational / Other(Please select from list below)	Refer (Please select from list below)	Disposal (Please select from list below)	Date &Sign. Dispenser & Doctor

Occupational

- Cut, Bruises, of skin
- Burn and Scalds
- Sprains, Strains, Fracture
- Occupational Dermatitis
- Foreign Bodies/Eye
- Chemical Injuries
- Other (Please mention)

Non- Occupational

- Respiratory disorders
- Digestive disorders
- Rheumatic complaints
- Functional CNS disorders
- Non-work accidents
- Boils and Carbuncles
- Non-occupational sepsis
- Condition of eyes and visual defects
- Condition of ears
- Other than industrial conditions

Other

- Return from Sickness
- Medical examination
- Inoculation /immunization

Refer

- Specialist Doctor
- Hospital
- physiotherapy

Disposal

- Work
- Home
- Hospital

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC.#	
		Issue #	Issue Date
	Vehicle / abnormal vehicle Fitness Certificate	Page 1 of 1	

Comments (If any):

Registration No.	**Company / Contractor:**	**Contractor Name:**
Site / Location:		**Department:**
Driver Name / Designation / Age :		**Make / Model:**
Type of Vehicle / abnormal vehicle :		
Date of Inspection:	**Validation Date: From**	**To**

Sr No	Safety Check	Status			Remarks
		Ok	Not Ok	N/A	
1	General Condition of Vehicle / abnormal vehicle (Walk around the vehicle and check for any abnormality)				
2	Any mechanical defect, repair or replacement				
3	Seat Belt				
4	Tyres Condition / Pressure				
5	Steering working				
6	Clutch & Brakes				
7	Wind Screen, Side mirrors , Wiper / Washer				
8	Lights / Indicators				
9	Horns (Reverse Horn for Heavy Mobile Equipment)				
10	Engine Oil, Brake Oil and Coolant Condition / Level				
11	Battery / Terminals Condition				
12	Battery water Level				
13	Seats Condition				
14	Overall paint condition				
15	Vehicle Cleanliness				
16	All loads are secured (No loose tools, instruments / material etc)				
17	Engine Smoke Normal				Last Emission Test Date: Result:
18	Lifting Equipment load testing				Test Date: Result:
19	Visual Inspection For Looseness Of Any Nuts And Bolts				
20	Complete tool box (Jack, wrench etc)				
21	Valid Driving License				
22	First Aid Box				
23	Fire Extinguisher				

Checked by: First Line Executive	Approved by: Respective HSE Executive
Name:	**Name:**
Designation:	**Designation:**
Sign:	**Sign:**
Date:	**Date:**

Note: Certification based merely on visual inspection. It does not certify any mechanical part / operation or any mechanical defect is not taken into consideration).

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	FIRST–AID BOX CONTENTS LIST	Issue #	Issue Date
		Page 1 of 1	

Sr. No.	Item name	Quantity (Numbers)
1	Cotton roll guaze 1 inch(finger)	One packet
2	Cotton roll guaze 2 ,4,6 inches	One packet each
3	Crepe bandage	2
4	Cotton wool	1 packet
5	Pyodine antiseptic solution	1
6	Adhesive plaster	1
7	Triangular bandages (40 in. x 40 in. x 56 in)	6
8	Safety pins	2 Pair large size with safety lock
9	Splints of "6" different sizes.	6
10	Polyfax skin ointment	1
11	Saniplast First aid bandages	1 packet of 100 bandages
12	Dressing scissor (straight edges)	1
13	Burn cream (Dermazine or quench or flamazine cream)	1
14	Iodex if not available then Voltral emulgel	1
15	Disposable polythene gloves	1 packet
16	Tourniquet	1'inch x 24'inch.

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	First-Response Kit of Dispensary Doctor Contents List	Issue #	Issue Date
		Page 1 of 1	

Sr. No.	Item Name	Quantity (Numbers)
1	Cotton roll guaze 1,2,4,6 inch	1packet Each
2	Crepe bandage	2
3	Cotton wool	1 packet
4	Pyodine antiseptic solution.	1
5	Adhesive plaster, Dressing scissor (with non curved edges)	1Each
6	Tourniquet 2"x 24" long (Non elasticized)	1
7	Arm Sling	2
8	Safety pins	2Pairs
9	Polyfax skin ointment	1
10	Saniplast First aid bandages	1Packet
11	Nitroderm Patch	2
12	Any Burn cream (Dermazine cream etc.)	2
13	Disposable plastic polythene gloves.	1 packet
14	Sterile eye dressing (individually packaged)	2
15	Tab Disprin	10
16	Tab Angisid	10
17	Glucometer with alcohol swabs, lancet and strips	1 set
18	25% Dextrose Water 20 ml	2
19	Disposable syringes	1ml,3ml,5ml(Two each), 20ml & 50ml(One each)
20	Voltral emulgel.	1
22	Surgical mask	One packet
23	Mouth piece and CPR Mask	One each

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #	
	Parameters to be Checked for Potable Drinking Water	Issue #	Issue Date
		Page 1 of 1	

- **Chemical examination (Parameters to be checked for Potable Drinking Water are as under):**

Sr. No.	Parameters
1	Color
2	Taste
3	odor
4	Turbidity
5	PH
6	Total Dissolved Solids (TDS)
7	Total Hardness as $CaCO_3$
8	Sulfate (SO_4)
9	Nitrates (NO_3)
10	Fluoride (F)
11	Chloride
12	Zinc
13	Arsenic (As)
14	Copper (Cu)
15	Lead (Pb)
16	Nickel (Ni)
17	Sodium (Na)
18	Calcium
19	Chromium

- **Microbiological examination (Parameters to be checked for Potable Drinking Water are as under):**

Sr. No.	Testing method	Permissible Limits
1	Total Colony Count	< 500 cfu / ml
2	Total Coli Forms	0/100ml
3	Faecal Coli Forms (E. Coli)	0/100ml
4	Faecal Streptococci / Enterococci	0/100ml

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Medical Equipment to be available at Dispensary / Sick Bay	Issue #	Issue Date
		Page 1 of 1	

List:

- Oxygen cylinder/with all the accessories.
- Blood pressure apparatus.
- Glucometer.
- Stethoscope.
- ENT set.
- Umbo bag.
- Mouth piece.
- Tongue depressors (Disposable) and flash light.
- Nebulizer.
- Patients couch (with adjustable head and foot ends).
- Patients stool (Revolving and height adjustable).
- I/v stand.
- Sterilizer.
- Dressing trays (02 no).
- Kidney trays (02 no) (Medium size).
- Surgical knife. (01 no).
- Forceps. (01 no).
- Dressing scissors of 2 sizes.
- Waste disposal cans with lids
- Dressing bowls small, medium and large size. (1 each).
- Wooden splints. One set.
- Needle holders. (01 no).
- Instruments drum. (01 no).
- Dressing drum. (01 no).
- Blanket. (01 no).
- Stretcher with straps (01 No).
- Water proof waste bags (plastic). (one packet)

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Usual Observation Items to conduct RSA	Issue #	Issue Date
		Page 1 of 1	

Typical Observation Items

1. Is employee wearing proper clothing?
2. Is the employee wearing prescribed (by the site management) protective equipment for head, eyes, ear, foot etc?
3. Is proper job procedure being followed?
4. Is the employee using proper tools?
5. Are the tools in safe conditions?
6. Is there a chance for the employee to fall, slip, trip or strike against an object or hit by something?
7. Any other unsafe condition or anything which can go wrong and result in an incident?

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Requirement for Sick Bay / Dispensary	Issue #	Issue Date
		Page 1 of 1	

As per ANSI standard the Sick Bay / Dispensary should be:

(a) Located near the work area or areas it is to serve.

(b) Easily accessible to workers at all times.

(c) Able to accommodate a stretcher.

(d) Close to bathroom facilities.

(e) Kept clean and sanitary.

(f) With adequate lighting, ventilation and heating arrangements.

(g) Clearly identified as First-Aid Facility and appropriately marked with how and where to access the First-Aider.

(h) Used only to administer First-Aid or health related services and equipped with:

- (i) A communication system.
- (ii) A sink with cold/ warm running water.
- (iii) Eye wash equipment, if it is a work site.
- (iv) A bed with mattress and 2 pillows.
- (v) First-response kit of dispensary doctor contents list attached as Annexure-B

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	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	First –Aid Box Usage Log Sheet	Issue #	Issue Date
		Page 1 of 1	

Sr. No.	Location	Date/ Time	Type of Injury/illness		Name& Dept. For whom used	By whom used	What item used from first Aid Kit	Sign. of first aider
			Occupational / Detail & cause of injury	Non-Occupational / Detail of injury				

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	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Check list for Food Handling Sites and Food Handlers	Issue # 02	Issue Date
		Page 1 of 3	

Site: ..... **Canteen name:** .....

Date of monitoring: .....

		(Tick Appropriate)	
1.	**WALLS:**	1-Smooth & Clean	2- Dirty
	DATE OF LAST LIME WASHING:		
2.	**FLOOR:**	1- Smooth &Clean	2- Dirty
3.	**DOOR:** (Hinges)	1- Clean	2- Dirty
	a) **Door knobs.**	1- Clean	2- Dirty
	b) **Door mats.**	1- Clean	2- Dirty
4.	**CEILING:**	1- Clean	2- Dirty
		3- Fixed	4- Needs partial fixing
5.	**EXHAUST FAN:**	1- Clean	2- Dirty
	• Local exhaust ventilation.	1- Clean	2- Dirty
	• General exhaust ventilation.	1- Clean	2- Dirty
6.	**FOOD PREPARATION AREA:**	1- Clean	2- Dirty
	• Racks.	1- Clean	2- Dirty
	• Shelves.	1- Clean	2- Dirty
	• Taps.	1- Clean	2- Dirty
	• Washing facility.	1- Clean	2- Dirty
7.	**FOOD COOKING AREA:**		
	• Cutting	1- Clean	2- Dirty
	• Knives	1- Clean	2- Dirty
	• Cooking utensils	1- Clean	2- Dirty

8.	**POTABLE WATER BEING USED:**	1- Tap water	2- Mineral water
		3- Filtered water	

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Check list for Food Handling Sites and Food Handlers	Issue # 02	Issue Date
		Page 3 of 3	

19. **UTENSILS WASHING FACILITY:**

• Washing area	1- Clean	2- Dirty
• Washing Liquid / Soap.	1-Present	2-Not Present
• Washing scrubber / scourer	1- Present	2-Not Present

20. **GENERAL PRESENTATION OF FOOD HANDLERS:**

• Hair	1-Properly cut	2-Trimmed
• Cap	1-Worn	2-Not worn
• Nails	1- Properly cut	2-Not properly cut
• Apron (Cooks)	1- Present	2-Not Present
• Gloves	1-Worn	2-Not worn
• Shoes	1-Uniform shoes	2-Casual Shoes

Checked by: 1) HSE Focal Point Representative _____

2) In-charge Admin_____

3) HSE Engineer_____

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	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Check list for Food Handling Sites and Food Handlers	Issue #	Issue Date
		Page 1 of 3	

Site: ..... **Canteen name:** .....

Date of monitoring: .....

		(Tick Appropriate)	
1.	**WALLS:**	1-Smooth & Clean	2- Dirty
	DATE OF LAST LIME WASHING:		
2.	**FLOOR:**	1- Smooth &Clean	2- Dirty
3.	**DOOR:** (Hinges)	1- Clean	2- Dirty
	a) **Door knobs.**	1- Clean	2- Dirty
	b) **Door mats.**	1- Clean	2- Dirty
4.	**CEILING:**	1- Clean	2- Dirty
		3- Fixed	4- Needs partial fixing
5.	**EXHAUST FAN:**	1- Clean	2- Dirty
	• Local exhaust ventilation.	1- Clean	2- Dirty
	• General exhaust ventilation.	1- Clean	2- Dirty
6.	**FOOD PREPARATION AREA:**	1- Clean	2- Dirty
	• Racks.	1- Clean	2- Dirty
	• Shelves.	1- Clean	2- Dirty
	• Taps.	1- Clean	2- Dirty
	• Washing facility.	1- Clean	2- Dirty
7.	**FOOD COOKING AREA:**		
	• Cutting	1- Clean	2- Dirty
	• Knives	1- Clean	2- Dirty
	• Cooking utensils	1- Clean	2- Dirty
8.	**POTABLE WATER BEING USED:**	1- Tap water	2- Mineral water
		3- Filtered water	

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Check list for Food Handling Sites and Food Handlers	Issue #	Issue Date
		Page 3 of 3	

19. **UTENSILS WASHING FACILITY:**

• Washing area	1- Clean	2- Dirty
• Washing Liquid / Soap.	1-Present	2-Not Present
• Washing scrubber / scourer	1- Present	2-Not Present

20. **GENERAL PRESENTATION OF FOOD HANDLERS:**

• Hair	1-Properly cut	2-Trimmed
• Cap	1-Worn	2-Not worn
• Nails	1- Properly cut	2-Not properly cut
• Apron (Cooks)	1-Present	2-Not Present
• Gloves	1-Worn	2-Not worn
• Shoes	1-Uniform shoes	2-Casual Shoes

Checked by: 1) HSE Focal Point Representative _____

2) In-charge Admin_____

3) HSE Engineer_____

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	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	RSA Form	Issue #	Issue Date
		Page 1 of 1	

Date / Time: _____

Department: _____

Site: _____

Section: _____

Name of executive: _____

Designation of executive:

Serial No.	Description of Un-Safe Acts (USA) or Un-Safe Conditions (USC)	USA or USC	Action Taken / Planned

Signature _____

	PUNJAB INDUSTRIAL ESTATES	DOC. #: PIEDMC-GSM-QABP	
	No Objection Certificate (Undertaking)	Issue # 03	Issue Date
		Page 1 of 1	24-01-2022

I, _____(2)_____ s/o _____(2)_____ resident of _____ holder of CNIC No._____ am presently working as _____ in _____(1)_____. I hereby confirm that I am duly authorized by _____(1)_____ through _____(3)_____ dated _____ to legally bind _____(1)_____ as under.

_____(1)_____ is fully responsible for the work to be carried out at SNGPL network i.e. high pressure underground distribution gas pipeline, overhead Consumer Metering Stations (CMS), Sales Metering Stations (SMS), Town Border Stations (TBS), District Regulating Stations (DRS), Industrial CMS, Valve Assemblies at _____ (hereinafter referred to as "site").

In case any damage occurs to SNGPL network at site as a result of any act or omission of any worker, employee, contractor or sub contractor etc. of _____(1)_____, or is a direct or consequential result of any activity of any worker, employee, contractor or sub contractor etc. of _____(1)_____ at site, _____(1)_____ shall compensate SNGPL by bearing all expenses to restore SNGPL network to its original operational condition to the full satisfaction and approval of SNGPL.

_____(1)_____ agrees to indemnify and hold harmless SNGPL and its affiliates, officers, directors etc. from any liabilities, causes of action, lawsuits, penalties, damages, claims that may be made either by _____(1)_____ or any third party for injury, damage or loss of any kind or nature resulting from, relating to or in any way connected with the activity of any employee, worker, contractor, sub contractor of _____(1)_____ at site.

_____(1)_____ also agrees that this undertaking is in addition to and not in derogation of all other legal rights and remedies of SNGPL.

Key:

(1) Name of Company
(2) Particulars of person giving undertaking
(3) Instrument through which the person authorized.

	Punjab Industrial Estat Development and Management Compan (PIEDMC)	DOC. #:	
	Inspection Checklist of First Aid Box and Stretcher	Issue #	Issue Date
		Page 1 of 1	

General requirements			First aid box inspection			Stretcher inspection				
Sr. No.	Date /Time	Site/ location	Injury data maintained Y/N	Expiry of first aid box items checked Y/N, which item expired	Replacement/Maintenance required, Y/N. Detail.	Fabric, sheet, Straps, hinges & locks Status	Replacement/ maintenance of accessories if any Yes/No (Please give detail which item)	Remarks If any	Name by whom checked:	Sign. Of First-aider

Prepared By _____

Name: _____

Designation: _____

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	OH & S PROCEDURE	Issue #	Issue Date
	General Cleaning Of Food Handling Sites Requirements	Page 1 of 1	

General cleaning of food handling sites shall be carried out according to following table:

Sr. No.	Area	Action	Frequency
1	Floor	Dry & Wet mopping.	(Morning +Evening or on when required).
2	Door	Dry mopping then wet mopping.	Twice daily (Morning +Evening).
3	Cooking area /food preparation area	Scrubbing/cleaning.	At least Twice daily or on when required.
4	Service area	Washing and scrubbing.	At least Twice daily or on when required.
5	Utensils washing area	Scrubbing and washing.	At least Twice daily or on when required.
6	Storage area (Dry, raw, cooked food)	Cleaning, washing and Scrubbing (if required).	At least Twice daily or on when required.
7	Walls	Lime washed.	Bi-annually.
8	Lights	Dry mopping.	Once a week.
9	Ventilators	Dry mopping.	Once a week.
10	Ceiling	Dry mopping.	Once a week.

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	OH & S PROCEDURE	Issue #	Issue Date
	General Cleaning Of Food Handling Sites Requirements	Page 1 of 1	

General cleaning of food handling sites shall be carried out according to following table:

Sr. No.	Area	Action	Frequency
1	Floor	Dry & Wet mopping.	(Morning +Evening or on when required).
2	Door	Dry mopping then wet mopping.	Twice daily (Morning +Evening).
3	Cooking area /food preparation area	Scrubbing/cleaning.	At least Twice daily or on when required.
4	Service area	Washing and scrubbing.	At least Twice daily or on when required.
5	Utensils washing area	Scrubbing and washing.	At least Twice daily or on when required.
6	Storage area (Dry, raw, cooked food)	Cleaning, washing and Scrubbing (if required).	At least Twice daily or on when required.
7	Walls	Lime washed.	Bi-annually.
8	Lights	Dry mopping.	Once a week.
9	Ventilators	Dry mopping.	Once a week.
10	Ceiling	Dry mopping.	Once a week.

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Water Filter Log	Issue #	Issue Date
		Page 1 of 1	

Site: _____ **Date:** _____ **Time:** _____

Type of water filter:

General Condition:

Maintenance if required Yes ☐ or No ☐

Chemical dozing if required Yes ☐ or No ☐

Type and amount of material used for dozing:

Sr. No.	Location	Replacement	Sanitization and Cleaning of membrane	Maintenance
1				
2				
3				
4				
5				
6				
7				

Activity carried out by:

Name: _____ Sign: _____ **Dated:** _____

Verified by:

Name: _____ **Sign:** _____ Dated: _____

Monitored by:

HSE Engineer: _____ **Sign:** _____ Dated: _____

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	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	OH & S PROCEDURE	Issue #	Issue Date
	Daily Cleaning and Waste Disposal Checklist for Sanitation	Page 1 of 1	

کام کی جگہ _____ تاریخ / ماہ _____

ٹھیکیدار کا نام _____ صفائی کرنے والے لوگ کے نام اور نمبر _____

ڈیوٹی سٹیشن _____

سپیشن چیک لسٹ سینٹری سپروائزر خود بھر کے ایڈمن آفیسر سے تصدیق کروائے گا۔

نمبر شمار	ایریا صاف کیا گیا یا نہیں	پہلا ہفتہ					دوسرا ہفتہ					تیسرا ہفتہ					چوتھا ہفتہ				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1	فرش گیلا اور خشک کچرے سے خشک کیا گیا یا نہیں																				
2	گیلری صاف کی گئی یا نہیں																				
3	کوڑے دان صاف کر کے پلاسٹک کا لفافہ لگایا گیا یا نہیں																				
4	ٹوائلٹ صاف کیا گیا یا نہیں																				
5	ٹوائلٹ میں برش، ٹشو اور ٹونٹیاں صاف کی گئی یا نہیں																				
6	صابن اور ٹشو پیپر سٹینڈ صاف کیا گیا یا نہیں																				
7	دروازے کی کنڈیاں صاف کی گئی یا نہیں																				
8	فلش سیٹ صاف کیے گئے یا نہیں																				
9	ٹوائلٹ کے فرش صاف کیے گئے یا نہیں																				
10	کیا ٹوائلٹ وغیرہ صاف کرنے کیلئے برش، ٹوائلٹ کلینر، ٹوائلٹ پاؤڈر اور جراثیم کش کلینر کا استعمال کیا گیا																				

تیار کنندہ _____ تصدیق کنندہ _____

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Notification of any Communicable and Contagious Disease Form	Issue #	Issue Date
		Page 1 of 1	

Location:

Date/Time	Name, Department & Designation of person suffering from disease	No. of persons suffering from disease	Category: SNGPL / Casual/ Contract	Name of Disease.

Name and Designation of person who notified: _____ Date &Sign: _____

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Notification of any Communicable and Contagious Disease Form	Issue #	Issue Date
		Page 1 of 1	

Location:

Date/Time	Name, Department & Designation of person suffering from disease	No. of persons suffering from disease	Category: SNGPL / Casual/ Contract	Name of Disease.

Name and Designation of person who notified: _____ Date &Sign: _____

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #	
		Issue #	Issue Date
	HSE Site Committee Meeting Attendance Sheet	Page 1 of 1	

Date: _____

Meeting Date / Time	
Place	
Duration	

SR. No.	Name of participants	Section / Department	Designation	Signature

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #	
		Issue #	Issue Date
	HSE Site Committee Meeting Attendance Sheet	Page 1 of 1	

Date: _____

Meeting Date / Time	
Place	
Duration	

SR. No.	Name of participants	Section / Department	Designation	Signature

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #:	
	Oxygen Cylinder Inspection Performa	Issue #	Issue Date
		Page 1 of 1	

Date / Time	Location	General Condition	Date when filled/ tested	Pressure Gauge Status	Refilling required Yes/No	Replacement of accessories if any Yes/No (Please give detail which item)	Remarks If any	Name& Sign.

Prepared By _____

Name: _____

Designation: _____

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #	
		Issue #	Issue Date
	Minutes of Meeting	Page 1 of 1	

Meeting: _____

Date: _____

List of Participants: 1. _____

2. _____

3. _____

4. _____

Sr. No	Agenda Point #	Summary of Discussion	Responsibility	Target Date

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	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #	
		Issue #	Issue Date
	Minutes of Meeting	Page 1 of 1	

Meeting: _____

Date: _____

List of Participants: 1. _____

2. _____

3. _____

4. _____

Sr. No	Agenda Point #	Summary of Discussion	Responsibility	Target Date

Prepared By: _____

Verified By Focal Point: _____

	Punjab Industrial Estates Development and Management Company (PIEDMC)	DOC. #	
		Issue #	Issue Date
	Minutes of Meeting	Page 1 of 1	

Meeting: _____

Date: _____

List of Participants: 1. _____

2. _____

3. _____

4. _____

Sr. No	Agenda Point #	Summary of Discussion	Responsibility	Target Date

Prepared By: _____

Verified By Focal Point: _____

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	PUNJAB INDUSTRIAL ESTATES	DOC. #: PIEDMC-GSM-QABP	
	Gas Safety Management Activity Performa	Issue # 02	Issue Date
		Page 1 of 1	24-01-2022

Sr. No.	Subject	Comments / Remarks
1	Name of outside (third party) agency/ Company's internal department	
2	Meeting date and time	
3	Document/ Drawings exchanged	Yes_____ No_____
4	Affidavit received	Yes_____ No_____
5	No. of days of activity carried out	
6	Pipe Line Attendant Deputed	
7	Job Completed Safely	Yes_____ No_____
8	Date and time of Incident if occurred	

Prepared By: _____ **Verified By:** _____

SUI NORTHERN GAS PIPELINES LIMITED
GAS HOUSE, 21 KASHMIR ROAD, P.O. BOX 56, LAHORE (PAKISTAN)

Ref. No. P&D/02(16282)

Date: 04.02.2022

General Manager (Technical),
Punjab Industrial Estate,
Development and Management Company,
Commercial Area (North), Sunder Industrial Estate,
Sunder-Raiwind Road Lahore.

Subject: **ESTABLISHMENT OF QUAID-E-AZAM BUSINESS PARK (QABP)**

Dear Sir,

Please refer to M/s PIEDMC's letter ref. Nos. PIEDMC/HO/SNGPL/0131 dated 14.01.2022 and PIEDMC/HO/SNGPL/0189 dated 20.01.2022 regarding the subject matter.

In this regard, we are willing to carry out Operation & Maintenance activities of internal distribution gas network of QABP being executed by SNGPL on EPC basis as contractor, for which, draft Operation & Maintenance Agreement will be shared shortly. However, feasibility study/system design report of internal distribution gas network of QABP is being enclosed for your perusal and review please.

Furthermore, please note that SNGPL is also willing to design, fabricate/construct and install industrial CMS's for your consumers located in QABP but it will be dealt separately on EPC basis, subject to issuance of license of distribution & sale to QABP as per regulations of OGRA.

Yours faithfully,
Sui Northern Gas Pipelines Limited

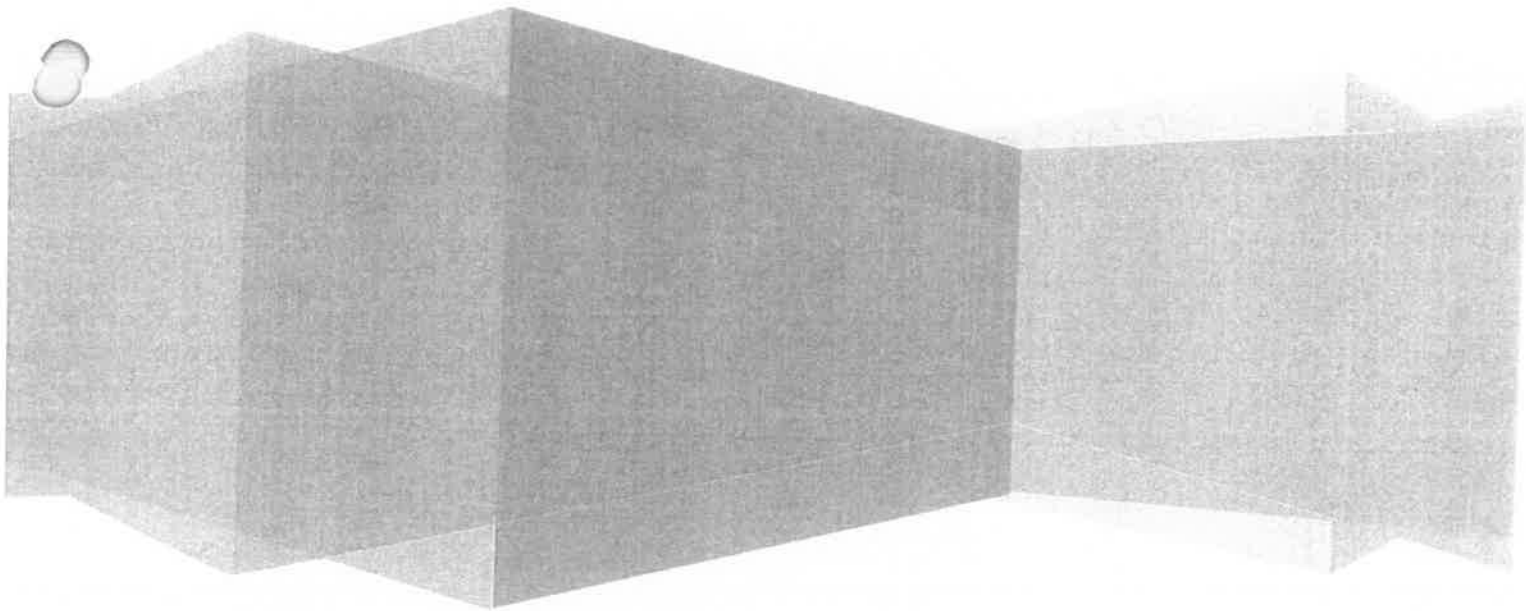
(Farrukh Majeed)
General Manager (P&D)
For Managing Director

Encl: As Above.

Punjab Industrial Estate Development and Management Company

Gas Distribution Network Design Report

Quaid E Azam Business Park



GAS DISTRIBUTION NETWORK DESIGN REPORT

Quaid-e-Azam Business Park (QABP)

PUNJAB INDUSTRIAL ESTATES DEVELOPMENT & MANAGEMENT COMPANY (PIEDMC)

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1. BACKGROUND

The Government of Pakistan passed Special Economic Zone (SEZ) Act 2012 to attract investment and to promote better infrastructure which will help to grow the economy, create social cohesion, enhance the environment and deliver better public services. The establishment of special Economic Zones will bring prosperity in the country in shape of employment, capital investment and earning of foreign exchange by exporting the value added goods etc.

Multiple Special Economic Zones are being established in Punjab, considering the significance of China Pakistan Economic Corridor and relocation of various Chinese industrial units. Out of proposed 8 Special Economic Zones in Punjab, Quaid e Azam Business Park (QABP) is a special economic zone which is located on Lahore – Islamabad Motorway at a distance of 2 kilometers from Sheikhupura interchange. It spans over an area of 1,860 acres. QABP will have numerous facilities including a dedicated interchange on M-2 with easy access to link roads, a dedicated power plant along with 132 KV grid station and gas supply.

To fuel QABP industrial estate, the supply of natural gas is essential considering its economical and environmental characteristics. Hence, a viable and optimal gas distribution system should be designed, planned and implemented inside the boundary of Quaid e Azam Business Park, Special Economic Zone. A gas distribution network is a system of internal gas distribution pipeline network, which ensures smooth supply of gas from a Sales Meter Station (SMS) cum Consumer Meter Station (CMS) to an industrial consumer. This is mainly constructed underground along the road side.

2. INTRODUCTION

This document has been prepared for supply of gas to Quaid E Azam Business Park (QABP). The followings type of industries will be established in this business park:

1. Textile industry
2. Garment industry
3. Engineering industry

4. Denim industry
5. Pharmaceutical
6. Plastic industry
7. Chemical industry
8. Paper industry
9. Flour Mills
10. Food
11. Cold Storage
12. Warehouses
13. Miscellaneous subject to approval

This document describes the design of Natural Gas internal distribution network for provision of Natural Gas (called Sui Gas) as an energy resource. The initial lay out plan of the industrial estate clearly indicates the designated areas which have been classified as above. The purpose of this classification is to plan and design utilities infrastructure with regard to the requirements of respective areas. In light of this context, the gas distribution network is designed in such a manner that it caters the load of each area with optimum utilization of pipeline capacity. Moreover, provisions are made to cater the enhancement of load due to extension and expansion in the industrial units and also diversification of business and processes due to rapid improvement in technology.

The methodology applied for the design of gas distribution network is based on average gas load requirements of industries. Gas distribution network will be laid along the road side as supply mains to cover the area of QABP. The supply mains will cross the unconstructed road through open cut. The constructed roads will be crossed through thrust bore method to avoid reinstatement of damaged roads. The system isolation valves have been considered to attend the emergency due to gas leakage. The design of this gas distribution also incorporates the provision to extend gas network on all three side except Motorway side to accommodate future extension of Industrial Estate.

3. SYSTEM DESIGN PARAMETERS

The following are the major factors considered for the designing of gas distribution network:

1. Gas pressure to be set at downstream of SMS cum CMS (starting point).
2. Terminal pressure required at doorstep of industry.
3. Gas loads of industrial pockets in MMCFD.
4. Length of gas network.
5. Diameter of gas pipeline.
6. Velocity of gas in pipeline.

The following are the other factors involved:

7. Friction factor.
8. Specific gravity of gas.
9. Gas compressibility factor.
10. Average temperature of gas.

Major factors play important role in network designing while other factors have to be incorporated though they have less significance. The calculation of distribution network capacity is based on two fixed factors and one variable factor. The two fixed factors are:

1. Delivery pressure to be set at downstream of SMS Cum CMS station and minimum pressure required at the tail end of distribution network.
2. Point to point distances of the area.

The variable factor is diameter of pipeline which is calculated while considering the gas flowing velocity. The gas flowing velocity in the distribution network pipeline should not be more that 50 ft/sec. If the velocity increases beyond specified limit, then it may affect the distribution network in the shape of vibrations, ruptures, increase in hoops stress and noise pollution. Hence, at certain scenarios velocity constraints dictate a larger diameter.

The gas distribution network of QABP is designed to operate at intermediate pressures in order to achieve pressure requirements of industries. Multiple design scenarios have been prepared to check the availability of pressure at consumer end. The distribution network is designed in such a way that it can provide required quantity of gas to the consumers at 40 psig pressure which will be sufficient for the smooth operation of industries. Moreover, it also helps to maintain a cushion for availability of gas to enhance the capacity. This cushion can be used to overcome the situation in case the pressure is low on supply mains from SNGPL side. In spite of availability of line capacity, the distribution networks can be operated on optimum pressure to minimize the losses or any other technical faults.

The gas pipelines should be laid at a safer distance from other utilities and structures and crossing of other utilities at an allowable distance as defined in American Society of Mechanical Engineers (ASME B) 31.8 code.

4. SYSTEM DESIGN ASSUMPTIONS

Load Centers

As mentioned above, the layout plan has been divided into designated areas for various type of industries. The following type of industrial units is considered as load centers for designing of gas distribution network:

1. Textile industry
2. Garment industry
3. Engineering industry
4. Denim industry
5. Pharmaceutical
6. Plastic industry
7. Chemical industry
8. Paper industry
9. Flour Mills
10. Food
11. Cold Storage
12. Warehouses
13. Miscellaneous subject to approval

Beside these above load centres, other load centres are as follow:

1. Expo centre
2. Commercial area
3. Hospital
4. Vocational institute

Details of industrial units

Table 1 summarize the details of the industrial units at QABP

Load Calculations

The exact load cannot be assessed due to the reason that the size of industrial units is not known yet. However, calculations are based on average gas load of similar type of industries. This may have variations but networks capacities will easily absorb these variations. Table 1 provides the load calculation information for each type of industry.

TABLE 1: LOAD CALCULATION FOR EACH TYPE OF INDUSTRY

Sr. No.	Zone	Plot Nos.	Plot Category	No. of Plots	Unit Load (MCFH)	Total Load (MCFH)	Proposed Min. Pressure (psig)
1	Textile	{1A ~ 127A}	4 acres & above	16	15	240	40
			>=2 acres but < 4 acres	70	10	700	
			< 2 acres	41	3	123	
2	Chemical	{15B ~ 66B}	4 acres & above	22	3	66	30
			>=2 acres but < 4 acres	30	2.5	75	
			< 2 acres	-	-	-	
3	Garments	{67B ~ 146B}	4 acres & above	8	15	120	35
			>=2 acres but < 4 acres	43	10	430	
			< 2 acres	-	-	-	
4	Food & Packaging	{81B ~ 109B} {147B ~ 190B}	4 acres & above	44	3	132	30
			>=2 acres but < 4 acres	29	2.5	72.5	
			< 2 acres	-	-	-	
5	General	{1B ~ 14B} {1C ~33C} {113C ~ 150C} {84D ~ 123D} {162D ~ 191D} {204D}	4 acres & above	45	2.5	113	25
			>=2 acres but < 4 acres	12	2	24	
			< 2 acres	111	1.5	167	
6	Pharmaceutical	{34C ~ 112C} {124D ~161D} {205D ~ 206D}	4 acres & above	-	-	-	25
			>=2 acres but < 4 acres	-	-	-	
			< 2 acres	119	2.43	289	
7	Engineering	{11D ~ 83D} {192D ~ 203D}	4 acres & above	4	3.5	14	25
			>=2 acres but < 4 acres	5	3	15	
			< 2 acres	76	2	152	
Total Load						2732	
Total Load = 2732 MCFH = 2.73 MMCFH = 65 MMCFD approx.)							

Note:
MMCFH = Million cubic feet per hour
MMCFD = Million cubic feet per day

5. NETWORK DESIGN

Network is designed on intermediate pressure taking into consideration the optimum utilization of network. As mentioned above, it also provides a provision for expansion in the system as well enhancement of load by individual industrial units. SNGPL had already completed laying of 16" x 17 KM main transmission line from Qila Sattar Shah up to the gate of QABP for the supply of allocated 65 MMCFD of gas load.

Gas distribution network of QABP is designed by using AGA Gas Equation. The scenarios for system network design are shown as **Attachment-1** of this document. The distribution supply mains of varying diameters are designed starting from SMS cum CMS QABP to various parts of industrial estate, hence catering the gas load of industrial units of designated areas. The branch / service line is designed by taking off-take from the supply mains upto the CMS at the doorstep of industrial consumer as per its gas load / pressure requirement.

All product, materials and equipment in the network shall conform to standards, specifications and codes referred in ASME B31.8 "Gas Transmission & Distribution piping systems. Since the network will be operated at a pressure of less than 150 psig, thus material like valves, flanges and others will have flange rating of class 150 (Maximum allowable operating pressure 275 psig) whereas line pipe will conform to API-5L Grade B. The welding will be carried out as per API-1104 standards.

The result of the simulation study carried out on simulation software covering various options showing the dynamics and pressures of proposed distribution network for different scenarios are enclosed as **Attachment-1** of this document. Different options are studied by considering different gas supply pressure at downstream of SMS cum CMS QABP.

The salient features of internal gas network design are summarized below:

1. Gas internal distribution network is designed based on ASME B 31.8 standard.
2. The maximum allowable operating pressure (MAOP) = 275 psig.
3. Maximum Operating pressure MOP = 150 psig.
4. Network Operating pressure = 90 -100 psig.

5. Terminal pressure at each industrial pocket = minimum 40 psig.
6. Gas load at each industrial pocket as per detail given at Table 1.

The gas network analysis is carried out based on the above stated design condition which reveals following gas network is required to be laid:

1. 16" dia x 3.45 km supply main.
2. 12" dia x 3.28 km supply main.
3. 10" dia x 6.31 km supply main.
4. 02 Nos. CP system along with ground bed.

Network Capacity Chart

Table 2 provides the distribution network pressures of terminal points at different pressure settings from SMS cum CMS QABP against each scenario.

TABLE 2: CALCULATED PRESSURE RANGE FOR EACH SCENARIO

Scenario	Flow at SMS cum CMS (MCFH)	Pressure at SMS cum CMS (psig)	Calculated Pressure range at CMS of Industries (psig)			
			Block - A	Block - B	Block - C	Block - D
1	2730	100	87 – 90	88 – 90	89 – 92	89 – 95
2	2730	90	76 – 79	77 – 79	78 – 82	78 – 79
3	2730	80	64 – 67	66 – 68	66 – 71	66 – 67
4	2730	70	55 – 52	54 – 56	54 – 59	54 – 56
5	2730	60	52 – 55	54 – 56	54 – 59	54 – 56
6	2730	50	24 – 30	26 – 30	27 – 35	27 – 29

The simulation results show that Scenarios 1 – 5 meet the gas load and minimum pressure requirement at CMSs of all industrial units. These scenarios also cater future extensions or enhancement of loads as per the given loads.

The layout design of gas distribution network of QABP is attached as **Attachment-2** of this document which indicates diameter, length and valve positions for physical execution of job and measurements of line pipe of various diameters. On the basis of this, the approximate cost of the project has been calculated considering prevailing

market rates. The source of calculation of cost is SNGPL unit rates for the year 2020-21.

6. RECOMMENDATIONS

Following recommendations are made for the efficient and smooth operation of gas network of Quaid E Azam Business Park

- The laying of gas distribution network should be carried out in accordance with the design proposed in this report. It is recommended to lay pipeline distribution network in accordance with ASME-B31.8 standard and welding should be done as per API-1104 code.
- The network should be operated at optimized pressures without compromising the velocity limits.
- Cathodic Protection of distribution network should be ensured to prevent corrosion otherwise the life of pipelines will reduce and may result into underground leakages causing safety hazard as well as wastage of gas. It is a cumbersome job to detect and repair underground leakages.
- It should also be ensured that the job for laying of distribution network be made to the contractor who has reputable experience, professional personnel and approved by SNGPL for laying of gas distribution network. Moreover, the supervision of contractor job should be designated to SNGPL as third party inspector.
- Alternately contract for laying of distribution network in QABP may be awarded to SNGPL as deposit work. In such case the third party supervision from QABP is advisable.

List of Attachments

This appendix lists attachments to this system network design report.

No.	Name	Description
1	Attachment No-1	Simulation results of distribution network operation scenarios
2	Attachment No-2	Working Plan for pipe diameter & length and position of valves

ATTACHMENT 1

SYSTEM NETWORK SCENARIOS

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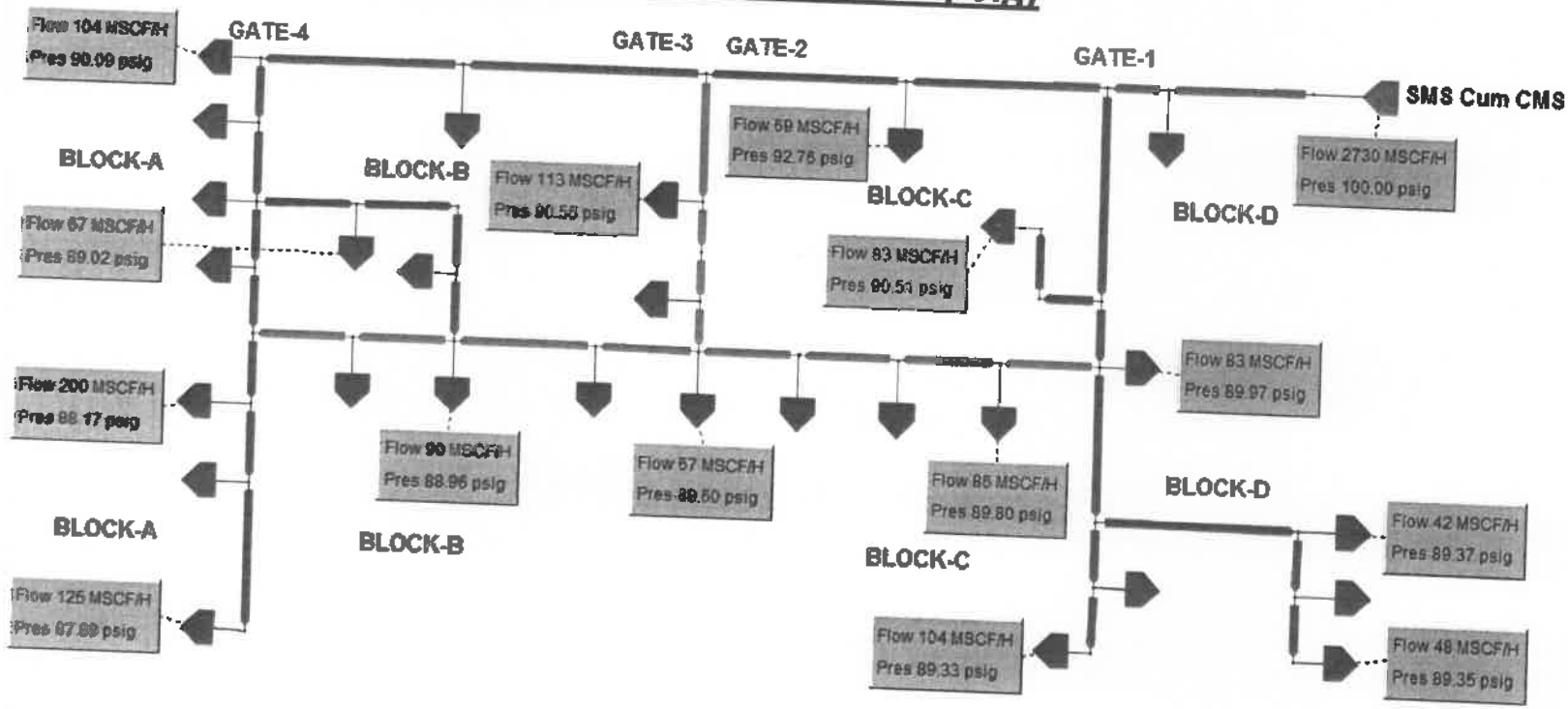
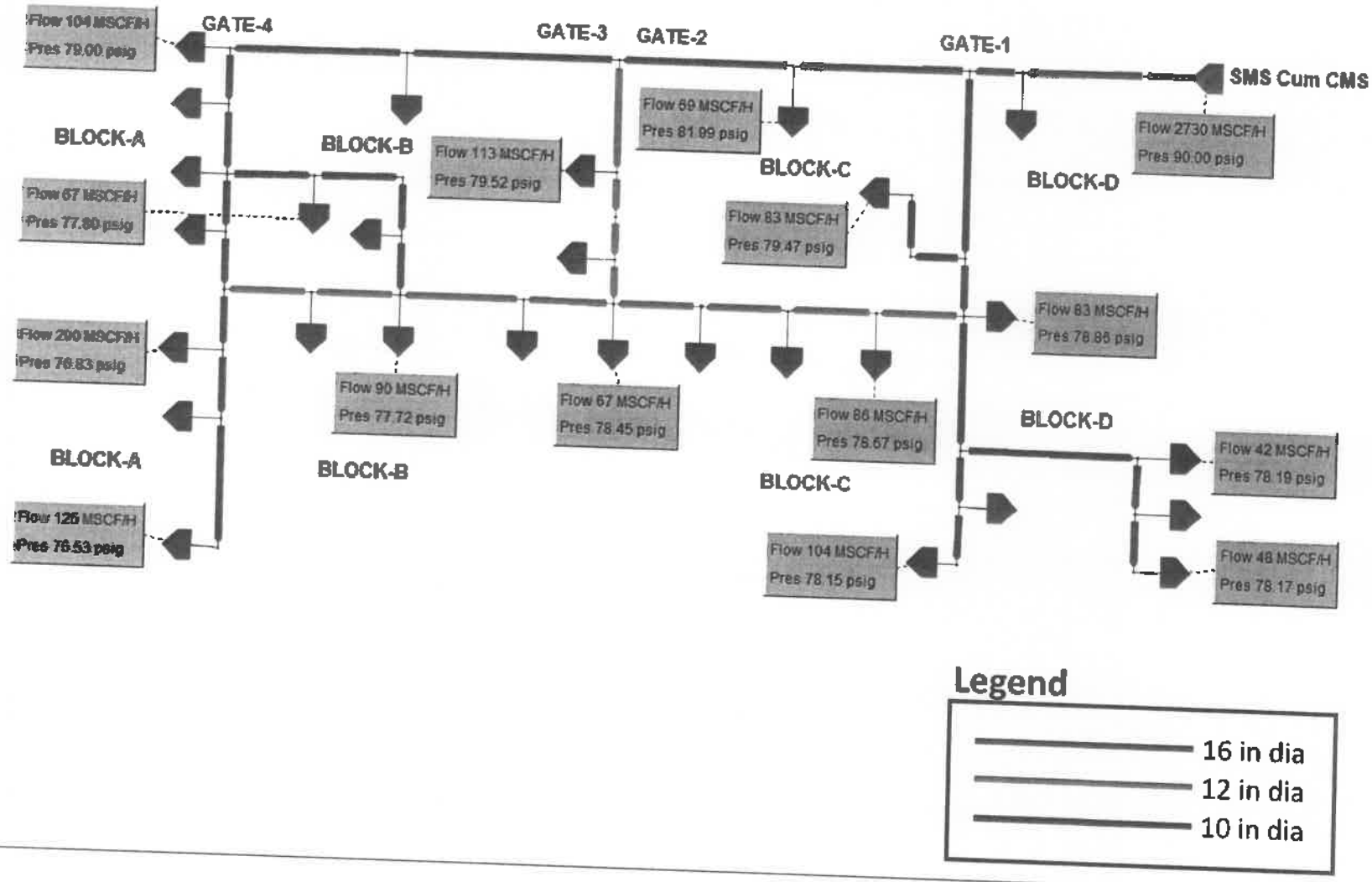
Scenario No-1(SMS cum CMS Pressure = 100 psig)



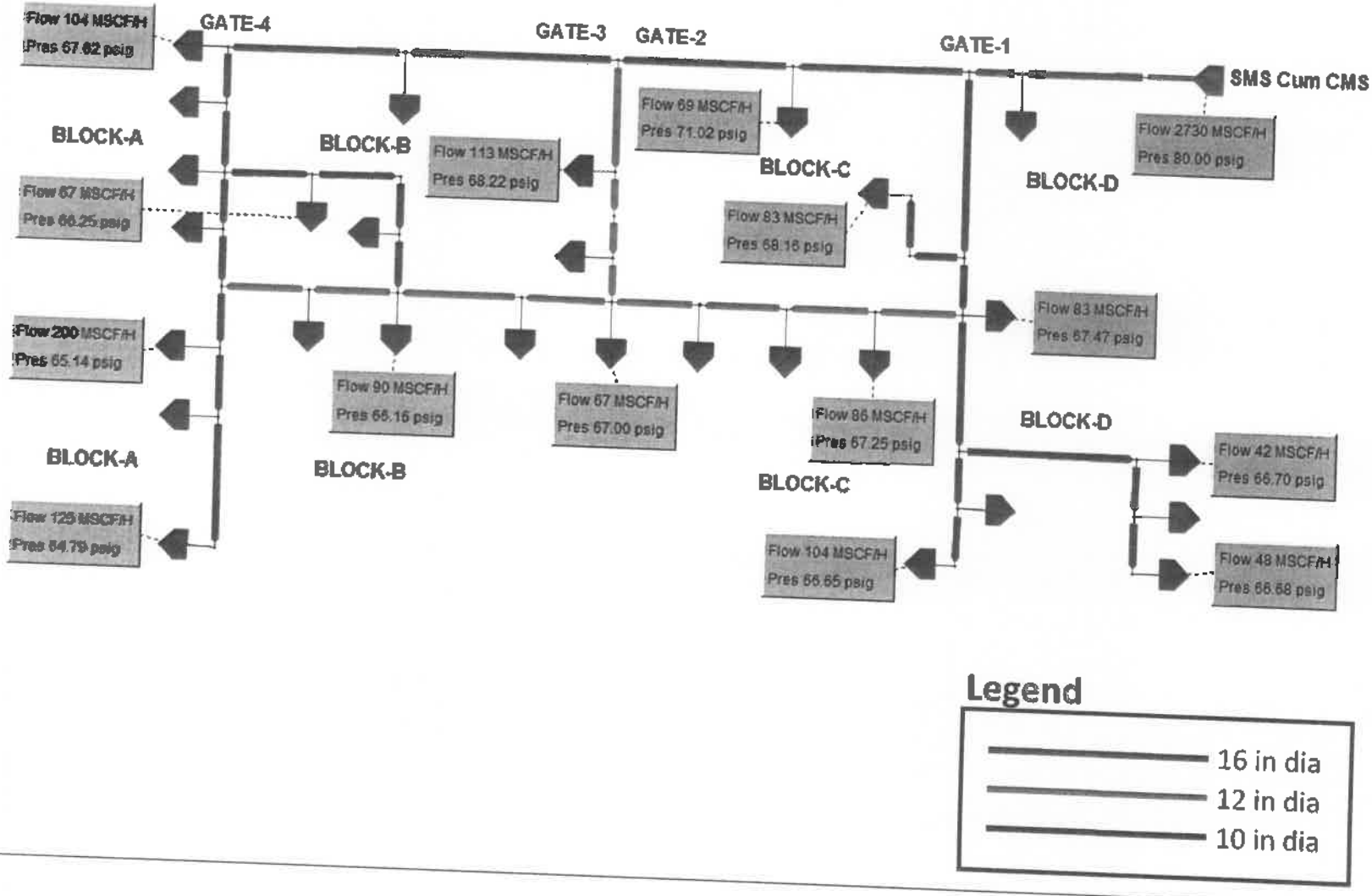
Legend

16 in dia
12 in dia
10 in dia

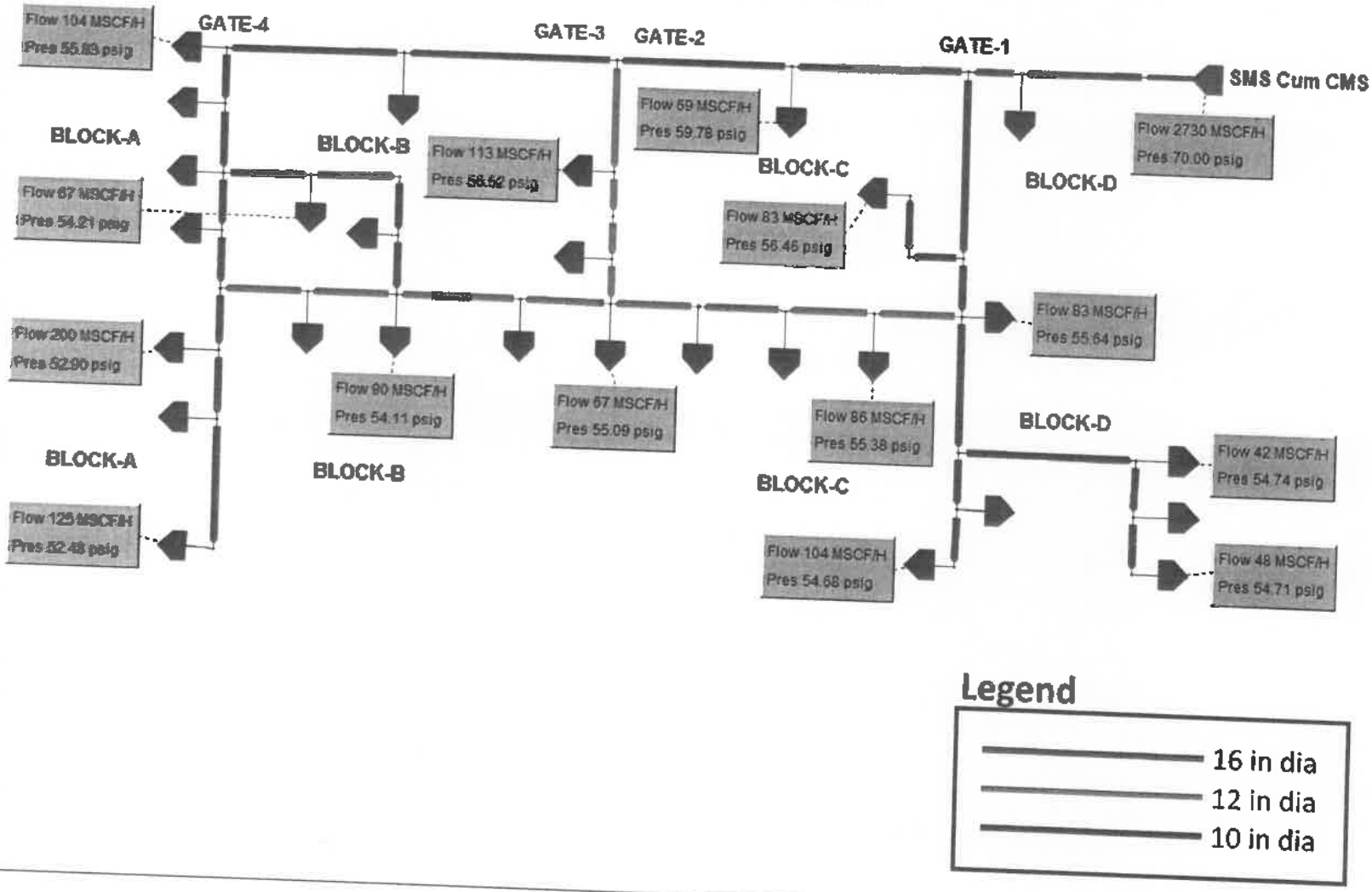
Scenario No-2 (SMS cum CMS Pressure = 90 psig)



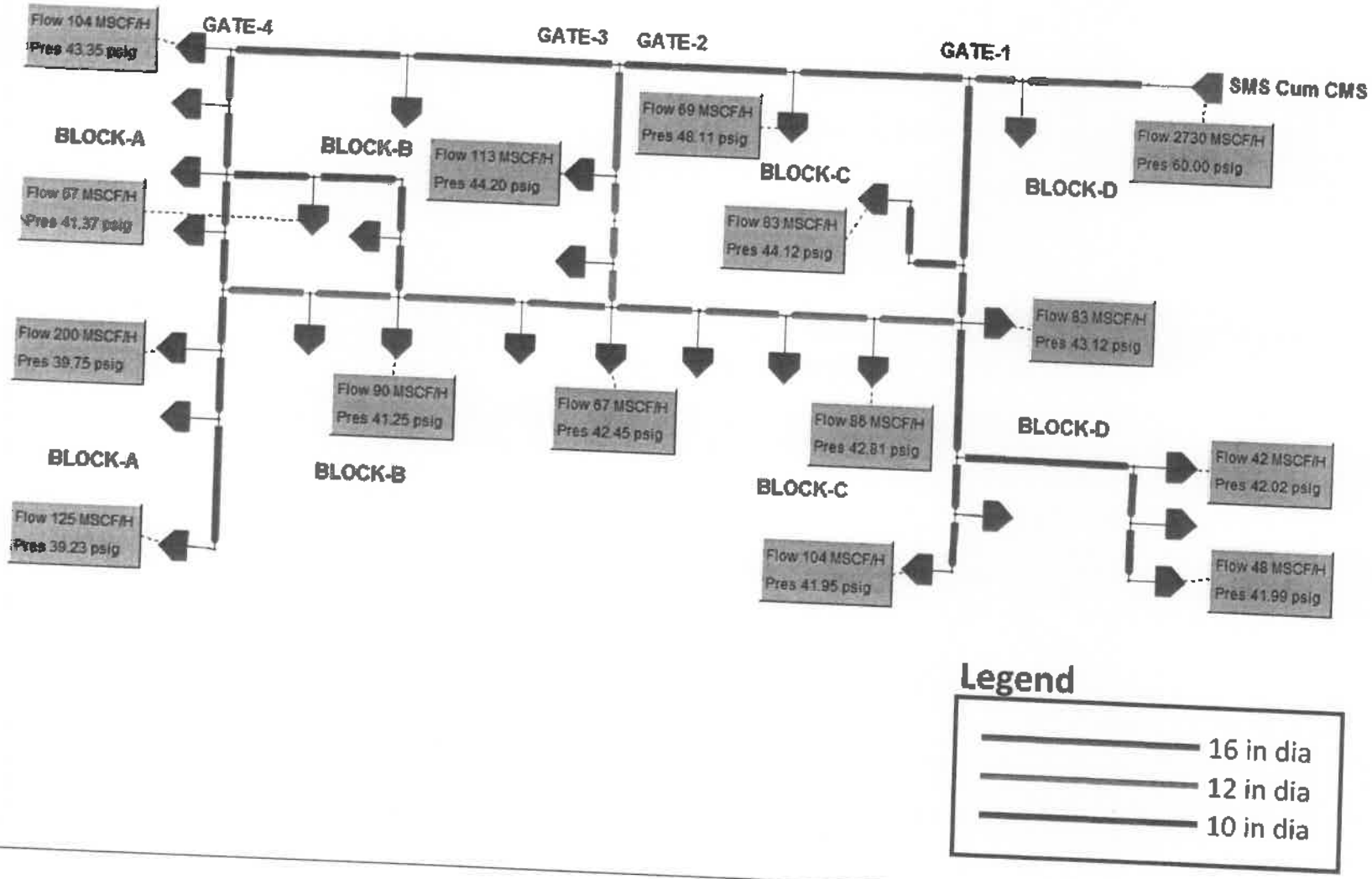
Scenario No-3 (SMS cum CMS Pressure = 80 psig)



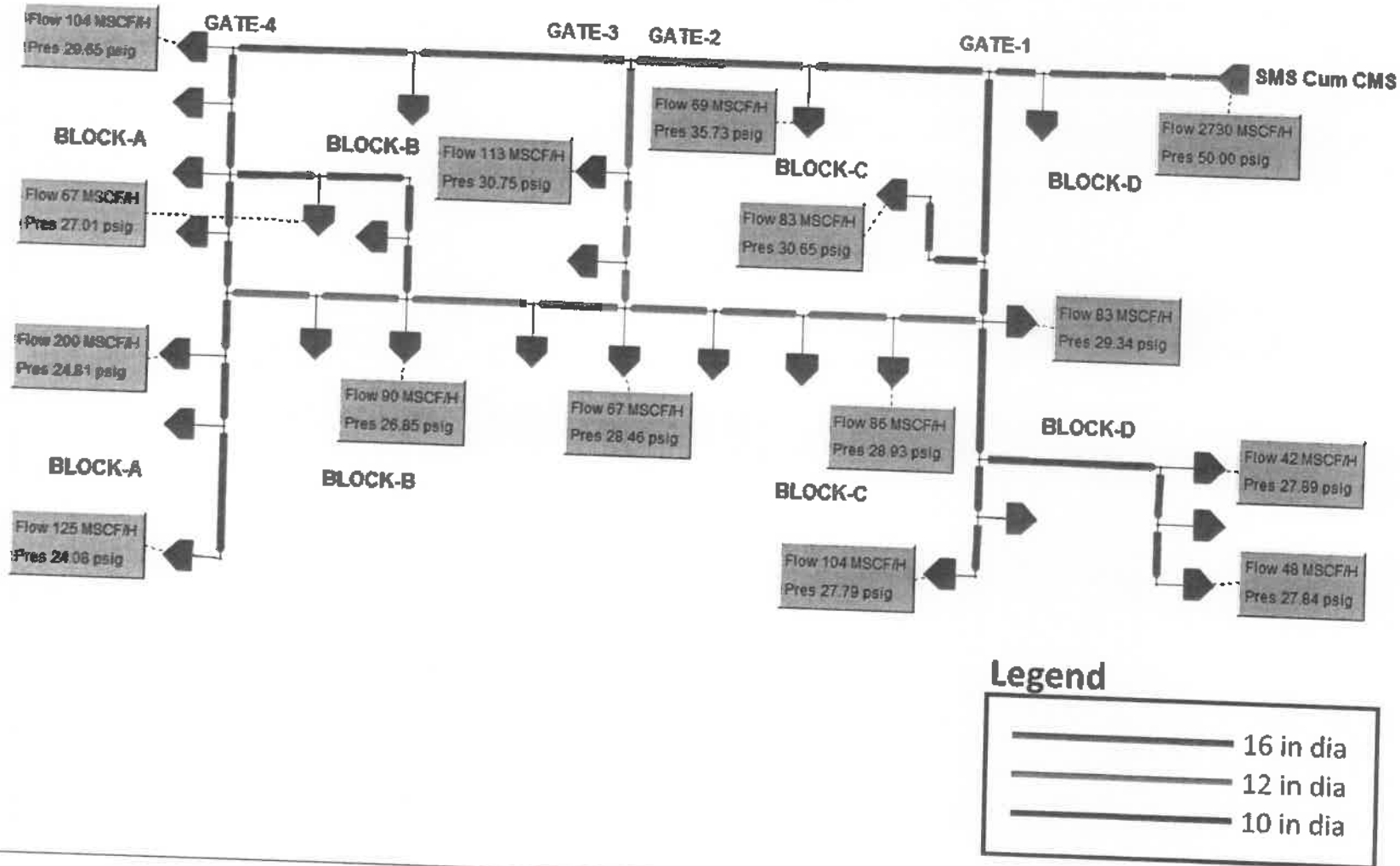
Scenario No-4 (SMS cum CMS Pressure = 70 psig)



Scenario No-5 (SMS cum CMS Pressure = 60 psig)



Scenario No-6 (SMS cum CMS Pressure = 50 psig)



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ATTACHMENT 2

DESIGNED GAS NETWORK LAYOUT

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Punjab Industrial Estate Development and Management Company (PIEDMC)

HEALTH, SAFETY AND ENVIRONMENT (HSE) MANUAL FOR QUIED -E -AZAM BUSINESS PARK (QABP)

Sr. No	Name	Designation	1st Draft	2nd Draft	Final
			Signature		

Date.....

Prepared by: Mr. Zeeshan Ali / Professional Engineer / PEC No.4664

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FORMS

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Employer Commitment to Health Safety and Environment

We are committed to making this workplace Environment Safe and healthy.

Health safety and environment policy

Management commitment

President Punjab industrial estate development and management company (PIEDMC-QABP), has signed our health safety and Environment policy, demonstrating the commitment of management to the health safety and environment of people working or involved with our organisation.

A copy of our health safety and environment policy is on the next page.

HSE POLICY

In the course of business, the Punjab Industrial Estate Development and Management Company (PIEDMC-QABP) identifies the following priorities:

- Safe working environment, protection of the health of staff and residents living in the Sundar Industrial Estate.
- Reduction of anthropogenic impact on the environment;
- Rational use of natural resources.

The Punjab industrial estate development and management company strategy in the field of industrial safety occupational health and environmental management is to create conditions corresponding to international standards, government and corporate regulations for industrial safety, occupational health and the environment protection.

One of the key conditions is personal responsibility of an employee for the solution of problems faced by the Residents and Board of Management Sundar Industrial Estate in the field of industrial safety, occupational health and the environment protection.

The most important goals of the Punjab Industrial Estate Development and Management Company (PIEDMC-QABP) in the field of Industrial Safety, Occupational Health and Environment Protection are:

- Improvement of industrial and environmental safety of hazardous production facilities by ensuring trouble-free operation of process equipment, introduction of effective methods of technical diagnostics of equipment;
- Identification and assessment of industrial hazards and risks of the Plot/ Plant / Company, minimization of industrial risks;
- Improvement of control over compliance with industrial and environmental safety at the production facilities of the Plot/ Plant / Company.
- Reduction of the negative environmental impact due to the introduction of new advanced technologies, equipment and materials;
- Rational use of natural resources.

To achieve these goals it is necessary to:

- Ensure compliance with current legislation, industrial, corporate and local regulations governing the Plot/ Plant / Company's activities in the field of industrial safety, occupational health and the environmental protection, as well as other external requirements in the field of industrial safety, occupational health and environment protection, which the Company has undertaken to perform;
- Carry out the identification and assessment of industrial hazards and risks, perform management activities, reducing industrial risks;
- Identify and eliminate harmful factors in the workplace;
- Take measures to prevent pollution of the environment;
- Give due consideration to the complex of pre-emptive measures to prevent the possibility of emergency situations, and if they occur, to take measures to reduce the consequences of emergency for the environment;
- Develop and adopt a set of measures for the prevention of occupational accidents and diseases;
- Provide training and development of the Company's employees in the field of industrial safety, occupational health and environment protection;

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- Bind contractors engaged in the production facilities of the Company to comply with applicable requirements of the Plot/ Plant / Company for industrial safety, occupational health and environment protection;
- Improve the working methods in the implementation of the Plot/ Plant / Company's policy in the field of industrial safety, occupational health and environment protection.

CEO
Punjab Industrial Estate Development and Management Company

(PIEDMC)

LOCAL LEGISLATION

Objective

The objective of these laws is to protect humans from being, subjected to injuries and illnesses. These laws ensure that employees work in a Healthy and Environmental friendly conditions. Employers should take precautions for the safety of its employees, for preventing accidents.

The objective of these laws is also to regulate workers. The provision of the act clearly shows that the said regulations are intended for the benefit & welfare of the workers.

Environmental commitment

Punjab Industrial Estate Development And Management Company (PIEDMC-QABP) shall take necessary measures to ensure safe working conditions, and to ensure safety and health of employees working therein. The minimum standards applicable at Punjab Industrial Estate Development And Management Company (PIEDMC-QABP) shall be those defined in the legal clause act No., such as:

Over Crowding

No workroom shall be overcrowded to an extent that is injurious to the health of the workers employed therein, so shall be provided at least 32.5m^3 (350 ft^3) of space for every worker employed in a workroom.

Cleanliness

The PIEDMC shall keep clean and free from effluvial arising from any drain, nuisance and in particular:

a) Accumulation of dirt and refuse shall be removed daily by sweeping or by any other effective method from the floors, chairs of work-rooms, staircases and disposed of in a suitable manner.

b) The floor of every room without carpets will be cleaned at least once in every week by washing, using disinfectant where necessary or by other effective method.

c) Where the floor is liable to become wet in the course of any manufacturing process to such an extent as is capable of being drained, effective means of drainage shall be provided and maintained.

d) Painted or varnished surfaces shall be repainted or re-varnished at least once in every five years.

e) Whitewashed or color washed shall be carried out at least once in every fourteen months.

f) All inside walls and partitions, all ceilings, or top and sides of rooms and walls, passages and staircases shall come under above point d) and e).

Discharge of wastes, effluents and air

According to the rules and regulations no person shall discharge or emit or allow the discharge or emission of any effluent or waste or air pollutant in an amount, concentration or level which is in excess of the National Environmental Quality Standards (NEQS)/ PEQS or, where applicable.

Ventilation and Temperature

In every workroom effective & suitable provisions for ventilation to maintain temperature shall be made:

a) Adequate ventilation by the circulation of fresh air.

b) Temperatures that will secure workers therein, to reasonable conditions of comfort and prevent injury to health, and in particular:

c) The walls and roofs shall be of such material and so designed that such temperature shall not be exceeded but be kept as low as practicable.

d) Where the nature of the work carried out involves or is likely to involve, the production of excessively high temperature, such adequate measures as are practicable shall be taken to

protect the workers, by separating the process which produces such temperature from the work-room by insulating the hot parts or by other effective means.

e) A thermometer shall be provided and maintained in such place and position as may be specified

Lighting

a) In every part of the Punjab Industrial Estate e where workers are working or passing, lighting shall be maintained and provided:

   i. Sufficient and suitable lighting, may be natural, artificial or both.

   ii. Emergency lighting at special points in work-room and passages to function automatically in case of a power failure of the ordinary electric system.

b) In the Punjab Industrial Estate all glazed windows and sky-lights used for the lighting of the work-room shall be kept clean on both the outer and inner surfaces and free from obstruction as far as possible.

b) c) In the Punjab Industrial Estate effective provisions should, as far as is practicable, be made for the prevention of:

   i. Glare either directly from any source of light or by reflection from a smooth or polished surface.

   ii. The formation of shadow to such an extent as to cause eyestrain or risk or accident to any worker.

Drinking water

Effective arrangements should be made to provide & maintain at suitable points conveniently situated for workers therein, sufficient supply of fresh & filtered drinking water as per WHO standards. Arrangements shall also be made for sufficient number of cups/ disposal glasses or other

drinking vessels, unless the water is being delivered in an upward jar.

Prohibited areas for dining

By nature of the work condition eating of food is prohibited in following areas:

a) Where poisonous/ harmful materials that propagate dust, smoke, fumes etc. are used.

b) Where employees are subjected to harmful radiation.

c) Where employees are subjected to pollution on parts of the body or the contamination to work clothes.

d) Where there is possibility of increase in rodents / reptiles and animals because of the leftover food which could become hazardous for the plant operations.

Toilets & Washing

Provision of sufficient and suitable wash basins for employees normally present in the place of work plus cleaning material for the cleaning thereof, sufficient toilets and change rooms cleaned and maintained continuously and separated for either sexes.

Latrines and Urinals

a. All such latrines and urinals shall be maintained in clean and sanitary conditions at all times with suitable detergent.

b. The floor and internal walls of the latrines & urinals and the sanitary blocks shall, up to a height of three feet, be finished to provide a smooth polished impervious surface.

c. Washing facilities shall be provided near every sanitary convenience.

Compulsory vaccinations and inoculation

Each employee shall be vaccinated and inoculated against such diseases and at such intervals as may be prescribed by the company doctor. The expenses, if any, of such vaccinations and inoculations shall be borne by the company.

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CONFINED SPACES

Precautions against entering confined spaces

No person shall be allowed or permitted to enter any Chamber, Tank, Vat, Pit, Pipe, fuel or other confined space in which dangerous fumes, low oxygen level and LEL are likely to be present to such an extent as to

a. Involve risk to a person's life, unless it is provided with a manhole of adequate size or other effective means of ingress.
b. No portable electric light of voltage exceeding twenty-four volts shall be permitted in any confined space and where the fumes present are likely to be flammable, a lamp or light of flameproof construction shall be permitted for use in such confined space.
c. No person shall be permitted to enter any confined space until all practicable measures have been taken to remove any fumes that may be present and to prevent ingress of fumes.
d. For entering Confined space Develop a procedure of confined space will be followed.

Explosive or Inflammable dust, gas, etc.

Different processes produce dust, gases, fumes, and vapours of such character and extent as likely to explode or ignite, all practicable measures shall be taken to prevent any explosion by:

a. Effective enclosure of the plant or machinery used in the process (Explosion proof type equipment)
b. Removal or prevention of accumulation of such dust, gases, fumes and vapours
c. Exclusion of effective enclosure from all possible sources of ignition

SAFETY CONCERN

SAFETY SIGNS AND NOTICES

Safety Signs and Notices shall be displayed in a prominent and obvious place in the work place. Clear and detailed instructions for prevention of fire, protection of employees from the dangers they may be subject to while performing their duties, ways of protection and methods of preventing accidents should be mentioned. The instructions shall be in Urdu or English. There should be displayed warning signs near places of danger and also fixed safe operating instructions near machinery operation.

First Aid

There should be a Trauma Centre / Hospital fully equipped, with doctors and attendants/ Emergency Medical Technicians. The Trauma Centre / Hospital should operate round the clock for attending any emergencies at the factories QABP Industrial Estate . In addition there should be at least Three Ambulances.

one for shifting patient from Factories site to own Trauma Centre / Hospital and other Two for shifting patients to the nearest hospitals for serious medical emergencies.

Storage of Chemicals

In Punjab Industrial Estate Factories, there should be a Warehouse where the chemical, catalysts and different type of gases being used on the plant are kept separate. All the chemicals being handled should have their MSDS (Material Safety Data Sheets) in which all their properties, type of effects, its first aid and firefighting measures are mentioned. All chemical and gases should be clearly marked with their hazard identification stickers.

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Safe Areas

Employees are forbidden to enter an area where machinery is operating unless dressed in clothing suitable to the nature of work, and in compliance with the orders specified by the plant for safety of employees.

Following shall be securely fenced by the safeguards of substantial construction that shall be kept in position while the parts of the machinery required being fenced are in motion or in use, mainly:

a. Every moving part of the prime mover & every flywheel connected to a prime mover
b. The hindrance and tailrace of every water wheel and water turbine
c. Any part of the stock bar which projects beyond head stock of a lathe and unless they are in such position or of such construction as to be as safe to every person employed in the industry, as they would be if they were securely fenced:
    i. Every part of an electric generator, a motor or rotary convector
    ii. Every part of transmission machinery
    iii. Every dangerous part of any machinery

Machinery with moving parts

All machineries, which have moving parts, must be considered as potentially hazardous and the persons may be in danger of being injured by coming into contact with a moving machinery safety precautions have to be taken:

a. Every dangerous part of all machinery must be securely guarded that must automatically prevent the machine operator coming into contact with a moving part of a machine.
b. All guards whether fixed or automatic must be constantly maintained and kept in position while the machinery is in service or on standby.
c. All guards must be of sound design and of adequate strength, sufficient to withstand the stresses of the process and environmental conditions.

d. Guards must be constructed in such conditions that do not create any hazard themselves.

e. Fixed guards must be checked to ensure that they are securely fastened in place that no access is possible from any point into the trapping area, and no secondary trap has been formed between the guard itself and any moving part of the machine.

f. Adjustable guards must be checked daily to ensure that the adjustable element of the guard remains firmly in place once positioned.

Pneumatic Systems

Compressed air is used to operate pneumatic tools and equipment. The following safety points should be considered in pneumatic system.

a. Pneumatic pressure testing must only be used if hydrostatic testing is unacceptable and pneumatic testing is unavoidable.

b. The compressed air supply must be properly regulated to the correct pressure, adequately filtered, dried and, where necessary, lubricated.

c. The means of disconnection from the air supply must be easily accessible and all pneumatic equipment's (tools, hoists etc.) must be disconnected from the air supply before changing attachments (tool bits, abrasive wheels etc.) or before carrying out any adjustments or dismantling.

d. Air Hoses and couplings of the recommended size and in good condition should be used and hoses must be safely routed to prevent damage due to heat, chemical or mechanical means.

e. Pneumatic drills are designed for use with drilling bits, which can be held by chuck or collet adapters. These drills must not be used for any other purpose without consulting the manufacturer.

f. Drill bits must not be larger than the rated capacity of the chuck or collet. Similarly, drill bits used with collets should be designed for one specific size or range of collet. The drill

bit must be inserted as far as possible into the chuck or collet and clamped securely and centrally (with the air supply isolated). Chuck keys must always be removed after use.

g. The work-piece must be sufficiently secure to accept the drilling operation without moving or turning, particularly when sharp edged sheet material is being worked on. Care should be taken to avoid jamming (seizing) of the drill. Thrust should be applied in the direction of drilling particularly with angle drills. If a side-handle or additional grip handle is used, it must be securely fixed.

h. Seizure or jamming of the drill bit causes a reaction torque, which may be dangerous with hand held drills. Lubrication and/ or a reduction in feed pressure should reduce the likelihood of the drill bit jamming.

Hydraulic systems

Hydraulic systems use fluid pressure to provide mechanical operation via jacks, actuators or hydraulic motors. Hazards to personnel operating or working on the equipment may occur due to the oils in the system, system pressure or inadvertent operation of the mechanical output of the system. Hydraulic equipment should be fully conversant with the proper procedures (Procedure for operation of Hydraulic system) should also be studied for its safe operation. Some necessities are:

a. The system operating pressure shown on the pressure gauge should be within the recommended operating range.

b. The equipment, if defective in any respect, should be effectively immobilized pending adjustment or repair.

c. Only correct grade of hydraulic fluid should be used for topping up a hydraulic system.

d. Before pressure is released from a system, any load on it should, where necessary, be adequately supported by other means.

e. Absolute cleanliness is essential to proper and safe operation of hydraulic systems; the working area and tools, as well as the system and its components, should be kept clean during servicing work.

f. Only those replacement components that comply with manufacturer's recommendations should be used.

g. Equipment under which personnel are required to work should be properly supported with chocks, wedges or by other safe means - never by jacks alone.

Fire concern

Precautions in Case of Fire

All Punjab Industrial Estate Development And Management Company offices shall be provided with proper means of escape in case of fire and Assembly Points.

a. In the plant the doors affording exit from any room shall not be locked or fastened so that they can be easily and immediately opened from inside while any person is within the room, and all such doors unless they are of the sliding type shall be constructed to open outwards or where the door is between two rooms in the direction of the nearest exit from the building and such door shall not be locked or obstructed while work is being carried on in the room & shall be kept free from any obstruction at all time.

b. Every window, door or other exit affording means of escape in case of fire, other than means of exit in ordinary use, shall be distinctively marked in Urdu or English and in red letters of adequate size or by some other effective and clearly understood sign.

c. There shall be provided effective and clearly audible means of giving warnings in case of fire to every person employed therein.

2.2 A free passageway giving access to each means of escape in case of fire shall be maintained for the use of all workers in every room of the Punjab Industrial Estate Development And Management Company Medical concern

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2.5.1 INSPECTIONS AND MEDICAL EXAMINATION / HR CONCERN REQUIRED ON IT

The inspections of Labourer concerned shall be able to take samples of any material used in industrial or other operations subject to inspection if they are believed to be harmful or injurious to health and safety of employees. The samples are to be analysed to find out the extent of the effects. If necessary, medical examinations may be authorized for employees. Medical checks are made for the working conditions and the effects on employees. Medical checks can be made inside the place of employment during working hours or outside after working hours.

Notification of Accidents

The accidents should be notified and the notification should be as follows:

a. In cases of death, fire or explosion, the notification should be made immediately after the accident occurs and through the fastest means of communication.

In case of disability of employees for three days or more notification shall be within twenty-four hours of the accident by the TOP Management of Punjab Industrial Estate Development And Management Company .

CONTRACTOR SAFETY DOCUMENT

Introduction

Health, Safety and Environment is gaining much attention around the globe. Different jobs are often contracted out to Contractors. Consequently, the effect of these contractors on overall safety in industries is gaining much importance. Therefore the selection of contractors capable of implementing proper HSE procedures is crucial for maintaining a high level of safety and continuous improvement.

For implementation of contractor safety system, the Building Control Department or Procurement & Contracting department shall nominate a Supervisor or Focal Person who will:

a) Supervise the Contract

b) Formally approve the contract

c) Ensure that approved and qualified contractors are selected

d) Periodically ensure adherence to the contract

e) Designate a Project coordinator who coordinates in his responsibilities under his supervision.

f) Responsible to communicate all the contractual requirements to the Contractor prior to start of the Contract and the Contractor followed all relevant safety standards

g) Monitor compliance with all HSE requirements as mentioned in the contract

h) Issue report on the performance of the Contractor

Improvement in contractor safety is achieved by the selection of contractors who meet the criteria, which is specified in the contract document. Contract Document is issued to prospective contractor at tendering stage, discussed in safety requirements, in order to appoint contractor at site before work commences which include:

a) Scope of work and Services included

b) Responsibility of PIEDMC

c) Responsibility of Contractor for HSE

d) Insurance requirements

e) Risk Assessment/ Method statement

f) Arrangement for selecting and managing sub-contractors

g) Arrangement for monitoring compliance with legislative requirements

h) Arrangement for HSE requirements

i) Recording and investigating of HSE incidents, injuries

SAFETY REQUIREMENTS CONCERNING CONTRACTORS

These are some basic safety requirements that apply to all work being carried out by the Contractors and their Subcontractors. The Punjab Industrial Estate Development And Management Company (PIEDMC) has developed Safety requirements for Contractors and Subcontractors to assure the safety of employees and the public who may be in proximity to construction or maintenance operations performed by Contractor or Subcontractor. Every Contractor is expected to take steps as necessary to protect the Health and Safety of employees during the performance of their work.

Each Contractor who sublets work to Subcontractor bears the sole responsibility for communication of safety related information and requirements to his subcontractors. Contractor shall ensure that their Subcontractors comply with the requirements outlined herein. These safety requirements do not in any way relieve contractors from any responsibility for compliance with the regulations as set out in the labour laws or other legal endorsement.

1. Pre-qualification
2. Risk management
3. Health risk management
4. Training
5. Performance and Reporting
6. Security and Emergency response
7. Non-compliance with HSE requirements
8. Housekeeping
9. Safe working procedures

Pre-qualification

Procurement & Contracting Manager (PIEDMC) is designated to ensure that only competent and approved contractors should be awarded the contracts. He should periodically ensure adherence to the contract. For ensuring competent and approved contractors, they need to be Pre qualified on the basis of:

1. Technical ability
2. Managerial ability
3. Past performance
4. Contractors HSE system
5. Insurance cover
6. Certification of equipment
7. Financial position

Technical ability

Contractors should have the appropriate technical ability to undertake the job.

a) Identify key personnel
b) Complete the profile of technical staff with their qualifications and relevant experience
c) Organogram of company
d) Ability to manage work as per contract agreement
e) Scope of work

Managerial ability

The ability of contractor to utilize its Manpower according to resources for the execution of jobs, including management, supervision of personnel, hiring of sub-contractors and effective

site.

Past performance

The contractor should have sufficient and appropriate experience and past track record to demonstrate their ability to perform similar type of jobs.

The following specific information may be required:

Details of Jobs performed

a) Contract type
b) Contract value
c) Duration of Contract
d) Client
e) Name and details of sub-contracts
f) Details of contracts being undertaken or recently completed within last 3-years
g) Completion certificate from client

Contractors HSE system

These requirements are for the purpose of giving the knowledge and confidence that contractors take Occupational Health and Safety system seriously and they have active and effective safety system in place to ensure compliance.

a) Assessment of sub-contractors & their ability to comply with HSE requirements.
b) Preparing safe work instructions and ensuring compliance with site safety rules.

c) Managing the rectification of unsafe work areas, equipment and materials.

d) Reporting and investigating accidents/ incidents and initiating actions.

Insurance cover

Contractors are required to produce satisfactory evidence of insurance cover in respect of their legal liabilities to third parties and their own employees. It is a condition of contract that any main contractor assumes the legal liabilities to the company and to third parties, which may be occasioned through the actions of any subcontractor or other body, employed or engaged by the contractor. This clause shall be implicated in the cases when required depending on size & nature of the job.

Certification of equipment

Contractors are responsible to ensure that all equipment brought on site conforms to acceptable standards. The Punajb Board of Management Sundar Industrial Estate (BOM-SIE) has the right to inspect equipment and reject any considered unsafe equipment. Such inspections will in no way diminish a contractor's responsibility for the operational safety of the equipment.

Financial position

During the pre-qualification phase, the contractor will be analyzed for their sound financial status in order to make sure that they are able to fulfill all the necessary requirements for that project.

Risk management

All Contractor employees must comply with Risk management requirements that are:

Risk Assessment process for each contract is the art of identifying the potential hazards at work place by which people could be injured during performance of their work. A risk assessment is nothing more than a careful examination of what in your work could cause harm to people so you can decide whether you have taken enough precautions or should do more to prevent harm. Risk

assessment of planned activities of contractor that shall be conducted to define high risk activities include these basic steps:

a) Look for the hazards e.g. pieces of equipment, hazardous substances
b) Decide who might be harmed and how e.g. staff, employees and public
c) Evaluate the risk and decide whether the existing precautions are adequate or whether more should be done
d) Record the findings
e) Regularly review of assessments and revise them

The Procurement Department of Punjab Industrial Estate & Development Company (PIEDMC) Quaid-e-Azam Business Park (QABP) or Building Control Department during the Risk Assessment process may seek advice from Health Safety & environment Department Head (HSE) to help out.

Appropriate Systems of work defined means that the Contractor should have the workplace procedures/ instructions regarding their jobs like Confined space entry, Hot work, Electrical isolation, Lockout or tag out, Chemical handling, excavation, Scaffolding, use of PPE's, tools, cranes, slings etc and safety management plan. To ensure that these working procedures meet the requirements of standards for doing any job is the responsibility of Procurement and Contracting Manager or Building Control Department.

HSE instruction for risk assessment provided means for every critical job like Welding, Cutting, Hot bolting in hazardous areas or the job, which is going to be conducted first time, Job Safety Analysis (JSA) will be done. The JSA will be done by the HSE Officer, the relevant maintenance Incharge, Contractor Safety Supervisor/officer and job relevant Supervisor. The HSE department will review the JSA. After completion of work, if any new points that has to be considered must

note down in JSA and with amendments of these points in JSA forward it to HSE department. Ensuring of JSA is responsibility of HSE department.

Equipment Inspection and maintenance is the responsibility of Project Team / Building Control Department BOM-SIE / Contractor Designated Staff that he makes Inspection schedule of all equipment's and maintain them in good condition. Unsatisfactory or defective tools/ equipment must be tagged out of service with color-coding. The designated Safety Supervisor of Contractor in coordination with Building Control Department PIEDMC QABP Supervisor will also do the audit of tools once a week and give a report to HSE department.

Health Risk Management

All Contractor employees must comply with Health risk management requirements that are:

Medical fitness of Contractor is the main issue of Health risk management. Contractor will provide complete medical record of each employee to Building and Control Department / HR Department or Project Team of Respective department of QABP , before commencing any work. These records are confidential and will be retained indefinitely in the custody and control of respective Project Team leader.

First aid and medical cover to the employees of contractor is the responsibility of Contractor. The contractor should manage first aid boxes and in case of injury or accident, provide medical cover to his employees.

Appropriate Personal Protective Equipment will be provided by contractor. The Contractor will standardize their PPE's standard w.r.t to Project Requirement and will get them approve from HSE Department of QABP . So Contractor will provide all Personal Protective Equipment's of to all his / her employees as per the job requirements.

The Basic PPE's are:

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a) Coveralls made of 100% cotton
b) Safety shoes, ankle with steel toe protection
c) Helmets
d) Goggles/ Spectacles with side protection
e) Cotton / PVC / Leather Gloves
f) Ear plugs
g) Gas masks
h) Safety Harness/ belt

Health Safety & Environment Department (HSE) of QABP will provide these specialized equipment to Contractor such as Self-contained breathing apparatus (SCBA), Airline respirator, Lifelines, Gas masks, gum boats, Heat/ Chemical Resisting clothing etc.

Instructions/ Training for use of PPE's will be given by HSE Department of QABP to employees and Contractor Supervisors if required. The Contractor Supervisors shall ensure about the ***implementation*** of use of PPE's of their workers in Sundar Industrial Estate premises. HSE Department will enforce all QABP employees and Contractor employees to use appropriate PPE's as per the job requirements of the Project with close coordination of the other departments of QABP.

Training

Training program for each Contractor and their employees is the necessary element at the start of contract. So training program includes:

Induction process for contractor and their employees is that the Contract Manager sends the list of people to HSE Department for safety induction of all contractor employees. The HSE

department will manage a detailed training program relating to Health and Safety issues for these Contractor employees.

Induction training provided and verified regarding to contractor is the entire responsibility of HSE Department of QABP Department / Engineer to ensure that each Contractor employees has provided induction training and then verified it by checking their attendance.

Regular safety talks will be given to Contractor/ Subcontractor employees before starting of each job for safe working on site is the entire responsibility of Contractor supervisors. On the other hand they also give safety talks weekly to employees regarding to safety concerns reported during previous jobs. To ensure about these talks is the responsibility of Project coordinator.

Toolbox talks will be given every day to Contractor supervisors and employees by the designated Safety Supervisor of Contractor and he will also make a record of these toolbox talks like work permit system, Confined space entry, Hot jobs, Welding, lifting equipment's and their use, Scaffolding, ERP, Reporting of Incidents/ Accidents, JSA, use of PPE's etc.

Training provided to contractor is an important issue. The HSE Department will make a schedule of trainings on different safety related topics and send a copy of this schedule to all departmental heads. The departmental head will nominate, and send a list of names of Contractor Supervisors, who attend the trainings, to HSE Department department. The ***validation*** of these trainings will be done by the test. HSE Department will maintain the attendee's record and if the persons nominated for training are absent, their names will be sent to H.O.D of Respective Department.

HAZARD MANAGEMENT

HSE department of QABP can develop an active process to manage hazards: we identify hazards, assess them, control them and regularly review controls and develop whole hazard management system.

HAZARD MANAGEMENT DEFINITIONS

Hazard

(a) Means an activity, arrangement, circumstance, event, occurrence, phenomenon, process, situation, or substance (whether arising or caused within or outside a place of work) that is an actual or potential cause or source of harm; and

(b) Includes -

(i) A situation where a person's behaviour may be an actual or potential cause or source of harm to the person or another person; and

(ii) Without limitation, a situation described in subparagraph (i) resulting from physical or mental fatigue, drugs, alcohol, traumatic shock, or another temporary condition that affects a person's behaviour.

Significant hazard

Means a hazard that is an actual or potential cause or source of -

(a) Serious harm; or

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(b) Harm (being harm that is more than trivial) the severity of whose effects on any person depend (entirely or among other things) on the extent or frequency of the person's exposure to the hazard; or

(c) Harm that does not usually occur, or usually is not easily detectable, until a significant time after exposure to the hazard.

Harm

(a) Means illness, injury, or both; and

(b) Includes physical or mental harm caused by work-related stress.

Serious harm

Means death, or harm described in the First Schedule to the Act as follows:

1. Any of the following conditions that amounts to, or results in, permanent loss of bodily function, or temporary, severe loss of bodily function: respiratory disease, noise-induced hearing loss, neurological disease, cancer, dermatological disease, communicable disease, musculoskeletal disease, illness caused by exposure to infected material, decompression sickness, poisoning, vision impairment, chemical or hot-metal burn of eye, penetrating wound of eye, bone fracture, laceration or crushing.
2. Amputation of body part.
3. Burns requiring referral to a specialist registered medical practitioner or specialist outpatient clinic.
4. Loss of consciousness from lack of oxygen.
5. Loss of consciousness, or acute illness requiring treatment by a medical practitioner, from absorption, inhalation or ingestion of any substance.
6. Any harm that causes the person harmed to be hospitalised for a period of 48 hours or more, commencing within seven days of the harm's occurrence.

All practicable steps

1. …in relation to achieving any result in any circumstances, means all steps to achieve the result that it is reasonably practicable to take in the circumstances, having regard to -
   (a) The nature and severity of the harm that may be suffered if the result is not achieved; and
   (b) The current state of knowledge about the likelihood that harm of that nature and severity will be suffered if the result is not achieved; and
   (c) The current state of knowledge about harm of that nature; and
   (d) The current state of knowledge about the means available to achieve the result, and

about the likely efficacy of each of those means; and

(e) The availability and cost of each of those means.

2. To avoid doubt, a person required by this Act to take all practicable steps is required to take those steps only in respect of circumstances that the person knows or ought reasonably to know about.

Eliminating hazards

Significant hazards to employees to be eliminated if practicable.

Where there is a significant hazard to employees at work, the employer shall take all practicable steps to eliminate it.

Isolating hazards

Significant hazards to employees to be isolated where elimination impracticable, where -

(a) There is a significant hazard to employees at work; and

(b) Either -

(i) There are no practicable steps that may be taken to eliminate it; or

(ii) All practicable steps to eliminate it have been taken, but it has not been eliminated

The employer shall take all practicable steps to isolate it from the employees.

Minimising hazards

Significant hazards to employees to be minimised, and employees to be protected, where elimination and isolation impracticable

1. Where -

(a) There is a significant hazard to employees at work; and

(b) Either -

(i) There are no practicable steps that may be taken to eliminate it; or

(ii) All practicable steps to eliminate it have been taken, but it has not been eliminated; and

(c) Either -

(i) There are no practicable steps that may be taken to isolate it from the employees; or

(ii) All practicable steps to isolate it from the employees have been taken, but it has not been isolated, -

The employer shall take the steps set out in subsection 2.

2. The steps are -

(a) To take all practicable steps to minimise the likelihood that the hazard will be a cause or source of harm to the employees; and

(b) To provide, make accessible to, and ensure the use by employees of suitable clothing and equipment to protect them from any harm that may be caused by or may arise out of the hazard; …

Hazard identification

Methods used for identifying hazards

We use several methods to identify hazards:

- Workplace inspections
- Task or job analysis
- Safety observation
- Accident, incident or near-miss investigation
- Process analysis
- Area analysis
- Injury data analysis
- Employee feedback

Who is involved in hazard management?

The people listed below are involved in our hazard management processes.

Sr. No.	Name/ Designation	Organization / Email / Contact Number	Skills and experience in hazard management

Hazard reporting

We encourage all employees to report any hazards they observe, using the hazard reporting sheet on the next page.

HSE DEPARTMENT OF QABP HAZARD REPORTING SHEET		
Department / Plot No.	Date	
What is the Hazard		
Where and how would contact with the hazard occur?		
Who comes into contact with the hazard? How often does contact occur?		
What harm would normally happen if someone comes into contact with the hazard?		
Suggested actions:		
Name :	Signature :	

Hazard Register

We list all identified hazards on our hazard register.

The next page has an example of our register. It includes the significance of hazards and the practicable steps (elimination, isolation or minimisation) we've taken to control them.

Hazard	Significant		Practicable to eliminate		All practicable steps to minimise		Controls required(including existing)		Person Responsible	Date to be completed by	Completed (date and initials)
	Y	N	Y	N	Y	N	Y	N			

Return to work

Return to work

In the event of work-related injury or illness we ensure our employees receive appropriate medical treatment and assessment as quickly as possible. HR Department or ISU Deptt is responsible for establishing and maintaining early contact with all injured or ill employees, regardless of whether it is a work-related injury or not.

Employees with work-related injuries

If an employee suffers any injury at work, they must report it to their supervisor as soon as possible and record it in the accident register.

If they require medical assistance, the doctor or hospital will complete Medical form(OPD or other Medical Form) , which the employee must present to management as soon as possible.

Alternative duties may be allocated until the injured employee is fit to return to their normal duties. In addition, the injured employee may be able to get extra assistance. All of these options should be discussed by the company, the employee, HR Department Representative as required.

Monitoring and reviews

We ensure our health and safety system is monitored and reviewed:

- We use the check sheet on the following page to do this.
- We monitor known hazards to determine whether the hazards continue to exist and the controls remain effective. We record inspections and update the hazard register.
- We monitor workplace conditions and practices and identify new hazards that may arise. We record inspections and update the hazard register.
- We annually review our systems using the self-assessment audit.
- We review and update our health and safety plans and objectives each year.
- We review all procedures and hazard management controls after each significant and potentially damaging event.
- We review all injury data each year and use this information to identify appropriate goals for the safety plan.
- We review this health and safety manual each year, to ensure the policy has been updated and signed and documentation is updated.
- We review the health and safety responsibilities designated to staff, each year.

Monitoring and reviews check sheet

Topic/task	Review date	Person(s) responsible
Monitor known hazards		
Monitor workplace		
Self-assessment		

Review health and safety plan		
Review significant events		
Review injury data		
Review health and safety manual		
Review health and safety responsibilities		

OCCUPATIONAL HEALTH

Noise

The word "noise" is derived from the Latin word "nausea," meaning seasickness. Noise is among the most invasive pollutants today. Noise is different than sound. Sound is pleasant hearing, while noise is the over exposure of pressure

Waves which irritates your ears and eventually damage the inner ear, making it a permanent loss.

Noise from road traffic, compressors, motors, drilling, grinding, Pneumatic pressure testing, construction equipment, manufacturing processes, lawn movers, and boom boxes, to name a few, are among the audible litters. Noise is defined as an unwanted sound; it is an inescapable part of everyday life. Noise can destroy a person's hearing. People do not easily become accustomed to

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noise. The slightest unwanted sound can become very annoying if it continues for any length of time.

Noise negatively affects human health and well-being. Subjected to 45 decibels of noise, the average person cannot sleep. At 120 decibels the ear registers pain, but hearing damage begins at a much lower level, about 85 decibels. The duration of the exposure is also important. Apart from hearing loss noise can cause lack of sleep, irritability, heartburn, indigestion, ulcers, high blood pressure, and possibly heart disease. One burst of noise, as from a passing truck, is known to alter endocrine, neurological, and cardiovascular functions in many individuals; and in general reduces the quality of life and opportunities for tranquility. Exposure to such noise tends to make the physiological disturbances chronic. In addition, noise-induced stress creates severe tension in daily living and contributes to mental illness.

Noise intensity is measured in decibel units. The decibel scale is logarithmic; each 10-decibel increase represents a tenfold increase in noise intensity. Human perception of loudness also conforms to a logarithmic scale; a 10-decibel increase is perceived as roughly a doubling of loudness. Thus, 30 decibels is 10 times more intense than 20 decibels and sounds twice as loud; 40 decibels is 100 times more intense than 20 and sounds 4 times as loud; 80 decibels is 1 million times more intense than 20 and sounds 64 times as loud.

Distance diminishes the effective decibel level reaching the ear. Thus, moderate auto traffic at a distance of 100 ft (30 m) rates about 50 decibels. To a driver with a car's window open or a pedestrian on the sidewalk, the same traffic rates about 70 decibels; that is, it sounds 4 times louder. At a distance of 2,000 ft (600 m), the noise of a jet taking off reaches about 110 decibels—approximately the same as an automobile horn only 3 ft (1 m) away.

The given Table-1 is showing duration per day in hours, against allowable noise exposure levels as per Occupational Safety and Health Administration Standards (OSHA).

Table 1 Noise level Vs. Duration

Noise Levels dba (hrs)	Duration Per Day (hrs)
8	85
6	88
4	92
3	97
2	100
1-1/2	102
1	105
½	110
¼ or less	115

There are two types of hearing loss: conductive and sensorineural (see fig.19.1.) for anatomy of ear).

Sensorineural hearing loss, the most common form in the World, occurs as a result of advancing age as well as exposure to loud noises. In both instances there is a disruption of the organ of Corti. The organ serves two functions: converting mechanical energy to electrical and dispatching to the brain, a coded version of the original sound with information about frequency, intensity, and tone. The hair cells of the organ of Corti send their electrochemical signals into the central nervous system, where the signals are picked up by thousands of auditory nerve fibers and transmitted to the brain. It is the decoding of all the information that enables a person to distinguish the unique sounds of a violin, trumpet, and clarinet; even though all three may be playing at the same time.

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The organ of corti, a gelatinous mass, is on of the best protected parts of the body, encased as it is within the cochlea which in turn is deeply embedded in the temporal bone, perhaps the hardest of the 206 bones (Bugliarello, et al., 1976). Never the less, loud noise can damage the hair cells and the auditory nerve, producing at times, depending on the type of noise, sudden and often total deafness.

Sustained noise over a period of time can also engender sensorineural deafness in the form of gradual losses in hearing. This is the most common loss in teenagers today listening to loud rock music (Bugliarello, et al., 1976).

Until a few years ago, sensorineural deafness could not be helped by hearing aids. However, with advances in electronic wizardry and miniaturization, devices for insertion into the auditory canal are available.

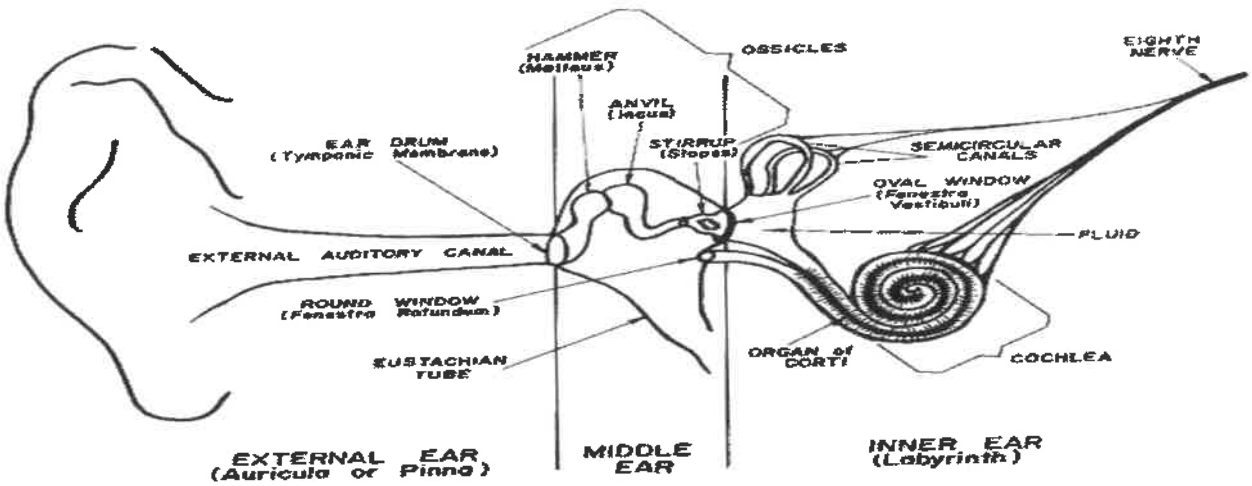

Figure 1 Anatomy of the Ear

Research shows that at least 30 million Americans (About 11% of the population) are exposed to excessive noise every day. About 10 million Americans have already sustained hearing loss to repeated exposure to hazardous levels of noise.

We experience noise in a number of ways. On some occasions, we can be both the cause and the victim of noise, such as when we are operating noisy appliances or equipment. There are also instances when we experience noise generated by others just as people experience second-hand smoke. While in both instances, noises are equally damaging, second-hand noise is more troubling because it has negative impacts on us, but is put into the environment by others, without our consent.

Noise is recognized as a controllable pollutant that can yield to abatement technology.

In order to control noise induced hearing loss. It is important to have a noise monitoring management system, through which the potential areas of high noise are defined and properly sign posted to ensure that people who work in these areas wear hearing protection.

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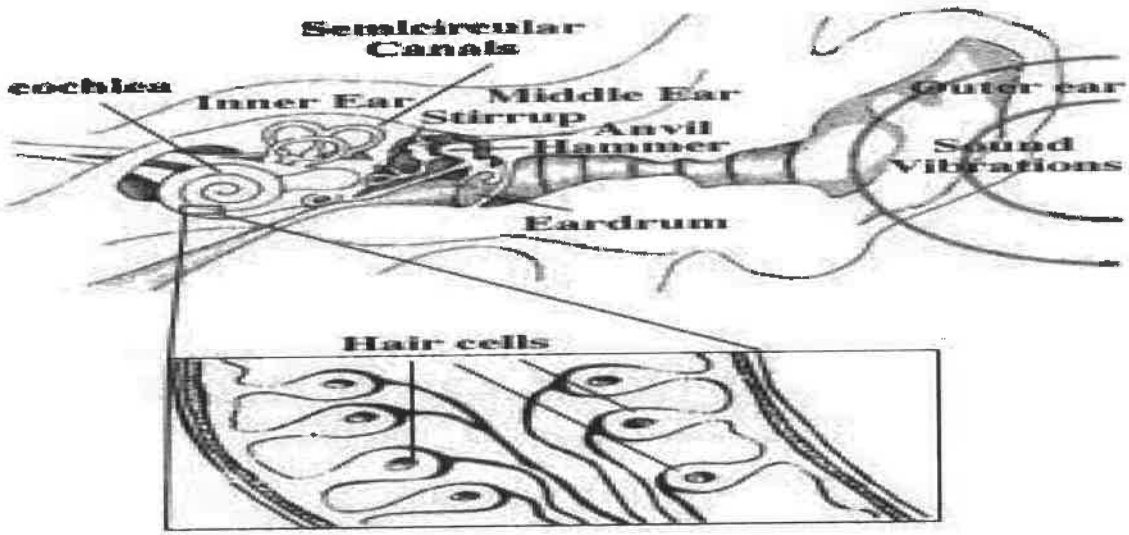


Audiometer testing of employees can help determine the areas of concern were people are exposed to high noise.

Noise induced hearing loss is preventable, if proper Personal Protective Equipment's, such as the Ear Plugs and Ear Muffs are used in all high noise areas were prolonged exposure is expected.

Ergonomics

The term "Ergonomics" is derived from the two Greek words:

"Ergon" meaning, "work" and;

"Nomoi" meaning, natural laws

Ergonomists study human capabilities in relationship to work demand

COMPUTER ERGONOMICS

Routine PC user defined as spending 20 hours or more per week working at a computer. Studies of PC users have not shown a risk of eye damage...although fatigue very possible. Workers using bi / tri-focal glasses before beginning PC use may need special purpose glasses for computer work.

These days office work means long hours sitting in front of a computer & the result is tired muscles, stiffness, and irritability, fatigue & above all the eyestrain. If you are working for along time then the work can be pleasant & less

irritable if you follow simple rules provided here for your comfort & fitness.

How can you get this, let us start?

a) Common Pains

Problems that can develop from ignoring poor computer use habits;

a) Headaches from facial tension and staring at the screen too long.

b) Back pain from slouching.

c) Wrist pain or permanent injury from Tendonitis or Carpal Tunnel Syndrome

70% of Carpal Tunnel

62% of Tendonitis

d) Backaches & Sore Muscles by sitting on uncomfortable chair

e) Stiffness, Aches & Pains to wrist & arms from typing too long or by unnatural position of arms

f) Headaches & Eyestrain from staring at PC or by reading matter that is hard to see

g) Body Aches from working long without any break

b). **Tendonitis and Carpal Tunnel Syndrome**

Tendonitis is the most common problem associated with computer overuse. It is an inflammation of the tendon. It may be felt as pain or a grinding sensation during movement of the elbow, forearm, wrist or hand. There are three stages:

i. Slight pain after extended computer use

ii. Pain during and after computer use

iii. More constant pain

Carpal Tunnel Syndrome is a repetitive stress injury. It results from nerve damage to the median nerve running through the palm side of the wrist. This is why wrist position during computer use is so important. Symptoms include:

i. Pain and tingling in the thumb and first 3 fingers which may occur at night

ii. Decreased muscle mass in the thumb

iii. Decreased sensation or coordination

c) Posture

In recent years, ergonomists have attempted to define postures, which minimize unnecessary static work and reduce the forces acting on the body. All of us could significantly reduce our risk of injury if we could adhere to the following ergonomic principles:

i. All work activities should permit the worker to adopt several different, but equally healthy and safe postures

ii. Where muscular force has to be exerted the largest appropriate muscle groups available should do it.

iii. Work activities should be performed with the joints at about mid-point of their range of movement. This applies particularly to the head, trunk, and upper limbs.

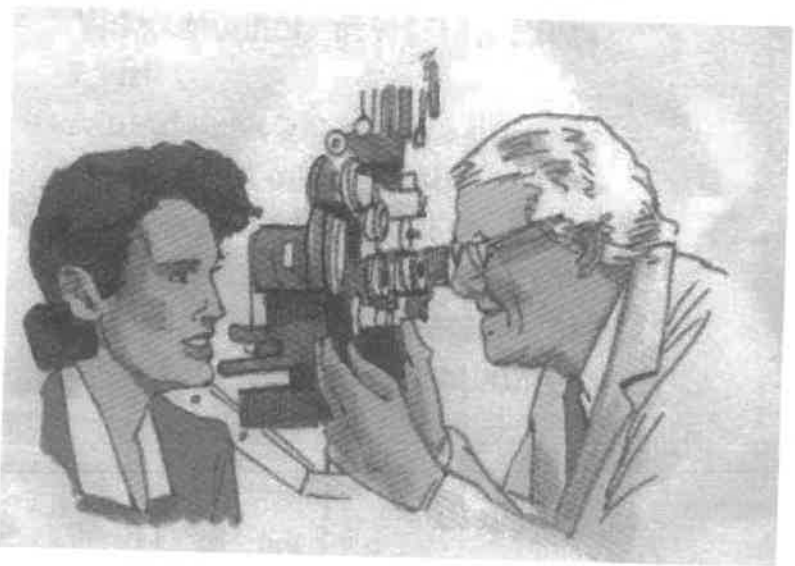
How to Relieve Yourself

a. Eyes

i. Position the screen as far as you can read anything clearly.

ii. Bifocal wearers use contact lenses or single correction reading strength glasses or you can use trifocals that make it easier to look at screen without craning.

The persons using contact lenses should notice their eyes becoming irritated if heat



b) Regular Check-ups

Get regular eye check-up i
if you are not suffering fro

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Eyestrain.

c) Working Area

a) The table for your computer should be of right size, height & big enough.

b) The keyboard should be moveable & it should have built in height adjustment pegs.

c) Your wrist should be straight & fore arms parallel to the floor while typing. If possible then use a padded wrist rest if you type a good deal.

d) The desk/table should be large enough to provide space for writing & doing other work comfortably.

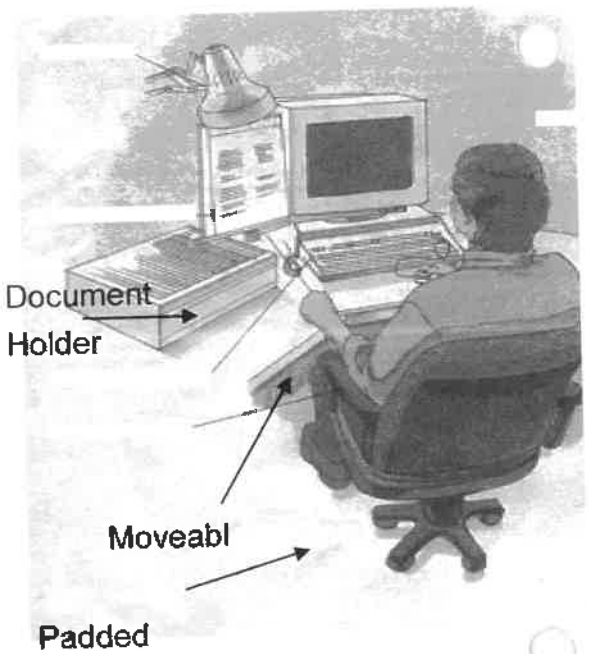
e) Adjust the light so that it does not cast a reflection on monitor screen.

f) The screen should be adjusted so it would not reflect any light from windows / overhead lights.

g) If you are typing a document then place the document in a holder at the same height as of the monitor for easy reading.

h) The monitor's distance from eye should be at least four feet.

i) The table's surface should not reflect any light into your eye.



d) **Chair**

a) Chair should be fully padded & adjustable.

b) Always use a footrest if your feet are not resting comfortably on the floor.

c) Adjust the height of chair so that your arms & wrist are straight when your hands

d) Are on keyboards.

e) The front edge of chair should curve down as hard edge hinders blood circulation & put legs & feet to sleep.

f) Backrest of the chair should provide good lower back support.

g) The chair must be on rollers so that it's easy for you to scoot to answer the phone, read or write at your table.

How To Use It

a) Sit straight to avoid strain in your neck & back.

b) Place the monitor at a normal reading distance. Top must level your forehead.

c) When you type, make sure your forearms are level & wrists straight.

d) You should shift your sitting position throughout the day to relax.

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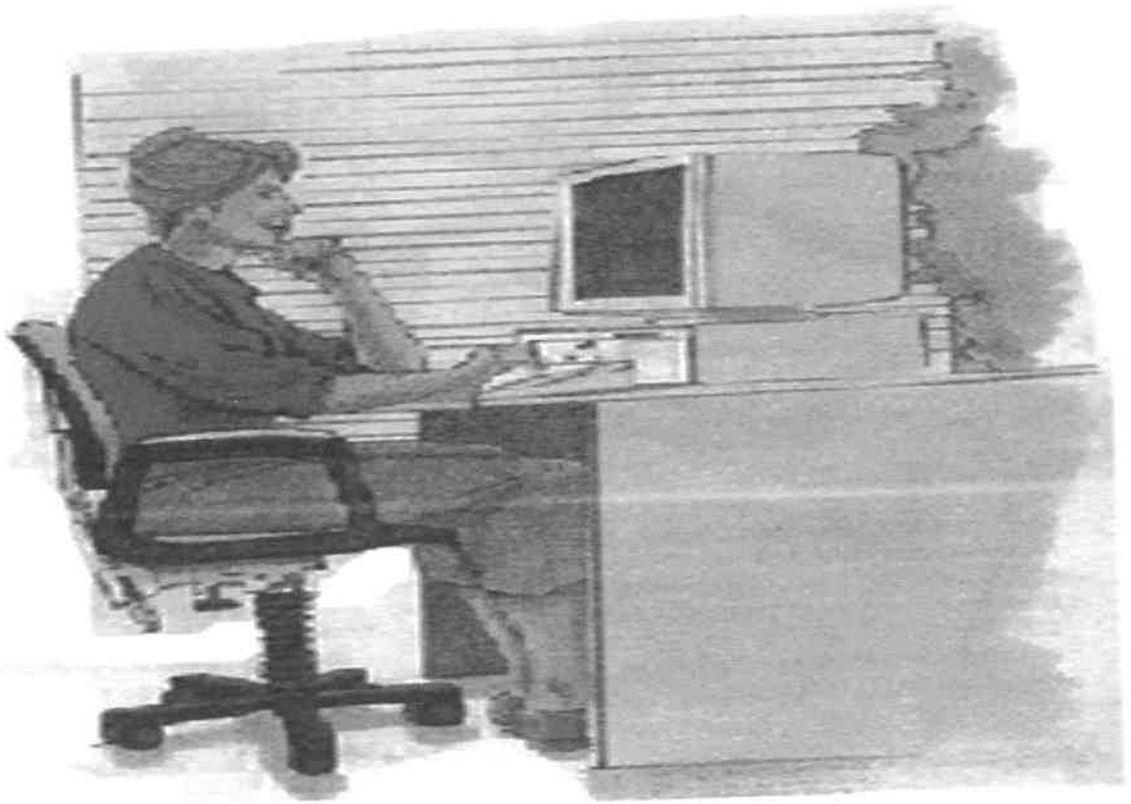

HSE PLAN OF QABP

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QUAID-E-AZAM BUSINESS PARK (QABP) HEALTH SAFETY AND ENVIRONMENT PLAN FY-2020-21

Sr No.	Objectives	Action Plan	Responsible	Time Line	Remarks / Status
01	Objective 1				
02	Objective 2				
03	Objective 3				
04	Objective 4				
05	Objective 5				
06					
07					
08					
09	Objective 9				

PERSONAL PROTECTIVE EQUIPMENT

Personnel protective equipment (PPE) is issued to all employees for specific tasks.

There are two forms on the next page. One is a register that helps us to track and maintain our PPE. The other is used when we issue PPE. It includes a date of issue and requires employees to state the training they're received enabling them to use the PPE.

Health Safety & Environment (HSE) Department of Quied-e-Azam QABP will train its employees in the correct use of PPES.Not wearing correct PPE will result in disciplinary action.

PERSONAL PROTECTIVE EQUIPMENT REGISTER

Equipment	When to be used (hazard)	Maintenance guidelines	Replacement (date or condition)

HEALTH SAFETY & ENVIRONMENT (HSE) DEPARTMENT OF QUAID-E-AZAM BUSINESS PARK (QABP) PERSONAL PROTECTIVE EQUIPMENT – FOR ISSUING EQUIPMENT

Name	Equipment	Training provided	Issue date	Date returned

SAFETY INSTRUCTIONS

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Safety guidelines for Employees/ Contractors

a) Access to QABP all facilities and Offices is controlled through Identity card/ Security passes. Please ensure proper display of this Card.

b) Employees/ Contractors are forbidden to carry mobile phones, matches, lighters, cameras, weapons, radio, tape recorder and other such electronic/ electrical gadgets in Electric Grid or operating areas of Different Industries of QABP.

c) Visitor to QABP Offices are allowed only if accompanied by a QABP employee.

d) QABP Staff in Operating areas of any plot shall not wear loose clothing and shall have Coverall, safety helmet, safety shoes, earplugs and Gas Masks (If required) as a minimum requirement.

e) Speed limits displayed on the roads shall be strictly adhered to. Ignition key shall be left inside the vehicle when left unattended. Do not leave vehicles obstructing traffic. Vehicles only to be parked in designate parking areas.

f) Give way to emergency vehicles, such as Fire Tenders, Rescue Vehicles Ambulances etc.

g) All accidents and personal injuries that will occur inside the QABP premises shall be immediately reported to HSE Department /Emergency Agency / Rescue-1122

h) Smoking is restricted to authorize smoking shelter or Designated Smoking areas in QABP Offices.

i) Siren is to warn people in case of fire/ Emergencies. When hearing the siren, approach to the nearest Assembly point/ safe location. HSE Department of QABP fire siren is tested at 1100 hours every Monday.

Posters

Posters should be used to convey fundamental action in the event of emergency to site personnel. The posters should be colourful and, which use block diagrams or flowcharts to convey instructions, are effective if they are not too detailed.

The Purpose of posters is:

a) To visually communicate

b) To avoid audience being read to

c) To provide up-close exchange of ideas

d) To transmit visual sensory message by utilizing the sign, symbols, objects and relationships graphically

e) To maximize opportunities to disseminate research findings

f)

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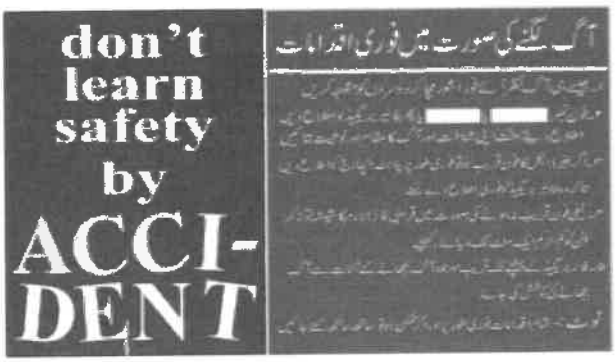
FIND
INFORM
RESTRICT
EXTINGUISH

GET FIRST-AID
FAST
ابتدائی طبی امداد فوراً حاصل کریں

اپنی کمر کا خیال کریں
بوجھ اٹھانا ہو تو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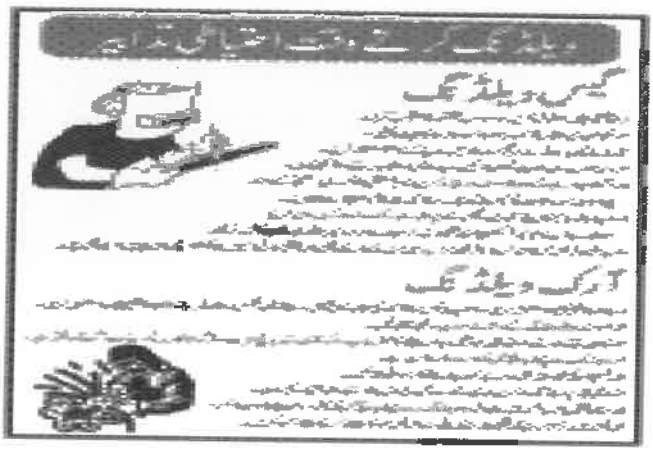

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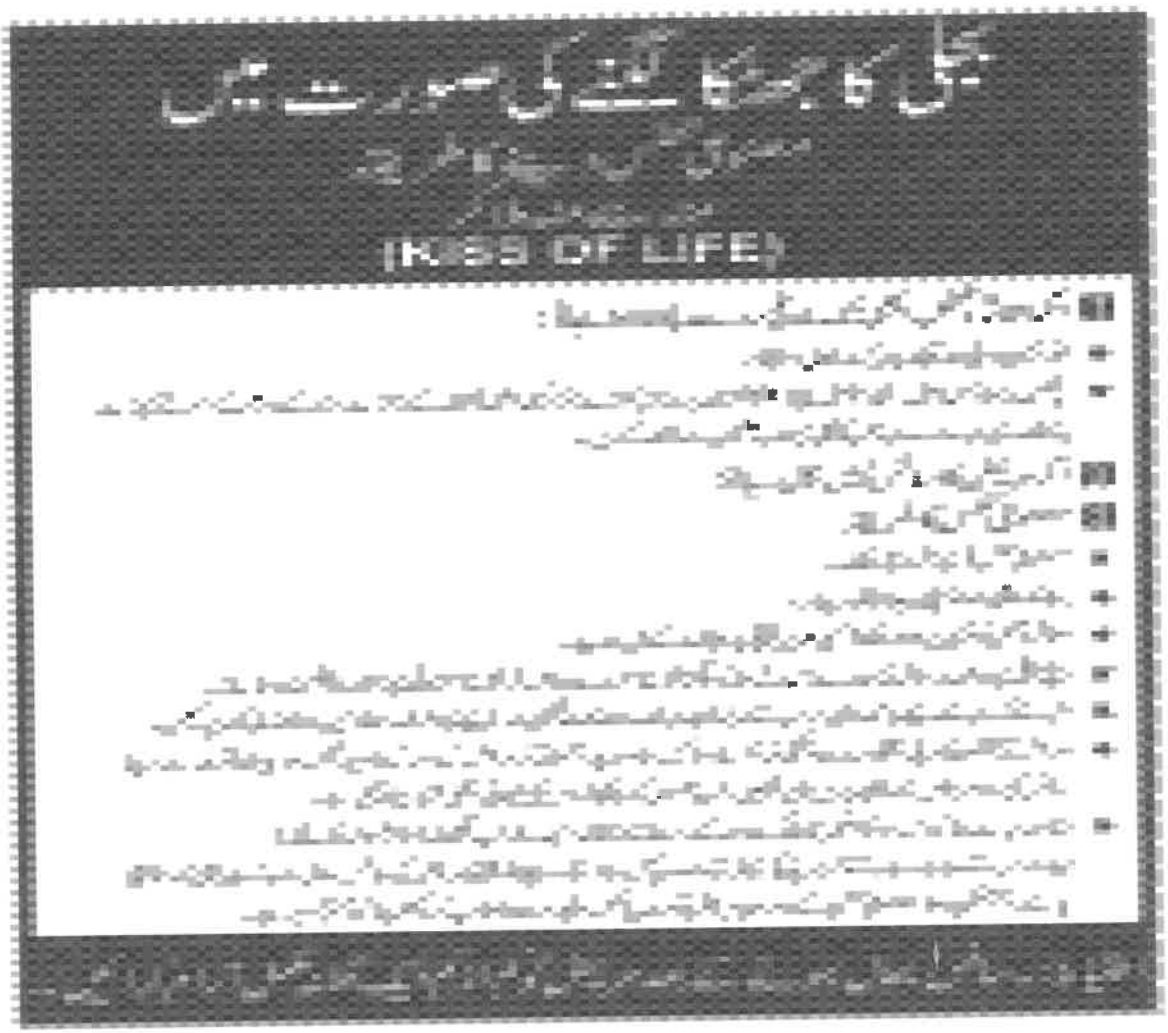

Welding

Introduction

Welding is a craft that can be performed reasonably by Professionals. As always, good equipment is important for producing good work. The basics and theory can be learned from books, but like many crafts, learning from someone proficient is very desirable. You have to get experience of various equipment and methods. Among the first things a new welder needs to understand, is to what type of different welding processes and equipment are involved, and their application.

Types of welding

Gas Welding

Gas – Slower and easier to control than electric arc. Uses gas flame over metals until molten puddle is formed. Most popular fuels used for welding, is a combination of Oxygen/Acetylene or Oxygen/Hydrogen gas.

Oxy-acetylene Welding

In gas welding, oxygen and acetylene are mixed in a nozzle and ignited. The heat of combustion of acetylene in oxygen is sufficient to fuse-weld metals. Both gases are hazardous and safety precautions must be taken while storing and using them.

PROCESSES (CUTTING, WELDING, BRAZING, SOLDERING, AND LEADING)

Most universal and useful welding tool uses acetylene gas and Oxygen for hot flame. With the right bits, rod, and technique, you can weld almost anything. Good for cutting anything from sheet metal to the turret off a tank, lead filling, brazing (a sort of hard soldering process) welding plate, welding sheet metal, welding aluminium, heating frozen bolts, or alternately cutting them off, drilling holes in plate, welding cast iron, shrinking and forming steel, and can double as a flame thrower in a pinch.

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The action of the oxyacetylene flame on the surface of the material to be welded can be adjusted to produce a soft, harsh or violent reaction by varying the gas flows. There are of course practical limits as to the type of flame, which can be used for welding. A harsh forceful flame will cause the molten weld pool to be blown away, while too soft a flame will not be stable near the point of application. The blowpipe is therefore designed to accommodate different sizes of 'swan neck copper nozzle which allows the correct intensity of flame to be used.

The relationship between material thickness, blowpipe nozzle size and welding speed, is shown in Table-1. When carrying out fusion welding the addition of filler metal in the form of a rod can be made when required.

The principal techniques employed in oxyacetylene welding are leftward, rightward and all positional rightward. The former is used almost exclusively and is ideally suited for welding butt, fillet and lap joints in sheet thicknesses up to approximately 5mm.

The rightward technique finds application on plate thicknesses above 5mm for welding in the flat and horizontal-vertical position. The all-positional rightward method is a modification of the rightward technique and is ideally suited for welding steel plate and in particular pipe work where positional welding, (vertical and overhead) has to be carried out. The rightward and all- positional rightward techniques enable the welder to obtain a uniform penetration bead with added control over the molten weld pool and weld metal. Moreover, the welder has a clear view of the weld pool and can work in complete freedom of movement. These techniques are very highly skilled and are less frequently used than the conventional leftward technique.

Table- 1 Oxyacetylene Cutting Information

Plate thickness (Inch)	*Cutting Tip (Size number)	Oxygen (Psi)	Acetylene (Psi)	Hand cutting speed (Inch per minute)
¼	0	30	3	16.0 to 18.0
3/8	1	30	3	14.5 to 16.5
½	1	40	3	12.0 to 14.5
¾	2	40	3	12.0 to 14.5
1	2	50	3	8.5 to 11.5
1-1/2	3	45	3	6.0 to 7.5
2	4	50	3	5.5 to 7.0
3	5	45	4	5.0 to 6.5
4	5	60	4	4.0 to 5.0
5	6	50	5	3.5 to 4.5
6	6	55	5	3.0 to 4.0
8	7	60	6	2.5 to 3.5
10	7	70	6	2.0 to 3.0
12	8	70	6	1.5 to 2.0

*Various manufacturers do not adhere to the numbering of tips as set forth in this table; therefore, some tips may be carry different identification numbers.

Equipment

Oxyacetylene equipment is portable and easy to use. It comprises oxygen and acetylene gases stored under pressure in steel cylinders. The cylinders are fitted with regulators and flexible hoses which lead to the blowpipe. Specially designed safety devices such as flame traps are fitted

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between the hoses and the cylinder regulators. The flame trap prevents flames generated by a 'flashback' from reaching the cylinders; principal causes of flashbacks are the failure to purge the hoses and overheating of the blowpipe nozzle.

ARC WELDING

Arc – Two metals are joined by generating an electric arc between a covered metal electrode and the base metal

Basic AC & DC arc (AC is cheaper)

Uses flux coated steel (or other) rods of various types for different jobs. Makes some of the best welds on heavy gauge steels and cast iron. Cutting rods can make clean holes through thick stock. It's very difficult to weld thin metals. You can also get a carbon arc torch to use on an arc welder to braze. Although the open circuit voltage of arc welding is relatively low (below 100V AC or DC), welding currents are high and the risk of electric shock must not be ignored.

MIG (Metal Inert Gas)

DC arc welding process which uses filler metal fed in the form of a spool of thin wire, shielded by flow of inert gas (CO_2, Argon) instead of flux used in Arc, and very fast, much easier than Arc Welding, with less heat buildup and very good for sheet metal, due to minimal heat distortion and harder to weld thick stock, as welds are weaker due to poorer penetration. The modern choice for steel body work, it can also be used for aluminium with Argon as shield gas.

TIG (Tungsten Inert Gas)

A high frequency AC arc process, which uses a tungsten electrode, shielded by an inert gas to create a fine, controllable torch. Uses a separate filler rod, as in Oxy-Acetylene welding. Capable of welding very thin metals, the best process for Aluminium, Stainless steel, and other exotic stuff.

Equipment

The main equipment for Arc welding is Transformer for the A.C or D.C Current used for electrodes and there is also a separate cable for earthing. The electrode used in Arc welding is made up of

such material that is going to be welded. Most arcs welding equipment is designed to operate safely in high humidity, rainy and windy weather, and in the presence of vapors, corrosive fumes, dirt, dust and gases.

PERSONAL PROTECTIVE EQUIPMENTS

The electric arc is a very powerful source of light, including visible, ultraviolet, and infrared. Protective clothing and equipment must be worn during all welding operations. During all oxyacetylene welding and cutting processes, operators must use safety goggles to protect the eyes from heat, glare, and flying fragments of hot metals.

During all electric welding processes, operators must use safety goggles and a hand shield or helmet equipped with a suitable filter glass to protect against the intense ultraviolet and infrared rays. When others are in the vicinity of the electric welding processes, the area must be screened so the arc cannot be seen either directly or by reflection from glass or metal.

Helmets and Shields

Welding arcs are intensely brilliant lights. They contain a proportion of ultraviolet light, which may cause eye damage. For this reason, the arc should never be viewed with the naked eye within a distance of 50.0 ft (15.2 m). The brilliance and exact spectrum, and therefore the danger of the light, depends on the welding process, the metals in the arc, the arc atmosphere, the length of the arc, and the welding current. Operators, fitters, and those working nearby need protection against arc radiation. The intensity of the light from the arc increases with increasing current and arc voltage. Arc radiation, like all light radiation, decreases with the square of the distance.

Being closest, welder needs to protect his eyes and face from harmful light and particles of hot metal. The welding helmet in figure is generally constructed of a pressed fiber insulating material.

It has an adjustable headband that makes it usable by persons with different head sizes. To minimize reflection and glare produced by intense light, helmet is dull black in color. It fits over the head and can be swung upward when not welding.

The chief advantage of the helmet is that it leaves both hands free, making it possible to hold the work and weld at the same time. The hand-held shield in figure provides the same protection as the helmet, but is held in position by the handle. An observer or a person who welds for a short period of time frequently uses this type of shield.

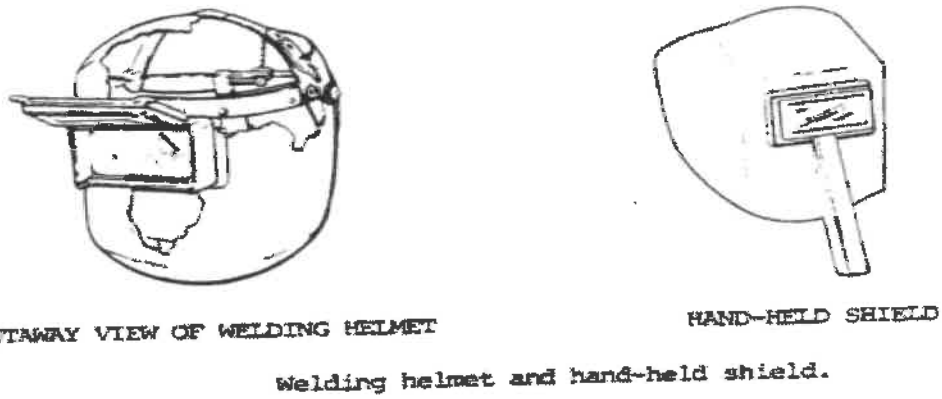

Figure -2 Welding Helmet and Hand-held Shield

The protective welding helmet has lens holders used to insert the cover glass and the filter glass or plate. Standard size for the filter plate is 2 x 4-1/4 in. (50 x 108 mm). In some helmets lens holders open or flip upwards. Lenses are designed to prevent flash burns and eye damage by absorption of the infrared and ultraviolet rays produced by the arc. The filter glasses or plates come in various optical densities to filter out various light intensities, depending on the welding process, type of base metal, and the welding current.

The color of the lens, usually green, blue, or brown, is an added protection against the intensity of white light or glare. Colored lenses make it possible to clearly see the metal and weld. The given

Table-2 lists the proper filter shades to be used. A magnifier lens placed behind the filter glass is sometimes used to provide clear vision. A cover plate should be placed outside the filter glass to protect it from weld spatter. The filter glass must be tempered so that is will not break if hit by flying weld spatter.

Table -3Lens Shades for Welding and Cutting

Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade Number
Torch Soldering	-	2
Torch Brazing	-	3 or 4
Oxygen Cutting		
Light	Under 1 inch, 25 mm	3 or 4
Medium	1 to 6 inch, 25 to 150 mm	4 or 5
Heavy	Over 6 inch, 150 mm	5 or 6
Gas Welding		
Light	Under 1/8 inch, 3 mm	4 or 5
Medium	1/8 to 1/2 inch, 3 to 12 mm	5 or 6
Heavy	Over 1/2 inch, 12 mm	6 or 8
Shielded metal arc	Under 5/32 inch, 4 mm	10
Welding (stick) electrode	5/32 to 1/4 inch, 4 to 6.4 mm	12
	Over 1/4 inch, 6.4 mm	14
Gas metal arc welding		
(MIG)	All	11
Non-ferrous base metal	All	12
Ferrous base metal		

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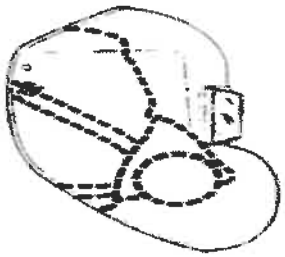
Gas Tungsten arc welding (TIG)	All	12
Atomic Hydrogen Welding	All	12
Carbon arc welding	All	12
Plasma arc Welding	All	12
Plasma arc Cutting		
Light	Under 300 Amp	9
Medium	300 to 400 Amp	12
Heavy	Over 400 Amp	14

Gas metal-arc (MIG) welding requires darker filter lenses than shielded metal-arc (stick) welding. The intensity of the ultraviolet radiation emitted during gas metal-arc welding ranges from 5 to 30 times brighter than welding with covered electrodes.

Do not weld with cracked or defective shields because penetrating rays from the arc may cause serious burns. Be sure that the colored glass plates are the proper shade for arc welding. Protect the colored glass plate from molten metal spatter by using a cover glass.
Face shields in figure must also be worn where required to protect eyes.

CLEAR FACE SHIELD



HELMET WITH RESPIRATOR

Welding helmets and shields.

Figure -4 Welding Helmet and Shield

Safety Goggles

During all electric welding processes, operators must wear safety goggles to protect their eyes from weld spatter, which occasionally gets inside the helmet. These clear goggles also protect the eyes from slag particles when chipping and hot sparks when grinding. Contact lenses should not be worn when welding or working around welders.

Protective Clothing

Personnel exposed to the hazards created by welding, cutting, or brazing operations shall be protected by PPE's. The appropriate protective clothing in figure required for any welding operation will vary with the size, nature, and location of the work to be performed. Clothing should always be kept dry, including gloves.

Figure 5 Protective Clothing

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Flameproof aprons or jackets made of leather, fire resistant material, or other suitable material should be worn for protection against spatter of molten metal, radiated heat, and sparks. Capes or shoulder covers made of leather or other suitable materials should be worn during overhead welding or cutting operations. Leather skullcaps may be worn under helmets to prevent head burns.

Sparks may lodge in rolled-up sleeves, pockets of clothing, or cuffs of overalls and trousers. Therefore, sleeves and collars should be kept buttoned and pockets should be eliminated from the front of overalls and aprons. Trousers and overalls should not be turned up on the outside. For heavy work, fire-resistant leggings, high boots, or other equivalent means should be used. In production work, a sheet metal screen in front of the worker's legs can provide further protection against sparks and molten metal in cutting operations.

Flameproof gauntlet gloves, preferably of leather, should be worn to protect the hands and arms from rays of the arc, molten metal spatter, sparks, and hot metal. Leather gloves should be of sufficient thickness so that they will not shrivel from the heat, burn through, or wear out quickly.

Protective Equipment

When welding in any area, the operation should be adequately screened to protect nearby workers or passers-by fro man the glare of welding. The screens should be arranged so that no serious restriction of ventilation exists. The screens should be mounted so that they are about 2.0 ft above the floor unless the work is performed at such a low level that the screen must be extended closer to the floor to protect adjacent workers. The height of the screen is normally 6.0 ft (1.8 m) but may be higher depending upon the situation.

Screen and surrounding areas must be painted with special paints which absorb ultraviolet radiation yet do not create high contrast between the bright and dark areas. Light pastel colors of a zinc or titanium dioxide base paint are recommended. Black paint should not be used.

Ventilation

In specific cases, there are other factors involved in which respirator protective devices (ventilation) should be provided to meet the equivalent requirements. They include:

a) Atmospheric conditions

b) Generated heat

c) Presence of volatile solvents

Screened Areas

When welding must be performed in a space entirely screened on all sides, the screens shall be arranged so that no serious restriction of ventilation exists. It is desirable to have the screens mounted so that they are about 2.0 ft (0.6 m) above the floor, unless the work is performed at such a low level that the screen must be extended closer to the floor to protect workers from the glare of welding.

Concentration of Toxic Substances

Local exhaust or general ventilating systems shall be provided and arranged to keep the amount of toxic frees, gas, or dusts below the acceptable concentrations. Compliance shall be determined by sampling of the atmosphere. Samples collected shall reflect the exposure of the persons involved. When a helmet is worn, the samples shall be collected under the helmet.

Ventilation System

Mechanical ventilation shall be provided when welding or cutting is done on metals, stainless steel to remove the fumes generated and under the following conditions:

a) In a space of less than 10,000 cu ft (284 cu m) per welder

b) In a roan having a ceiling height of less than 16 ft (5 m)

c) In confined spaces or where the welding space contains partitions, balconies, or other structural barriers to the extent that they significantly obstruct cross ventilation

Minimum rate

Ventilation shall be at the minimum rate of 200 cu ft/minute (57 cu m) per welder, except where local exhaust heeds, or airline respirators are used. When welding with rods larger than 3/16 in. (0.48 cm) in diameter, the ventilation shall be higher as following:

Rod diameter (inches)	Required ventilation (cfm)
1/4 (0.64 cm)	3500
3/8 (0.95 cm)	4500

Natural ventilation is considered sufficient for welding or cutting operations where the conditions listed above are not present.

Local Exhaust Ventilation

Mechanical local exhaust ventilation may be obtained by either of the following means:

A. Hoods

Freely movable hoods or ducts are intended to be placed by the welder as near as practicable to the work being welded. These will provide a rate of airflow sufficient to maintain a velocity the direction of the hood of 100 linear feet per minute in the zone of welding. The ventilation rates

required to accomplish this control velocity using a 3-in. wide flanged suction opening are listed in the Table-13.3.

Table 6 Required Exhaust Ventilation

Welding Zone	Minimum air flow (Cu ft per minute)	Duct diameter (Inch)
4 to 6 inch from arc to torch	150	3
6 to 8 inch from arc to torch	275	3-1/2
8 to 10 inch from arc to torch	425	4-1/2
10 to 12 inch from arc to torch	600	6-1/2

B. Fixed enclosure

A fixed enclosure with a top and two or more sides which surrounds the welding or cutting operations will have a rate of airflow sufficient to maintain a velocity away from the welder of not less than 100 linear ft per minute. Downdraft ventilation tables require 150 cu ft per minute per square foot of surface area. This rate of exhausted air shall be uniform across the face of the grille. A low volume, high-density fume exhaust device attached to the welding gun collects the fumes as close as possible to the point of origin or at the arc. This method of fume exhaust has become quite popular for the semiautomatic processes, particularly the flux-cored arc welding process. Smoke exhaust systems incorporated in semiautomatic guns provide the most economical exhaust system since they exhaust much less air they eliminate the need for massive air makeup units to provide heated or cooled air to replace the air exhausted. Local ventilation should have a rate of airflow sufficient to maintain a velocity away from the welder of not less than 100 ft (30 m) per minute. These two systems can be extremely difficult to use when welding other than small weldments. In all cases when local ventilation is used, the exhaust air should be filtered.

Safety precautions

General

a) A Hot Work Permit is required whenever Gas or Arc welding, cutting or burning is done for any purpose inside an area designated as Hazardous.

b) Do not permit unauthorized personnel to use welding or cutting equipment.

c) Fire extinguishers must be positioned in the vicinity of the welding equipment and be easily accessible.

d) All combustible materials in the vicinity of the welding operation must be removed, or, if this is not possible, covered by fire resistant materials.

e) Remove any assembled parts from the component being welded that may become warped or otherwise damaged.

f) Do not weld in a building with wooden floors, unless the floors are protected from hot metal by means of fire resistant fabric, sand, or other fireproof material. Be sure that hot sparks or hot metal will not fall on the operator or on any welding equipment components.

g) All personnel must be warned to keep away from the vicinity of welding operations.

h) Do not leave hot rejected electrode stubs, steel scrap, or tools on the floor or around the welding equipment.

i) Any tank or vessel which has contained flammable products must be cleaned and ventilated, or purged with an inert gas, and certified as 'gas free' before any welding or cutting work may be performed on it.

j) All pipes carrying a liquid or gas to a tank or vessel to be worked on must be disconnected or blanked off.

k) Hot tapping can be carried out on 'live' lines, which give a cooling effect, but is considered as a last resort procedure. It is a specialised technique for carrying out modification/repair to a system in service.

l) No welding or burning is permitted on pipelines where mechanical seal plugs are necessary, unless the safety department approves the completed isolation work and the site as fit for hot work.

m) While welding galvanized metal, alloys containing zinc, cadmium, mercury, antimony, chromium, tin, copper, or steel coated with any of these metals, fumes of toxic oxides can be formed. These fumes can cause a harmful action on the lining of the respiratory tract. Adequate ventilation of the working place can minimize or even exclude the danger from toxic gases. If this cannot be arranged breathing apparatus must be worn.

n) Clothing should always be kept dry, including gloves.

o) Oxygen must not be used for blowing out tanks or vessels.

p) Before cutting the bottom plates of any tank, test holes must first be drilled and gas tests taken to ensure that condition are safe below the tank floor.

q) Inspect the space between double plates where flammable material may be found, before welding operations begin.

r) After completing the work a welded article should be marked HOT until it has had time to cool to a safe temperature. Soapstone is commonly used for this purpose.

Oxy-Acetylene welding precautions

a) Always keep cylinders secured properly in a vertical position.

b) The cylinders should be chained properly.

c) Never use acetylene at more than 15psi. Higher pressure can cause an explosion.

d) The flexible hoses should be kept clear of any falling metal, slag or spark.

e) Never allow hoses to become coated with oil, grease or dirt.

f) Never use hoses in acetylene cylinder, which were for O_2.

g) Examine the cuts, burns, and worn areas on the hoses before attaching to weld.

h) Always check for leaks on the regulator and cylinder valve connections.

i) The cylinder should be properly named with the Gas that it contained.

j) When welding, the operator must wear protective clothing and tinted colored goggles. As the flame is less intense than arc and very little UV is emitted, general-purpose tinted goggles provide sufficient protection.

k) Valves, piping, fittings, gauges, regulators and gloves used with oxygen cylinders must be completely free of grease.

l) Checks for gas leaks on valves, gauges, hoses, torches and all fittings and connections must be carried out using soapy water.

m) Welding torches must not be left unattended in an enclosed space when in use such as during lunch breaks etc.

ARC WELDING PRECAUTIONS

a) Wet equipment or wet welders can spell disaster so they should be dried off, but only after the power source has been disconnected.

b) Wet floors are dangerous and can cause electrical shock.

c) Check the insulation and lead cables for exposed conductors.

d) Replace all weld lead spliced within 10 feet of the holder.

e) Check the electrode holders for loose or exposed connection.

f) Never coil or loop electrode cable around any part of your body.

g) Be sure the welding machine frame is properly grounded; double-check the ground connections.

h) Never use pipelines carrying gases or flammable liquids or conduits carrying electrical conductors as grounds.

i) Don't ground to a building structure that is a great distance from the weld.

j) Make sure the insulation is sufficient on higher open-circuit voltage.

k) For AC welding under wet conditions, including perspiration, be sure to have an automatic control to reduce the no-load voltage; this prevents electrical shock.

l) Do not change the polarity switch when your machine is under load.

m) Make sure there is a power disconnect switch on the welding machine to shut down the machine immediately in an emergency.

n) Electrode holders should be stored where they cannot make contact with personnel, conductors, fuels or compressed gas cylinders.

o) If you are not going to be welding for a few minutes, disconnect the power source and remove the electrodes.

p) Never strike an arc on an industrial gas cylinder.

q) Always keep any live part away from gas cylinders.

r) Arc dangerous to eyes because of UV light protection till 50 ft.

s) Fire resistant screens must be erected around the work area to prevent sparks from flying outside the immediate working area, and also to screen off the ultraviolet and infrared rays generated by welding.

t) Do not use old barrels or drums to support work, they may explode and are unstable.

u) Welders' overalls should not have any pockets, or 'turn-ups' on the trousers, where sparks could be caught.

v) Leather or other flame resistant aprons give additional protection against heat, sparks and flames and must always be worn.

w) Shoulder covers made of leather or other flame resistant material must be worn when welding is to be done above head level.

x) Welders and other persons working with welders even when wearing helmets and screens must use goggles. The screens can then be lifted if necessary.

y) A welder must always use a helmet type protector or hand-shield type protector, which covers and protects his eyes and head.

z) Hands must be protected by flame resistant gauntlets, which come high over sleeve.

WELDING IN CONFINED SPACES

A confined space is intended to mean a relatively small or restricted space such as a tank, boiler, pressure vessel, or small compartment of a ship or tank.

SAFETY PRECAUTIONS

a) In confined space, the gas cylinders and welding machines shall be left on the outside.

b) Torches must be lit outside before being passed into a confined space.

c) Where a welder must enter a confined space through a manhole or other all opening, means will be provided for quickly removing him in case of emergency with safety belts and lifelines attached to the welder's body.

d) To eliminate the possibility of gas escaping through leaks or improperly closed valves, the gas and oxygen supply valves will be closed, the regulators released, the gas and oxygen lines bled, and the valves on the torch shut off when the equipment will not be used for a substantial period of time. Where practical, the torch and hose will also be removed from the confined space.

e) A person outside who can control the gas supply and give the operator any assistance required must accompany a welder in a confined space.

Ventilation in Confined Spaces

All welding and thermal cutting operations carried on in confined spaces must be adequately ventilated to prevent the accumulation of toxic materials, combustible gases, or possible oxygen deficiency. Requirements in this section have been established for arc and gas welding and cutting. These requirements will govern the amount of contamination to which welders may be exposed:

a) Dimensions of the area in which the welding process takes place (with special regard to height of ceiling)

b) Number of welders in the room

c) Possible development of hazardous fumes, gases, or dust according to the metals involved

d) Location of welder's breathing zone with respect to rising plume of fumes

A. Air replacement

Ventilation is a perquisite to work in confined spaces. This applies not only to the welder but also to helpers and other personnel in the immediate vicinity. Oxygen must never be used for ventilation.

B. Airline respirators

In circumstances where it is impossible to provide adequate ventilation in a confined area, airline respirators or hose masks will be used for this purpose.

C. Self-contained units

In areas immediately hazardous to life, hose masks with blowers or self-contained breathing equipment shall be used.

D. Outside helper

Where welding operations are carried on in confined spaces and where welders and helpers are provided with hose masks, hose masks with blowers, or self-contained

breathing equipment, a worker shall be stationed on the outside of such confined spaces to ensure the safety of those working within. **First-Aid Equipment**

First-aid equipment will be available at all times. On every shift of welding operations, there will be personnel present who are trained to render first aid. All injuries will be reported as soon as possible for medical attention. First-aid will be rendered until medical attention can be provided.

Static Electricity and Lightning

Static Electricity

Static electricity is the situation where electrical charges build up on the surface of a material. It is called "static" because there is no current flowing as in AC or DC electricity. Static electricity is usually caused when materials are rubbed together or produced by movement/ friction between any two substances, becoming electrically charged. If the substances are conductors and earthed, the charge dissipates quickly as it is formed. This can be by a person accidental touching, causing the person to receive a shock, or by other means. The static charge can also discharge itself by sparking over earth, thus creating a source of ignition. The result is that objects may be attracted to each other or may even cause a spark to jump from one object to the other.

STATIC AND CURRENT ELECTRICITY

Static electricity, "net charge" or "separated charge" or "the science of electrostatics" is the study of electric charges and the way they separate and combine. Static electricity studies the attraction and repulsion between charges, and the invisible electrical fields they create.

Current electricity, "charge flow" or "electric current", or "the science of electrodynamics" is the study of the flowing or wiggling of charges, of the magnetic attraction and repulsion they create, and of the way they can move electrical energy around.

Characteristics of Static Electricity

Charges on surface

Charged atoms are on the surface of the material. Static electricity is different than regular electricity that flows through metal wires. Most of the time the materials involved in static electricity are nonconductors of electricity. If electrical charges build up on the outside of a metal, most of them will dissipate into the metal, similar to an electrical current.

PREFERS DRY AIR

When the air is humid, water molecules can collect on the surface of various materials. This can prevent the buildup of electrical charges. The reason has to do with the shape of the water molecule and its own electrical forces. Thus, static electricity is formed much better when the air is dry or the humidity is low.

Force field causes attraction

An object that has static electricity charges built up on its surface has an electrical force field coming from the surface. This field will mildly attract neutral objects or those with no charge. The field will strongly attract an object that has an opposite charge on its surface. From this we get the expression: "Opposites attract." If two objects have the same charge, the electrical force field will cause those objects to push away from each other or repel.

Causes of static charge

On Plant site a static charge can be generated by:

a) Highly Volatile products flowing through pipes.

b) Low conductivity liquids flowing into storage tanks, road tankers and similar containers.

c) The flow of all products through a pump.

d) Settling of liquid droplets or solid particles dispersed in a liquid of very low conductivity.

e) Liquid droplets falling through air or gas.

f) Mixing, blending and agitating of low-conductivity liquids.

g) Synthetic fibre cord running through the gloved hand of an operator.

CONTROLLING DANGERS

There are places where static electricity can be a danger or hazard:

1. A spark can
   a) Damage Computers/ Electronics
   b) Cause an explosion

USE GROUND WHEN WORKING ON COMPUTER

A static electricity spark can damage the internal electronics of a computer. Normally, when operating a computer, static electricity is not a problem. But if you have been having problems with static electricity causing spark when you touch things, it is wise to take precautions before touching even the computer keyboard. Touch something metal to ground yourself, before you touch the computer.

Technicians who work on the inside of computers should have a special pad on the floor and use a grounded strap on their wrist that will suck any charges from their bodies. This is to avoid any chance of damaging the electronics with a static electrical spark. When a person handles computer boards, it doesn't take much of a spark to damage the circuitry. Filling station safety

Thousands of gallons of Highly Volatile or gasoline are transferred from a truck into the underground tank at a filling station, there is a lot of friction, which is caused by the gasoline flow. Also, since the fuel is very flammable, a single spark caused by static electricity could cause an explosion. Thus, the trucks use a grounding device on the hose that draws the electrical charges away from the gasoline, preventing any static sparks from occurring.

People who are filling a gasoline container at the pump are advised to use caution like Mobile phone should be off, No smoking, No door closing of vehicle to avoid static sparks. When you

slide out of your car, touch something made of metal to dissipate excess charges. It is also recommended to place the container on the ground when filling it.

Lightening

Lightning is created by the attraction between opposite charges, the same force that creates static electricity. But lightning uses huge opposite charges to produce an electrical current that's nothing like what you'd get from static electricity.

Lightning may not seem much like static electricity, but it's actually very similar. Both are sparks of electricity created through the attraction of unlike charges. The difference is that static electricity creates a small spark, while lightning is a huge spark of electricity.

In storm, tiny particles in the cloud move around picking up positive or negative energy charges, e.g. when shoes are rubbed against a rug. The positive charged particles are light, and rise to the top of the cloud. The negatively charged particles are heavier, and collect at the bottom of the cloud. As more particles become charged, they divide into opposing groups in the cloud. When the power of attraction between them gets too great, the particles discharge their energy at each other, completing a path for electricity to travel through the air. We call this flow of electricity, lightning.

It's the negative charges in the bottom of the cloud that cause lightning to strike the ground. When the negatively charged particles group together, they begin to seek out positive charges from the ground below. The excess electrons create a channel of charged air called a leader that reaches down to the ground below. The leaders attract other charged ground-based channels called streamers.

When the stepped leader from the cloud meets a returning streamer from the ground, the path is ready. An electrical current called the return stroke travels back up the path. This return stroke

releases tremendous energy, bright light and thunder. The typical stroke can last only 30 milliseconds, so four to five strokes may happen in the blink of an eye. Despite the old saying, lightning does strike the same place twice.

When the electrical potential between two clouds or between a cloud and the earth reaches a sufficiently high value (about 10,000V per cm or about 25,000V per inch), the air becomes ionized along a narrow path and a lightning flash results. Many meteorologists believe that this is how a negative charge is carried to the ground and the total negative charge of the surface of the Earth is maintained.

Thunder

The flash of a lightning strike resulting in thunder, occur at roughly the same time. But light travels at 186,000 miles per second, almost a million times the speed of sound. Sound travels at the slower speed of one-fifth of a mile in the same time. So the flash of lightning is seen before thunder is heard. By counting the seconds between the flash and the thunder and dividing by 5, you can estimate your distance from the strike (in miles). But why does lightning cause thunder at the same time it strikes?

Lightning causes thunder because a strike of lightning is incredibly hot. A typical bolt of lightning can immediately heat the air to between 15,000 to 60,000 degrees Fahrenheit. That's hotter than the surface of the sun!

A lightning strike can heat the air in a fraction of a second. When air is heated that quickly, it expands violently and then contracts, like an explosion that happens in the blink of an eye. It's that explosion of air that creates sound waves, which we hear and call thunder.

Controlling Dangers

There are places where Lightning can be a danger or hazard:

Lightning can;

a) Damage to structure, building and storage tanks

b) Severely injure a person

Lightening is a frequent hazard to structures and the storage of flammable liquids. A typical lightening stroke may produce power on the order of thousand billion horsepower, but only for few millionths of a second. This high rate of energy gives lightening its destructive effect. A tremendous voltage about 100,000 volts per foot of gap 15 required to cause lightening to jump the gap between clouds or between cloud and earth. Direct strokes of lightening on a cone roof storage tank containing flammable liquids can ignite the tankers content. The tank can be protected against direct lightening strokes by providing flame arrestors. The radius of protecting cone at the base is equal to the height of the mast

PROTECT FROM LIGHTNING

Lighting can also strike people out in the rain. It is not a good idea to stand under a tree during a thunderstorm, in case the tree gets struck with lightning. Also, it is not a good idea to walk out in an open area with an umbrella, because if you are the highest object in the field, you may be a target for the lightning strike.

LIGHTNING ARRESTER

The way to protect a structure or building that is out in the open is to attach a lightning arrester. It is a sharp pointed metallic lightning rods extending to the ground from a point above the highest part of the roof. The conductor has a pointed edge on one side and the other side is connected to a long thick copper strip, which runs down the building. The lower end of the strip is properly earthed. When lightning strikes it hits the rod and current flows down through the copper strip. These rods form a low-resistance path for the lightning discharge and prevent it from traveling through the structure itself.

For a long time people thought that the static electricity was attracted to the pointed end of the rod. Recent studies showed that a larger, rounded surface would be effective than a sharp point.

SAFETY IN LIGHTNING

A single stroke of lightning has 125,000,000 volts of electricity. That's enough power to light a 100-watt light bulb for more than 3 months, or enough to seriously hurt or to kill someone. Lightning is something you should not be careless around. When you see lightning, follow these safety rules:

1. **Stay away from anything that could conduct electricity.** This includes fireplaces, radiators, stoves, metal pipes, sinks, and phones.
2. **Don't use any plug-in electrical appliances** like hair dryers, electric toothbrushes, or electric razors. If lightning strikes your house they can conduct the charge to you.
3. **Don't use the telephone during the storm.** Lightning may strike telephone lines outside.
4. **Stay in your automobile if you are traveling.** Automobiles give you excellent lightning protection.
5. **Don't use metal objects outside**, like fishing rods and golf clubs. Golfers wearing cleated shoes are really good lightning rods.
6. **Get out of the water**. This includes getting off small boats on the water.
7. **If you're outdoors, seek shelter from lightning!** Buildings are best for shelter, but if no buildings are available, you can find protection in a cave, ditch, or a canyon. Trees are not good cover! Tall trees attract lightning.
8. **When you feel the electrical charge** -- if your hair stands on end or your skin tingles -- lightning may be about to strike you. Drop to the ground immediately!

PERSONAL PROTECTIVE EQUIPMENT'S

i) Dust mask

ii) Goggles

iii) Gloves

iv) Full protective clothing

v) Gum-boot

FIRE FIGHTING

Fire will rekindle until the mass is cooled below 310 ^{0}F (154^{0}C) so cool the surrounding areas with water fog to prevent re-ignition

a) In case the fire is in the container or trailer, 1st extinguish fire then cool the container or trailer loads with flooding quantity of water fog to prevent re-ignition.

b) For large fires, water applied as a fine mist is most effective. Never use high-pressure water spray because it disperses the dust into air.

c) Dense water sprays are permissible on deposits containing only a small proportion of extreme fires.

d) Gas mask approved for acid gases would not provide adequate protection in serious fire so fire-fighters handling larger fires should be equipped with breathing apparatus with a self-contained air supply.

a) Incipient fires in storage piles can be frequently smothered by gently shovelling , sand, or fine earth on them to exclude all air.

b) In all cases, it should be certain that the fire is fully extinguished and that the Surface has cooled sufficiently so that it will not reignite.

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RADIATION

Ionizing radiation from radioactive sources can cause injury to human tissues and organs. Ionizing radiations are particularly dangerous because they are invisible and cannot be detected by the human senses. Excessive doses of radiation can cause localized damage and general health disorders.

Localised effects usually take the form of burns and are caused by exposure to intense radiation. They are most likely to occur on the fingers and hands. Eyes are also sensitive and prolonged exposure may lead to cataract formation. Nothing is felt or noticed at the time, but serious results may become apparent in a few weeks.

Excessive irradiation to the body damages the blood and causes anaemia. There may be other effects, such as damage to growing tissue, sterility, loss of hair, production of warts, and localised skin thickening.

Maximum Permissible Dosage

The unit of radiation dosage is the sievert (Sv), which is defined as the product of the dose in grays and the quality factor. The gray and sievert supersede the rad and rem respectively.

1 gray (Gy)	=	100 rad ®
1 sievert (Sv)	=	100 rem
1 mSv	=	0.1 rem

The human body can tolerate a certain amount of radiation without any ill effects. The effect of each radiation dose is cumulative. Therefore a lifetime permissible dose is defined. Personnel who are designated to conduct work with radioactive materials and to whom the dose limits of 20 milli SV/year (2000 milli-rem/year and 0.75 milli-rem/ hour) apply.

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Radiography

Gamma Ray Equipment

Radioactive sources (such as Iridium 192 isotopes) radiate continuously in all directions and must be housed in suitably shielded containers. To avoid manual handling of the source and thus minimise the radiation dose received by the radiographers, projection-type source containers shall be used. In these containers the source is projected along a guide tube to the working position by flexible wire cable (or pneumatically). Thus the radiographer can be at a considerable distance from both the source and the container throughout the exposure. The source container shall be fitted with a key or a special type of padlock. The key shall be in the custody of a authorised user.

SAFE USE OF GAMMA RAY EQUIPMENT

a) Radiographic work in operating areas involving the use of gamma ray equipment is governed by Radiography permit conditions.

b) A barrication tape shall be provided to cordon off the area. Notices 'RADIOGRAPHY IN PROGRESS' shall be placed at or near the barrication tape.

c) Gamma ray sources continuously emit radiation in all directions and therefore should be housed in shielded containers and operated remotely by flexible guide tubes.

d) The safe distance (in metres) for demarcation of radiation area for Iridium 192 sources can be calculated multiplying the square root of the source activity (in Curies) by twenty-six. This is based on a maximum permissible dose rate of .0075 mSv/h (0.75 milligrams/h) with an output of 4.8 mSv/h (0.48 rems/h) at 1 metre for one curie of Iridium 192.

e) As far as is practicable, radiographic work shall be performed in a specially designated remote open area to avoid disruption of normal activities.

f) A dose rate monitor (survey meter) shall be used to check that the source is re-shielded after every operation.

g) Radiography shall not be permitted during night-time for fear of losing or mislaying the source.

h) When working at elevated locations, proper scaffolding shall be erected to permit safe working and quick access and exit.

Responsibility

Personnel authorised by the Pakistan Nuclear Regulatory Authority (PNRA)or Authorized Inspectors shall operate radioactive devices. People working with ionising radiations are categorised according to their degree of involvement and responsibility.

Radiation protection officer (RPO)

The non-destructive testing (NDT) inspector (from inspection section) is the competent person to exercise overall supervision of all activities connected with industrial radiography. These include, but are not limited to, maintenance of proper radiation dose records, control of sealed sources, follow of radiation safety, training of classified persons in safe use of radiographic equipment, organising contingency plans for dealing with emergency situations such as excessive exposures, accidents or thefts involving radioactive materials etc.

Authorised user

Inspection/ Instrument Engineer shall be the authorised user who, in addition to his normal duties will be responsible for transportation and custody of the sealed radioactive source (gamma ray isotope) within the company premises and construction sites.

Control of Radiation Exposure

To avoid such burns and their consequent effects, the hands and all other parts of the body must be kept away from unscreened sources of radiation. The purpose of all radiation protection

measures is to limit the dose received by persons by:

a) Increasing the working distance from the source of radiation.

b) Reducing the exposure time.

c) Interposing protective barriers between the source of radiation and the persons.

Radiography by Contractors

This section is primarily intended for industrial radiographic work performed by QABP Factories / Plots personnel, but the same basic principles shall apply to radiographic work carried out by outside contractors in QABP . While the contractor is responsible for protection of his employees against ionizing radiations, the company has the overriding obligation to ensure that the contractor's equipment and work methods conform to internationally accepted standards. To this extent, the competent person shall ensure compliance by the contractor with the safe practices in this section. Specifically, he shall ensure that the proper type of radioactive sources or equipment are used and all safety precautions are taken to reduce the chances of exposing QABP Staff as well as contractor's employees to ionizing radiations beyond permissible limits.

RADIANT HEAT

The effects of radiant heat on personnel increase with the heat flux and exposure time. There is, however, a threshold flux, which can be sustained for a long period without causing serious injury. The incident flux, that is the heat intensity striking the person, is reduced with increase in distance from the heat source.

An incident flux level of 1.6 kW/m^2 is considered safe for continuous human exposure, causing no discomfort or ill effects. The 'threshold' or limiting flux for personnel is considered to be 4 kW/m^2 and can be tolerated for several minutes before feeling discomfort. This level will not cause serious injury.

Personnel exposed to the following levels of incident flux for the period shown will suffer severe discomfort and probable blistering of the skin.

6.5 kW/m^2 for 20 seconds

11.0 kW/m^2 for 10 seconds

20.0 kW/m^2 for 5 seconds

Levels of 12 kW/m^2 and above can be lethal if the person does not escape or take shelter very quickly.

Clothing provides an effective shielding from thermal radiation, allowing only a small part of the body to be at risk. Where the radiation emanates from a high level, the safety helmet provides effective shielding for the face and neck.

The incident flux levels and exposure times given do not take into account the effects of solar radiation but its added effect will have a minor impact on personnel acclimatised to the conditions.

PRECAUTIONS

a) Any person feeling pain or discomfort from thermal radiation must seek shelter as quickly as possible and rest in the shade away from the source of radiation.

b) Equipment exposed to thermal radiation can safely tolerate higher levels of incident flux than those defined for personnel. However, if anything vulnerable to heat is involved and likely to cause problems due to overheating, then the effect of radiant heat on them should be evaluated. This includes low melting point materials such as aluminium and plastics, heat sensitive process or utility streams, flammable vapour spaces and electrical equipment.

c) Follow that:

i) If the temperature is 40°C, person should work for 6 hrs & rest for 2 hrs.

ii) If the temperature is 45°C, person should work for 4 hrs & rest for 4 hrs.

iii) If the temperature is 50°C no work at all.

First Aid

Over exposure to thermal radiation may result in skin burns, loss of body fluids and salts, and heat stroke. Medical attention should be obtained as soon as possible, especially if there is any

feeling of giddiness.

Dangerous Goods Classification:

Class 1, Explosives

Substances, which are included in Class 1, Explosives, if they are;

a) Capable of producing gas by chemical reaction at a temperature, pressure and speed, that would damage the surroundings; or

b) Designed to produce an explosive or pyrotechnic effect by heat, light, sound, gas or smoke, or a combination of these, as a result of non-detonative, self-sustaining exothermic chemical reactions.

DIVISIONS

Class 1, Explosives, has six divisions;

a) Class 1.1, mass explosion hazard;

b) Class 1.2, projection hazard but not a mass explosion hazard;

c) Class 1.3, fire hazard, either a minor blast or a minor projection hazard or both but not a mass explosion hazard;

d) Class 1.4, no significant hazard beyond the package in the event of ignition or initiation during transport;

e) Class 1.5, very insensitive substances with a mass explosion hazard; and

f) Class 1.6, extremely insensitive articles with no mass explosion hazard.

CLASS 2, GASES

A substance is included in Class 2, Gases, if it is;

a) A gas;

b) A mixture of gases;

c) A mixture of one or more gases with one or more vapours of substances included in other classes;

d) An article charged with a gas;

e) Tellurium hexafluoride; or

f) An aerosol.

Divisions

Class 2, Gases, has three divisions;

a) Class 2.1, Flammable Gases, which consists of gases that, at 20°C and an absolute pressure of 101.3 kPa,

i. Are ignitable when in a mixture of 13 per cent or less by volume with air, or

ii. Have a flammability range with air of at least 12 percentage points determined in accordance with tests or calculations in ISO 10156;

b) Class 2.2, Non-flammable and Non-toxic Gases, which consists of gases that are transported at an absolute pressure greater than or equal to 280 kPa at 20°C, or as refrigerated liquids, and that are not included in Class 2.1, Flammable Gases, or Class 2.3, Toxic Gases; and

c) Class 2.3, Toxic Gases, which consists of gases that

i. Are known to be toxic or corrosive to humans, or

ii. Have an LC_{50} value less than or equal to 5 000 mL/m cubic meters.

Class 3, Flammable Liquids

1. Substances that are liquids or liquids containing solids in solution or suspension are included in Class 3, Flammable Liquids, if they;

a) Have a flash point less than or equal to 60.5°C using the closed-cup test method; or

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A flash point of 65.6°C, using the open-cup test method is equivalent to 60.5°C using the closed-cup test.

b) Are intended or expected to be at a temperature that is greater than or equal to their flash point at any time while the substances are in transport.

2. Despite paragraph (1) (a), liquids that have a flash point greater than 35°C are not included in Class 3, Flammable Liquids, if they;
   a) Do not sustain combustion, as determined in accordance with the sustained combustibility test;
   b) Have a fire point greater than 100°C; or
   c) Are water-miscible solutions with water content greater than 90 percent by mass?

Class 4, Flammable Solids; Substances Liable to Spontaneous Combustion; Substances That on Contact with Water Emit Flammable Gases (Water-reactive Substances)

Substances are included in Class 4 if they are flammable solids, substances liable to spontaneous combustion or substances that on contact with water emit flammable gases (water-reactive substances) and meet the criteria for inclusion in one of the divisions and packing groups of Class 4.

Divisions

Class 4 has three divisions;

a) Class 4.1, Flammable Solids, which consists of substances that are
   i) Readily combustible,
   ii) Under normal conditions of transport, liable to cause fire through friction,

iii) Solid desensitized explosives, which are solid explosives desensitized through wetting with water or alcohols or diluted with other substances to form a homogeneous solid mixture to suppress their explosive properties so that they are not included in Class 1, Explosives,

iv) Self-reactive substances that are liable to undergo a strongly exothermic decomposition even without the participation of oxygen (air), but Class 4.1 does not include substances that have;

1.A primary class of Class 1, Explosives, Class 5.1, Oxidizing Substances, or Class 5.2, Organic Peroxides,

2.A heat of decomposition less than 300 J/g, or

3.A self-accelerating decomposition temperature (SADT) that is greater than 75°C for a 50 kg means of containment,

b) Class 4.2, Substances Liable to Spontaneous Combustion, which consists of

i. Pyrophoric substances that spontaneously ignite within 5 minutes after coming into contact with air, and

ii. Self-heating substances that, when in large amounts (kilograms), spontaneously ignite on contact with air after long periods (hours or days)

c) Class 4.3, Water-reactive Substances, which consists of substances that, in tests performed, emit a flammable gas at a rate greater than 1 L/kg of substance per hour or spontaneously ignite at any step in the test procedure.

Class 5, Oxidizing Substances and Organic Peroxides

Substances are included in Class 5 if they are oxidizing substances or organic peroxides and meet the criteria for inclusion in one of the divisions of Class 5.

Divisions

Class 5 has two divisions;

a) Class 5.1, Oxidizing Substances, which consists of substances that yield oxygen thereby causing or contributing to the combustion of other material, and

b) Class 5.2, Organic Peroxides, which consists of substances that

i. Are thermally unstable organic compounds that contain oxygen in the bivalent "-O-O-" structure,

ii. Are liable to undergo exothermic self-accelerating decomposition,

iii. Have one or more of the following characteristics;

1.They are liable to explosive decomposition,

2.They burn rapidly,

3.They are sensitive to impact or friction,

4.They react dangerously with other substances, or

5.They cause damage to the eyes, or

Class 6, Toxic and Infectious Substances

Substances are included in Class 6 if they are;

a) Liable to cause death or serious injury or to harm human health if swallowed or inhaled or if they come into contact with human skin; or

b) Infectious substances.

DIVISIONS

Class 6 has two divisions;

a) Class 6.1, Toxic Substances, which consists of substances that are liable to cause death or serious injury or to harm human health if swallowed or inhaled or if they come into contact with human skin; and

b) Class 6.2, Infectious Substances, which consists of infectious substances.

Criteria for Inclusion in Class 6.1, Toxic Substances

Substances included in Class 6.1, Toxic Substances, are grouped by oral toxicity, dermal toxicity and inhalation toxicity by dust, mist or vapor. Toxicity by inhalation of a gas is covered in Class 2.3, Toxic Gases. A substance is included in Class 6.1;

a) Due to oral toxicity if
   i. It is a solid and its LD_{50} (oral) is less than or equal to 200 mg/kg, or
   ii. It is a liquid and its LD_{50} (oral) is less than or equal to 500 mg/kg;
b) Due to dermal toxicity if its LD_{50} (dermal) is less than or equal to 1 000 mg/kg; or
c) Due to inhalation toxicity
   i) By dust or mist if dust or mist is likely to be produced in a transport accident and its LC_{50} (inhalation) is less than or equal to 10 mg/L, or
   ii) By vapor if its LC_{50} (inhalation) is less than or equal to 5 000 mL/m cubic meters.

Class 7, Radioactive Materials

Substances with a specific activity greater than 70 kBq/kg are included in Class 7, Radioactive Materials.

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DIVISIONS

There are no divisions for Class 7.

CLASS 8, CORROSIVES

Substances are included in Class 8, Corrosives, if they;

a) Are known to cause full thickness destruction of human skin, that is, skin lesions that are permanent and destroy all layers of the outer skin through to the internal tissues;

b) Cause full thickness skin destruction, or

c) Do not cause full thickness destruction of skin, but exhibit a corrosion rate that exceeds 6.25mm per year at a test temperature of 55°C, as determined in accordance with the ASTM Corrosion Test.

Divisions

There are no divisions for Class 8.

Class 9, Miscellaneous Products, Substances or Organisms

A substance is included in Class 9, Miscellaneous Products, Substances or Organisms, if it;

a) Is included in Class 9 in column 3 of Schedule 1; or

b) Does not meet the criteria for inclusion in any of Classes 1 to 8 and;

i) Contains a genetically modified micro-organism that would endanger public safety if accidentally released during transport,

ii) Except for asphalt or tar, is offered for transport or transported at a temperature greater than or equal to 100°C if it is in a liquid state or at a temperature greater than or equal to 240°C if it is in a solid state,

DIVISIONS

There are no divisions for Class 9.

LABELS AND PLACARDS

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LABELS AND PLACARDS

Class-1, Explosives

Figure 1 Class-1, Explosives For Class 1.1, 1.2, 1.3

Black: Symbol, numbers, letter and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Orange: Background

The symbol is an exploding bomb.

** Place for division – to be left blank if explosive is a subsidiary class

* Place for the Compatibility Group Letter – to be left blank if explosive is a subsidiary class

Class 1.4

Class 1.5

Class 1.6

Black: Numbers, letter and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Orange: Background

* Place for the Compatibility Group Letter

Class-2, Gases

Class 2.1, Flammable Gases

Black or White: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Red: Background

The symbol is a flame.

Figure A Class 2.1, Flammable Gases

Class 2.2, Non-flammable and Non-toxic Gases

Figure B Class 2.2, Non-flammable and Non-toxic Gases

Black or White: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Green: Background

The symbol is a gas cylinder.

Class 2.3, Toxic Gases

Figure C Figure 10 Class 2.2, Non-flammable and Non-toxic Gases

Black: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

White: Background

The symbol is a skull and crossbones.

Class 2.4, Oxidizing Gases

Figure D Class 2.4, Oxidizing Gases

Black: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Yellow: Background

The symbol is a flame over a circle (Flaming "O").

Class 3, Flammable Liquids

Figure E Class 3, Flammable Liquids

Black or White: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Red: Background

The symbol is a flame.

Class 4, Flammable Solids, Substances liable to Spontaneous Combustion and Substances that on contact with Water emit Flammable Gases (Water reactive Substances)

Class 4.1, Flammable Solids

Figure F Class 4.1, Flammable Solids

Black: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Red: 7 red stripes resulting in 13 equally spaced vertical stripes

White: Background The symbol is a flame.

Class 4.2, Substances Liable to Spontaneous Combustion

Figure G Class 4.2, Substances Liable to Spontaneous Combustion

Black: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Red: Lower half

White: Upper half The symbol is a flame.

Class 4.3, Water Reactive Substances

Figure H Class 4.3, Water Reactive Substances

Black or White: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Blue: Background

The symbol is a flame.

Class 5, Oxidizing Substances and Organic Peroxides

Class 5.1, Oxidizing Substances

Figure I Class 5.1, Oxidizing Substances

Black: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Yellow: Background

The symbol is a flame over a circle (Flaming "O").

Class 5.2, Organic Peroxides

Figure J Class 5.2, Organic Peroxides

Black: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Yellow: Background

The symbol is a flame over a circle (Flaming "O").

Class 6, Toxic and Infectious Substances

Class 6.1, Toxic Substances

Figure

Toxic Substances

Black: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

White: Background

The symbol is a skull and crossbones.

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Class 6.2, Infectious Substances

Figure K Class 6.2, Infectious Substances

Black: Symbol, number, text and line 5 mm inside the edge

White: Background

The symbol is three crescents superimposed on a circle.

The text is: INFECTIOUS

In case of damage or leakage immediately notify local authorities

Class 6.2, Infectious Substances

Figure L Class 6.2, Infectious Substances

Black: Symbol, number and line 12.5 mm inside the edge
White: Background
The symbol is three crescents superimposed on a circle.

Class 7, Radioactive Materials

13.9.7.1 Category I – White

Figure M Category I – White

Black: Symbol, number, text and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Red: One vertical bar following the word "RADIOACTIVE"

White: Background

The symbol is a trefoil.

The additional text under the word "RADIOACTIVE" is: CONTENTS ACTIVITY

Category II – Yellow

Figure A-1 Category II – Yellow

Black: Symbol, number, text and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Red: Two vertical bars following the word "RADIOACTIVE"

Yellow: Upper half of background excluding the border

White: Lower half of background and the border

The symbol is a trefoil.

The additional text under the word "RADIOACTIVE" is: CONTENTS ACTIVITY

Category III – Yellow

Figure A-2 Category III – Yellow

Black: Symbol, number, text and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

Red: Three vertical bars following the word "RADIOACTIVE"

Yellow: Upper half of background excluding the border

White: Lower half of background and the border

The symbol is a trefoil.

The additional text under the word "RADIOACTIVE" is: CONTENTS ACTIVITY

Category IV

Figure A-3 Category IV

Black: Symbol, number, text and line 12.5 mm inside the edge

Yellow: Upper half of background excluding the

border

White: Lower half of background and the border

The symbol is a trefoil.

The word " Radioactive " is optional.

Class 8, Corrosives

Figure A-4 Class 8, Corrosives

White: The number 8, upper half of background and the border

Black: Lower half of the background, except for the border and the number, and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

The symbol is liquid spilling from two glass vessels and attacking a hand and a metal bar.

13.9.7.6 Class 9, Miscellaneous Products, Substances or Organisms

Figure A-5 Class 9, Miscellaneous Products, Substances or Organisms

Black: Symbol, number and line 5 mm inside the edge for a label and 12.5 mm inside the edge for a placard

White: Background

The symbol is 7 black stripes resulting in 13 equally spaced vertical stripes in the upper half.

Danger Placard

Figure A-6 Danger Placard

Black: Text

White: Centre horizontal band forming the background for the word "DANGER"

Red: Background except for the centre band

The symbol is the word DANGER, with each letter at least 50 mm high and at least 10 mm wide.

Elevated Temperature Sign

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Figure A-7 Elevated Temperature Sign

Red: Symbol and border

White: Background

Size: Equilateral triangle with sides of at least 250 mm in length

The symbol is a thermometer.

This sign may be displayed on a standard-sized white placard.

Fumigation Sign

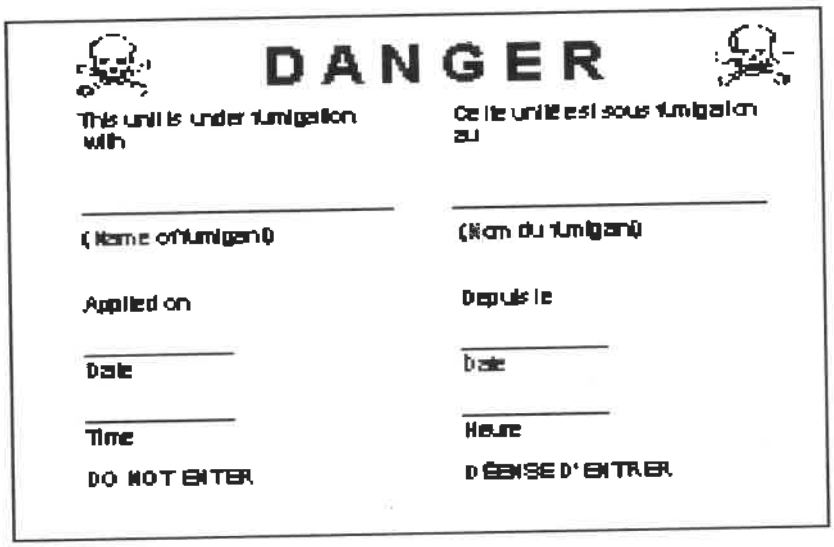


Figure 2 Fumigation Sign

Black: Symbol and text

White: Background

Size: Rectangle, at least 300 mm wide and 250 mm high

The symbol is the word DANGER centered between two skulls and crossbones.

The additional text under the word "DANGER" is:

This unit is under fumigation with

_____

(Name of fumigant)

Applied on

_____

Date

_____

Time

DO NOT ENTER

FIRST AID

First Aid

First aid is the initial assistance or treatment for someone who gets injured accidentally or falls ill.

First Aid Priorities

1. Assess the situation quickly and calmly
2. Protect yourself and the causality from danger
3. Comfort and reassurance to causality
4. Check ABCs
5. Call HSE Department of QABP / Rescue -1122/ for medical help

Human body

1. Anatomy and physiology
2. Respiratory system
3. Cardiovascular
4. Nervous
5. Urinary
6. Gastrointestinal

ABC of Life

1. Airway
2. Breathing and Bleeding
3. Circulation and Consciousness

Choking

Symptoms and Signs

Difficulty in speaking and breathing, coughing and distress, may lead to **unconsciousness**

Emergency management

1. Encourage to cough
2. Bend him forward give 5 sharp slaps between shoulder blades
3. Check mouth
4. Give up to 5 abdominal thrusts check mouth again. Repeat this sequence three times
5. Call HSE Department of QABP / Rescue-1122

Shock

Blood flowing to vital organs is insufficient to keep them supplied with oxygen.

Causes

1. Bleeding
2. Severe burns
3. Anaphylactic shock
4. Heart failure

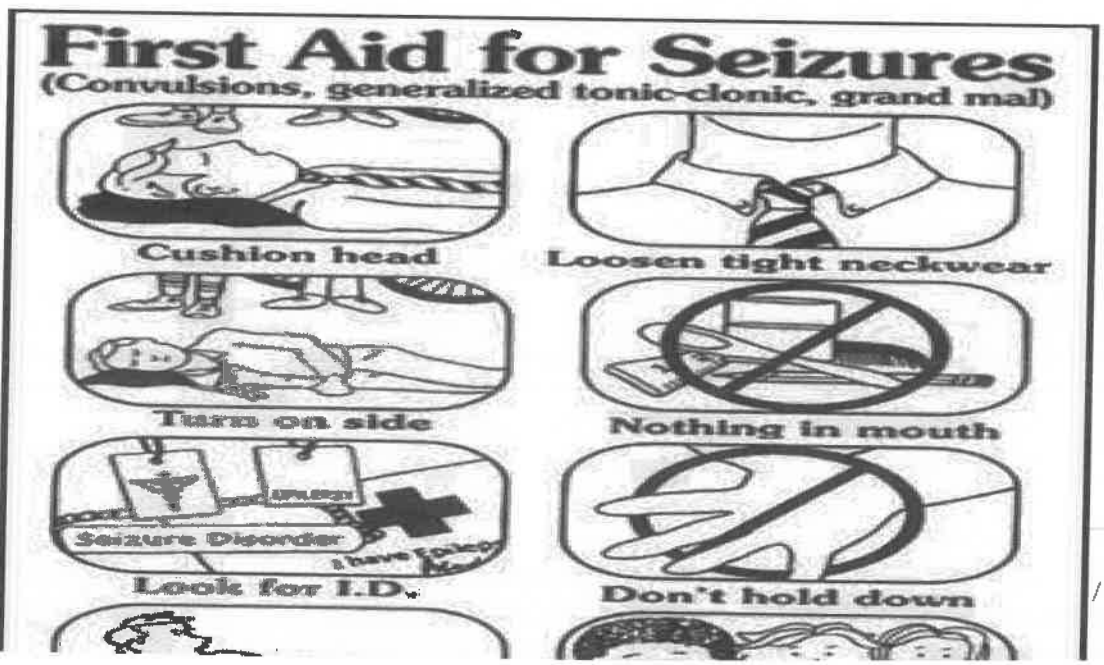
Symptoms and signs

1. Rapid weak Pulse
2. Pale Cold Clammy Skin
3. Sweating
4. Weakness Giddiness
5. Gasping of air
6. Unconsciousness

Management of Shock

1. Help the Causality to lie down
2. Raise and support the legs above the level of the heart
3. Loose tight clothing
4. Treat any cause of shock (Bleeding etc.)
5. Call HSE Department of QABP / RESCUE-1122

FITS



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First Aid for Seizures

Cardio-Pulmonary Resuscitation (CPR)

1. Lean well over the causality with arms straight.
2. Locate lower end of the sternum (breast bone).
3. Compress the chest 15 times 1.5-2 inches (@ 100 comp. /min)
4. Tilt the head, lift the chin, pinch the nose and give two rescue breaths.
5. Repeat chest comp. With two rescue breaths.
6. Continue this procedure until the help arrive or the causality make some movement and take some breath.

Bleeding

Dangerous Signs

1. Weak thready pulse.
2. Gasping for air
3. Unconsciousness

Management of Small Cuts and Wounds

1. Wash the cut with clean water and soap
2. If it is a small graze leave it open to dry

3. If necessary, cover with a small plaster
4. Check that bleeding has stopped
5. Look for other injuries

Management of Heavy Bleeding

1. Press hard on to the wound to stop the bleeding
2. If an arm or leg is cut elevate the limb
3. Cover with a clean pad apply a bandage
4. Check that bleeding has stopped
5. If you have bandaged a limb check frequently that the fingers and toes remain warm

Fractures

1. Support the injured part.
2. Do not move the causality unnecessarily.
3. If an open injury, cover it with clean pad and bandage it in place.
4. Call HSE Department of QABP / Rescue-1122.

Electric Shock

1. Check ABCs
2. CPR if necessary
3. Call HSE Department of QABP / Rescue -1122

Burns

Types

Superficial, 1st degree, 2nd degree, 3rd degree

S/s

Reddened skin, Pain in the area of the burn, swelling and blistering

Management

1. Cool the burn with ample water
2. Remove any constrictions
3. Cover the burn with clean material/plastic bag or the Quench cream
4. Call HSE Department of QABP / Rescue -1122 for help.

Snake bite

1. Call for emergency assistance immediately. Responding quickly in this type of emergency is crucial. While waiting for emergency assistance:
   a. Wash the bite with soap and water. Immobilize the bitten area and keep it lower than the heart.
2. Cover the area with a clean, cool compress or a moist dressing to minimize swelling and discomfort. Monitor vital signs.
3. If a victim is unable to reach medical care within 30 minutes, the American Red Cross recommends:

Apply a bandage, wrapped two to four inches above the bite, to help slow the venom. This should not cut off the flow of blood from a vein or artery - the band should be loose enough to slip a finger under it.***Transportation*** Ambulance will be used;

1. In case of fractures
2. In case of shock
3. In case of bleeding
4. In Case of Skin

	Punjab Industrial Estate Development And Management Company	DOC. #: PIEDMC-QABP-HSE/MANL-001	
	HSE MANUAL	Issue No.1	Issue Date

SAFETY SIGNS

Introduction

Safety signs are used to convey health / safety messages by combining geometrical shape, color and a pictorial symbol, to provide specific health and safety information or instruction.

The use of safety signs does not mean that the need for appropriate accident prevention measures will not be required in areas with sign posting.

Standards for Safety Signs

Safety signs are divided into four categories according to the type of message:

1. **Prohibition signs** Meaning - Do not operate. You must not; stop.
2. **Mandatory signs** Meaning - you must carry out the action given by the sign.
3. **Warning signs** Meaning - cautions; risk of danger; hazard ahead.
4. **Safe condition signs** Meaning - the safe way; where to go in an emergency; location of safety equipment or first aid.

The basic sign for all categories comprises:

a) A specific shape according to the category of the sign.

b) A color to which a specific safety meaning or purpose is assigned.

RED means **STOP**

BLUE means **OBEY**

YELLOW means risk of **DANGER**

GREEN means **GO** (safe)

c) A contrasting colour, where necessary, that contrasts with the safety colour to make the sign more conspicuous.

d) A symbol or pictorial representation within the safety sign.

The basic sign may be used where the hazard can be fully indicated without additional information.

If the sign needs additional information, supplementary text can be added, within a rectangular shape, next to the safety sign. Supplementary text shall be as in the sign with the text in the contrasting color on the safety sign background, or black letters on a white background.

Fire equipment signs comprise a red rectangle with symbol and/or text in white.

SAFETY SIGNS - PURPOSE AND COLOR

Purpose	Safety shape	Color	Contrasting color	Symbol color
Prohibition	Outline circle with diagonal cross bar	Red	White	Black
Mandatory action	Solid circle	Blue	White	White
Warning	Outline triangle	Yellow	Black	Black
Safe condition	Rectangle	Green	White	White

Multi-purpose signs are used to convey more than one message and any text or supplementary sign associated with, or as part of, a safety sign should be restricted to that safety sign category only, and should not include text relating to any other category. As an example, the multi-purpose sign may carry warning, prohibition and mandatory signs as follows:

a) Highly Volatile / Spirit highly flammable

b) No smoking

c) Switch oil engine

Identification of danger may be required in places where there is a risk of collision, falling, stumbling; falling objects or where there are steps, holes in floors or similar hazards. Attention can be drawn to these hazards by a danger identification sign, comprising a broad yellow band with diagonal, equidistant black stripes across it, located in the vicinity of the hazard.

The danger identification signs are used in addition to safety signs and not as a substitute.

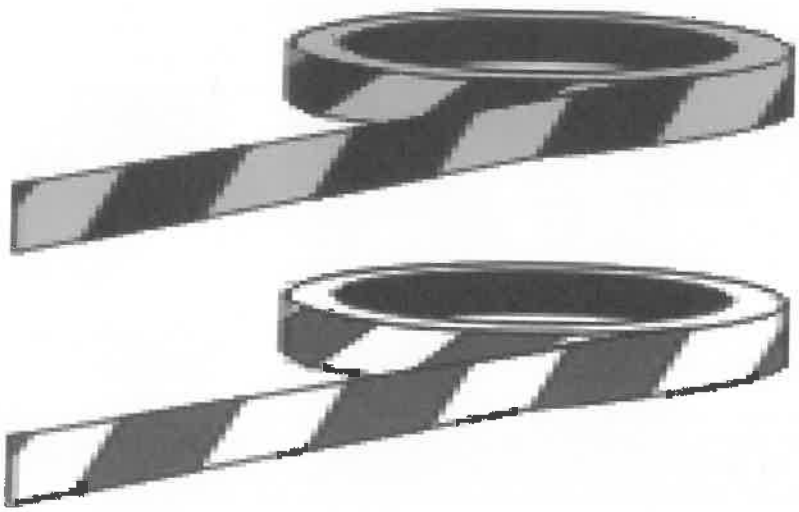

Figure 3 Probated Sign

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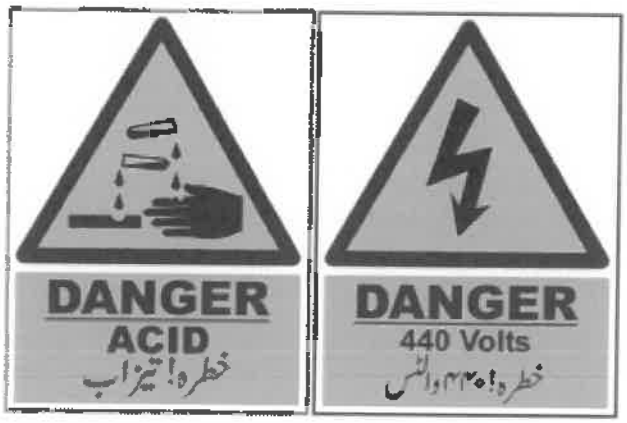
MANDATORY SIGNS

Mandatory signs

WARNING SIGNS

WARNING SIGNS



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SAFE CONDITION SIGNS

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	HSE MANUAL	Issue No.1	Issue Date

EMERGENCY RESPONSE PLAN (ERP)

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EMERGENCY

An unplanned, sudden, untimely event, causing injuries, death, and loss of reputation / production

OBJECTIVE

The objective of an emergency plan is to handle an incident/ Emergency with well-trained personnel supported by the required resources, efficient communications and backed by an alert administration. This plan will help to minimize panic and confusion in the event of an emergency. The prevention of personal injury and loss of property are the primary purpose for establishing this Plan.

Emergencies can strike at any time. ERP is to establish policies, procedures and organizational structures for response to a major emergency or crises and team of people who can respond to emergencies to do specific tasks and can take important decisions. There are only two basic rules for effective Emergency Response. Personnel must report to pre-arranged assembly points when they hear the alarm, and key figures must perform specified kick-off tasks before going into action.

The scenarios are designed to illustrate general principles only. The Emergency response plan or

scenarios are built on the incident categories.

Incident categories

International practice is to classify incidents into categories, based on their severity. Differentiation between categories is based on the capability of controlling the incident, which cannot be decided during the early stages of an emergency. The categories are as under;

CATEGORY	TITLE	DEFINITION & EFFECT	CAUSING INCIDENTS
0	**Minor Incident**	Incident which may involve injury or damage to plant - controllable by personnel on the site	1. Small Fire 2. Small Hydrocarbon Spill 3. Process Leak 4. Small leak of Hazardous Chemicals 5. Minor gas release (toxic or flammable)
1	**Serious Incident**	Incident which may involve **severe** injury, death or serious damage to plant beyond resources of	1. Fire 2. Small explosion with minor

		personnel on the site - controllable by internal resources	knock on effects 3. Serious spill containable 4. Gas release but controllable
2	**Major Incident**	Incident involving injury, death or major damage to plant or environment beyond resources of site emergency/ Fire services-Assistance from external aid required.	1. Major Fire 2. Major explosion 3. Major Spill 4. Major Gas release
3	**Disaster**	Escalating incident involving large-scale injury, death or damage-beyond internal resources and Mutual aid partners-threatening civilian population.	1. Toxic Gas Cloud 2. Flammable Gas Cloud, Disastrous Fires and explosions.

		Evacuation of the Entire area would be required.	

PRESIDENT QABP

Ensure presence of QABP Senior Management at Incident Site throughout the emergency.

Liaison with all external agencies (Media) for briefing them about the incident.

Monitor all emergency Activities throughout and provide support for resources.

PRESIDENTQABP / E.M will declare INCIDENT CATEGORY (0, 1, 2, and 3).

ALL QABP STAFF

Respond to fire alarm or incident and leave the office or work site or residential area and assemble at the designated assembly points. (Designated Area)

AM HR will perform the Head Count or Designated Officer

Monthly fire drill must be carried out. All draft instructions must be shared with all departments of QABP.

ASSISTANT MANAGER HR / HUMAN RESOURCE DEPARTMENT

Keep record of overtime of all the employees working on incident site.

HR department is responsible to keep a track for all the employees, who intends leaving the Lahore

Station. Must issue instructions to all employees to be available in case of emergency. Furthermore all employees Including A.M / Deputy Managers will seek approval / information before leaving the Lahore Station.

ENVIRONMENT OFFICER / ENVIRONMENT DEPARTMENT

Environment officer of QABP will prepare a detail report and suggests mitigation measures with respect to environment (but not limited to).

Prepare thorough report for the cost & cleaning of the roads etc.

Clear & remove debris & wreckages of the site with the help of Staff.

MANAGER ELECTRICAL / ELECTRICAL DEPARTMENT

Electrical department with consent of HSE Department and Owner or representative of the factory or building will disconnect the electricity if required and resume power after all clear.

Coordinate with the Emergency Handling Team at incident Site before any action.

Must have important contact numbers list for information to all concerned

Ensure provision of nonstop electricity to the Over Head Water filling Points in QABP.

DY.MANAGER SECURITY / HOD / SECURITY DEPARTMENT

Provide security coverage at incident site

Inform security supervisors about the arrival of Mutual aid partners and guide them to incident site.

Liaison with Local Police for incident Coverage as required.

Deals with all security issues.

Coordinates with fire services at site for emergency handling.

Coordinates with rescue team at site and focal persons for finding any missing and trapped person.

Use Walki Talkies or Mobile as per requirement

Control Room will follow-up Near By Hospitals of QABP in case of emergency and causalities are being observed.Use Walki Talkie or Mobile as per requirement.

Control room will follow up Rescue -1122, Fire Brigade, City District Government Fire Services and Mutual Aid Partners and Army Head Quarters / Cantt with following contact numbers if Disaster occurs like building collapse etc., for Support

H.O.D HSE

HSE Department Fire & Rescue Section

Senior F.F.O will respond to incident Site with following emergency handling equipment. HOD HSE& Disaster will act as incident controller with the permission of Top Management . Use Walki talkies or Mobile for Communication as per requirement.

Senior F.F.O will act as Incident Lead Officers in incident Controlling. After assessing the incident, Fire & Rescue team at site will inform control room to call Rescue -1122, Fire Brigade, City District Government Fire Services and Mutual Aid Partners for their Support.

Check the building and offices of their respective area for the presence of any trapped or injured person with Close coordination with Security.

Inform Control Room about Injuries and Fatalities. Give first aid & rescue the injured persons to local nearest hospital.

Ensure everyone has left their work Area or office and assemble at Assembly point.

Factory Manager of respective factory in QABP will ensure their head count and give clearance to QABP Fire & Rescue Team .

H.O.D HSE Department will ensure the deployment of rescue personnel's at appropriate places Supervise and ensure the rotation of Fire & rescue Team while extinguishing the fire and Liaison with all departments for resources.

Prepare a report of the Incident that will be submitted to Head Office

Ensure serviceability and operations of all fire and rescue vehicles available

Personal Presence at the scene of incidents.

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ASSEMBLY POINTS OF QABP

Sr.No.	Assembley Point	Location	Staus / Remarks

FIRE AND ITS ELEMENTS

Fire is a rapid, self-sustaining, oxidation process accompanied by the evolution of heat and light of varying intensities. Fire requires three elements for combustion, commonly known as Fire triangle, which are Fuel, Oxygen and Source of Heat or ignition. If we remove any one element from these three, the fire will not sustain combustion.

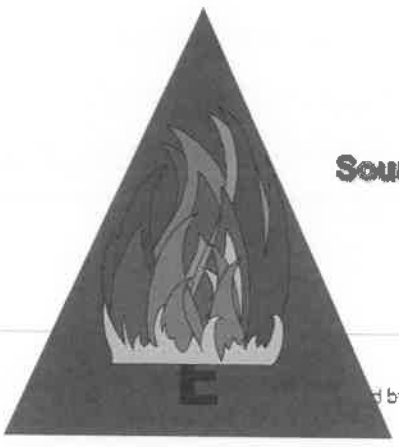


Figure A-1 Fire and Its Elements

Fuel can be found in the form of chemicals, gases, flammable liquids and solids. Oxygen is present in air surrounding the fuel. Heat, the third element, is normally not present at an ignitable level.

Most fires occur as a result of bringing the source of heat or ignition with fuel and oxygen mixture. Fires are started by:

a) Sparks, hot surfaces, flames, friction, grinding, cutting, drilling, welding, chiselling, etc.
b) Spontaneous combustion from heat generated in certain materials.
c) Spilling of chemicals on to flammable materials with which they react.
d) Overloading of electrical circuits causing breakdown of the insulation and subsequent arcing.

Some materials or gases may combine with other materials or gases to form an explosive mixture e.g. Hydrogen with Oxygen. Many chemical reactions are exothermic, i.e. accompanied by the liberation of heat so precautions must be taken in such processes to control the rate of reaction, and to ensure that there is no dangerous rise in temperature. For example, Oxygen and oxidising agents may cause ignition of iron sulphide. Reactions between acid and alkali, and oxidising & reducing agents, are also often sources of considerable heat.

Classification of Fires

Fires are classified in accordance with the type of fuel, so that, each class of fire involves materials with similar burning properties and, therefore, requires similar extinguishing agents.

The classification of fire is based on the NFPA standard, are as follows:

Class A - Fires in solid carbonaceous materials. These are the common ash-producing combustible materials such as wood and wood-based materials, textiles and fibres, and plastics and rubber. The best extinguishing media for Class-A fire is water.

Class B - Fires involving flammable liquids, e.g., Petroleum, Oils, Paints, Solvents. The best extinguishing media for Class-B fire is Foam with Water.

Class C - Fires involving energised electrical equipment, conductors or appliances, or fires started by an electrical fault or involving high voltage electricity. The risks posed by fires in electrical equipment are short circuits and electrical shock to the fire fighter. The power supply must be isolated and an inert non-conducting extinguishing media like CO_2 and Dry chemical powder (DCP) must be used. The isolation of the power supply will also prevent re-ignition from a faulty circuit.

Fires involving electronics such as computers, electronics, etc. can be extinguished by CO_2 and Halatron.

Class D - Fires involving combustible metals such as Aluminium, Magnesium, Potassium, Sodium, and Titanium. The best extinguishing media for Class-D fire is DCP.

Class E - Fires involving flammable gases such as hydrocarbon gases, hydrogen, etc.

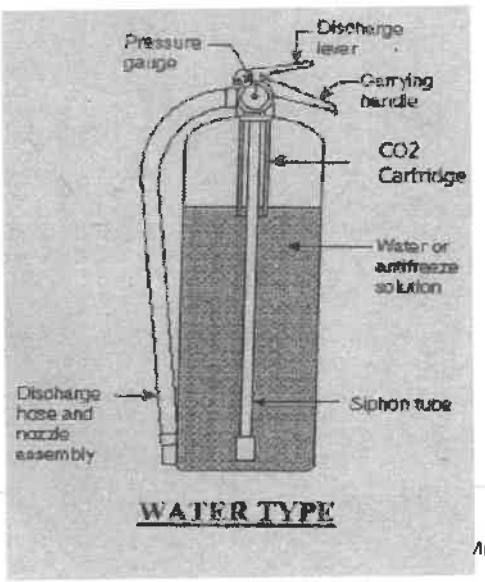
Gas fires should be extinguished by fuel starvation, by isolation of the fuel supply. There is no extinguishing media for gases fire. However if a gas fire ignites another fire then the fire has to be controlled according to the class of that fire.

PORTABLE FIRE EXTINGUISHERS

The Industrial Safety Unit (ISU) BOMSIE department is responsible for the BOMSIE portable fire extinguishers on Gate No.1, Gate No.2, Gate No.4 , Electric Grid , Rescue Buildings and External Fire Hydrants of SIE Inspection and Operations Only.

WATER EXTINGUISHER

Water type fire extinguishers are available for tackling class-A fire. These should not be used on fires involving live electrical equipment. Water type fire extinguisher contains water-based agents such as water & expellant agent, internally fixed with CO_2 cartridge.



WATER TYPE

Ar. Zeeshan Ali / Professional Engineer / PEC No.4664

Dry Chemical Powder (DCP) Extinguisher

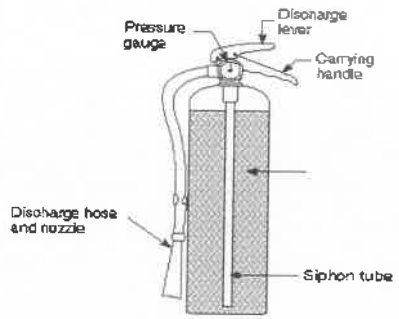
For use on Class-B and C fires where contamination is not a problem. DCP extinguishers are of three types:

1) Stored pressure
2) Outer cartridge
3) Inner cartridge

Stored pressure

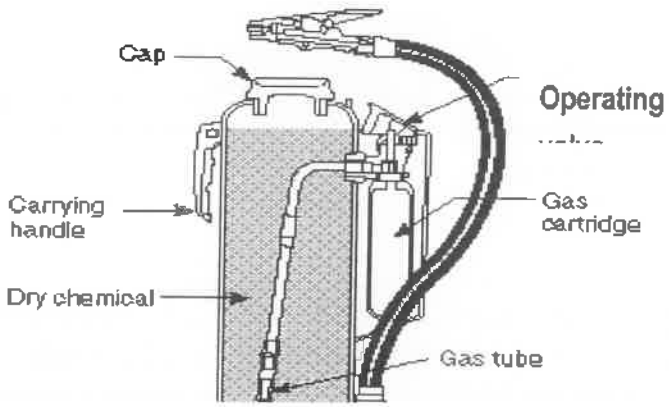
Fire extinguisher in which the extinguishing material (DCP) and expellant gas Nitrogen are kept in same cylinder, and the pressure is indicated by a pressure gauge.

Figure A-3 Stored pressure



Outer cartridge

In DCP outer cartridge, fire extinguisher has Potassium Bicarbonate. Carbon dioxide is used in small cartridge attached with the cylinder for the expelling agent.

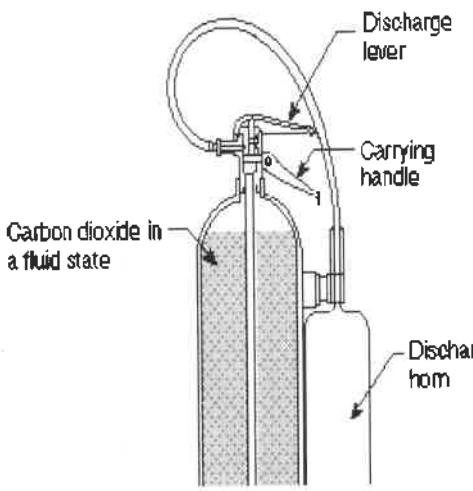


Inner cartridge

In DCP inner cartridge fire extinguisher, in which small Carbon dioxide cartridge is used inside the cylinder, which pressurizes the powder & act as an expelling agent.

Carbon Dioxide Extinguisher

For use on fires involving electrical equipment. CO_2 is safe for use on electrical panels and electrical equipment, as it does not leave any residue.



ıan Ali / Professional Engineer / PEC No.4664

Carbon Dioxide Extinguisher

Halotron Extinguisher

It is used on all types of fires. Prevents re-ignition and will leave no residue, and avoids expensive clean ups.

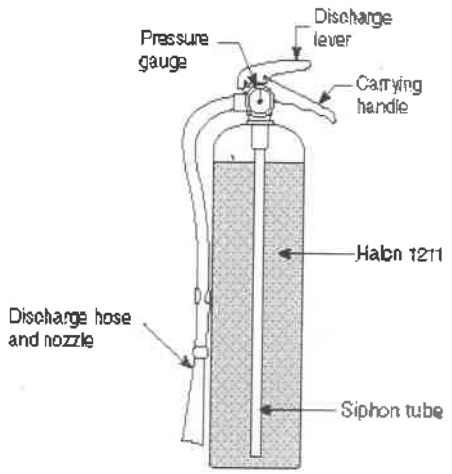


Figure of Halotron Extinguisher

FIRE EXTINGUISHER OPERATIONS

Hold upright, pull out locking pin, direct the direction at base of fire and squeeze discharge handle/ lever. Direct discharge at base of fire and continue after fire has gone out. Apply in sweeping action from side to side. Make it very clear in your mind the wind direction and always use

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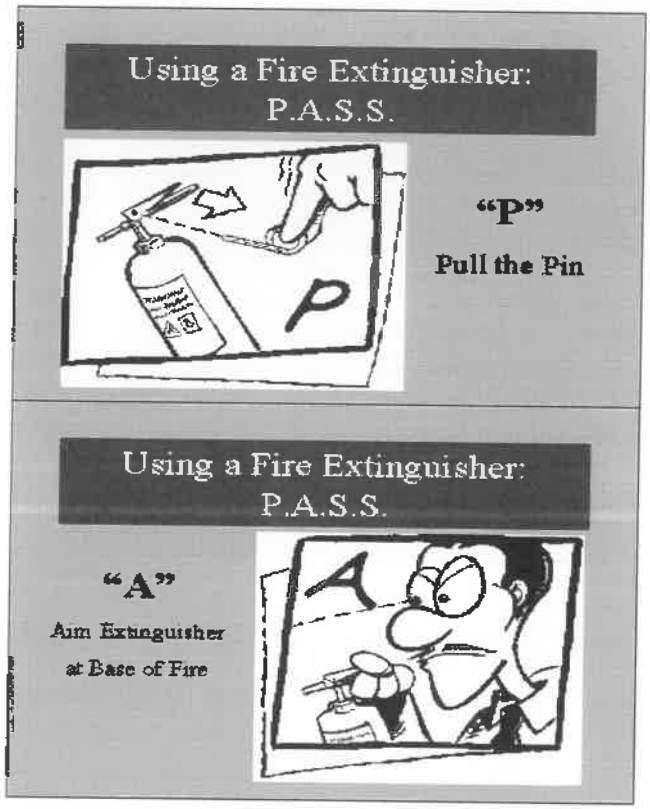
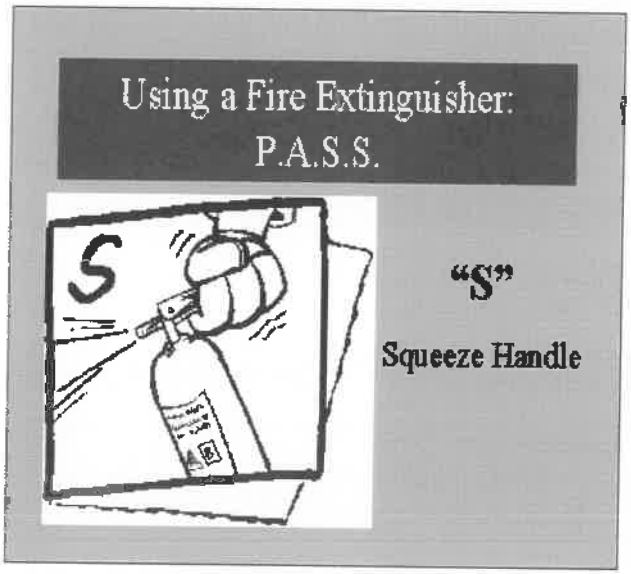
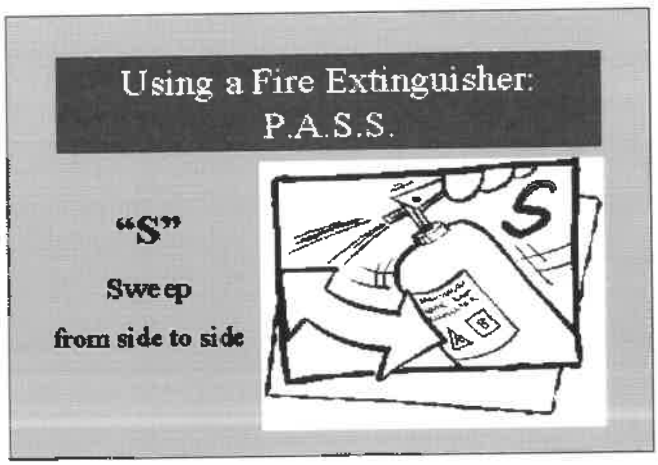
extinguisher in upward direction of wind at base of fire.


Using a Fire Extinguisher:
P.A.S.S.
"P"
Pull the Pin
Using a Fire Extinguisher:
P.A.S.S.
"A"
Aim Extinguisher
at Base of Fire


Using a Fire Extinguisher:
P.A.S.S.
"S"
Squeeze Handle

703



Hose Reels

Hose reels are required to carry fire-extinguishing water from main fire water line or fire vehicles, to the scene of a fire. There are 43 hose reels utilized in different areas.

Monitors

Monitors are used to discharge either water or foam with water. They can be on a fixed base, mounted on a mobile unit or on fixed tower. Monitors that are fixed can be operated locally or remotely. There are 94 monitors situated at different places.

FIRE EXTINGUISHING MEDIA

WATER

Water has the ability to absorb heat especially when evaporating to steam; it is thus an ideal cooling agent. It is useful in protecting equipment involved in, or near fires. Water will not extinguish highly flammable liquids so in this situation foam must be used

FOAM

Foam is a blanket of tiny, close-knit air-filled bubbles that floats on the lightest flammable liquids. When properly applied it flows across the surface of the burning liquid, progressively cutting off the air supply and smothering the fire. It also prevents vapour escape on spilled fuel. It is not easily dissipated and remains intact after the fire is extinguished, preventing re-ignition. To produce foam it is necessary to bring together the correct proportions of water, air and foam compound in a turbulent manner.

DRY CHEMICAL POWDER

DCP is discharged as a free flowing cloud. It is effective in dealing with a fire resulting from an oil spill and cannot be used in confined spaces. It is especially useful on burning liquids escaping from leaking pipelines and joints. It is a non-conductor so suitable for dealing with electrical fires and must be directed into the flames.

DCP has a negligible cooling effect and affords no protection against re-ignition, arising, for example, from the presence of hot metal surfaces. Certain types of DCP can cause a breakdown of a foam blanket and only those labelled 'foam compatible' should be used in conjunction with foam. DCP clogs and becomes useless if it is allowed to become damp when stored or when extinguishers are being filled.

Carbon Di-Oxide

CO_2, as an extinguisher, is effective primarily because it reduces the oxygen content of the air to a point where it no longer support combustion. A reduction of the oxygen content of the air from the normal 21% to 16% will start extinguishing most fires in spaces, which do not contain materials that produce glowing embers, or smouldering fires. In spaces containing such materials, or for fires involving very hot metal, it is necessary to reduce the oxygen content to 16% or less, and to maintain that dilution for more than the normal brief period, otherwise re-ignition may occur when

the area is ventilated

The shorter the time interval between the start of a fire and the release of the CO_2, the less heat will be built up in the surrounding materials and the more effective the smothering.

It can have the effect of making electrical insulation brittle when after heat; it is subjected to the cold shock application of CO_2. The main use at present is as an expellant in hand held extinguishers of water and DCP where it is used in cartridge form.

Halotron

Halotron includes Dichlorotrifluoroethane (HCFC-123) and proprietary gas mixture. Halotron is pressurized with Argon gas. This extinguisher is best for Class-E fires. Especially to safe the electronic equipments like computer and other sensitive electronic equipments. It leaves no residue. It is ozone friendly (Ozone depleting factor is Zero). It is the replacement of Halon 1211.

FM-200

For many years, people recognized Halon 1301 as one of the most effective Fire fighting/ suppression agents for diverse applications. It quickly extinguished all major classes of fires. It was especially in high value asset protection situations where it caused no residual damage to delicate equipment. In addition, Halon 1301 systems were utilized for both occupied and unoccupied spaces and were easy to install.

But Halon1301 was thought to have significant environmental consequences due to its potential contribution to depleting the stratospheric ozone layer.

With the phase-out of Halon 1301 production, effectively in nearly all countries at the end of 1993, the quest for a replacement resulted in the introduction of a number of clean fire suppression agents to the marketplace. FM-200 is one of the leading choice for high value assets fire protection.

PANADEMIC

RISK ASSESSMENT CHART (RAC)

SEVERITY	PROBABILITY				
	Frequent (F)	Likely (L)	Occasional (O)	Seldom (S)	Unlikely (U)
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L
	P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent (F), Likely (L), Occasional (O), Seldom (S) **P "Probability"** is the likelihood to cause an incident, near miss, or accident and identified as: Frequent (F), Likely (L), Occasional (O), Seldom (S)				**RAC Chart**
	S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic (C), Critical (Cr), Marginal (M), or Negligible (N) **S "Severity"** is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic (C), Critical (Cr), Marginal (M), or Negligible (N)				**E= Extremely High Risk**

	Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.	**H = High Risk** **M = Moderate Risk** **L = Low Risk**

Job Steps	Hazards	Controls	P	S	RAC
			O	M	M
1. Travelling to and from work	1.1 Close proximity to co-workers who may be infected 1.2 Handrails and seats infected with the virus 1.3 Hand to mouth contamination	1.1 Wherever possible choose a seat on any transport that prevents direct contact. Always wear long sleeved clothing on public transport. 1.2 Do not touch handrails, sides of seats or door handles, if you do, ensure no hand to mouth before washing your hands and sanitizing? All personnel should carry and use a small Alcohol based hand sanitizer, in case of contact 1.3 Never eat on any transport, do not chew on any transport, wear a face mask wherever possible Always try and use your own vehicle where possible, if you give someone a lift maximum of 3 occupants	O	M	M

2. Entering buildings	1.4 Touching exposed surfaces like door handles and potential hand mouth contamination Contamination from site, public transport or people into the office environment	1.5 Close proximity to co-workers who may be infected 1.6 Handrails and seats infected with the virus 1.7 Hand to mouth contamination	O	M	M
3.Working at your workstation in the office	3.1 Contamination from other users 3.2 Cross contamination from adjacent workers	1.8 Touching exposed surfaces like door handles and potential hand mouth contamination 1.9 Contamination from site, public transport or people into the office environment	O	M	M
4.Greeting people in the office or on site	4.1 Body to body contact resulting in hand to mouth contamination	4.1 Never shake hands, hug or greet anyone outside of your family home using body to body contact. If this happens unknowingly immediately wash your hands/face in warm soapy water for min 20 secs and then sanitise your hands	H	U	L
5.Taking cold drinks in the office	5.1 Hand to mouth contamination from receptacles and drinking stations	5.1.1 Never touch the nozzle of a drink's dispenser 5.1.2 Never use someone else's drinking receptacle 5.1.3 Take your personnel drinking bottle/cup home each evening and wash thoroughly, never leave on	O	M	M

		your desk 5.1.4 Never re-use plastic bottles 5.1.5 Never touch the nozzle of the drink's dispenser with the neck of your receptacle			
6.Taking warm drinks in the office	6.1 Hand to mouth contamination from cups	6.1.1 Never make a warm drink unless the water is boiling, if not boiled recently, place the non-metal cup in the microwave for 40 seconds 6.1.2 Personally wash your cup after every drink in warm water and using washing liquid 6.1.3 Always wash your cup at the start of the working day before the first drink, as described in 6.1.2. 6.1.4 Never share warm drinks 6.1.5 Never use shared milk cartons from a shared fridge	L	N	L
7.Eating food in canteen	7.1 Hand to mouth contamination from food that is contaminated 7.2 Contaminated cutlery/crockery	7.1.1 Never take food not prepared by either yourself, your immediate family (who you live with) or from a culinary professional	Cr	U	L

		catering service 7.1.2 Always wash your hands for 20 seconds in warm soapy water before taking food and always after touching a shared appliance like a microwave			
8.Conduct in (Essential) meetings	8.1 Body to body contamination (hand to mouth) 8.2 Inhalation of persons contaminated mouth droplets	8.1.1 Always Follow Expo Covid 19 Management Procedure (Business Resilience) guide on whether the meeting is classed as essential 8.1.2 Observe social distancing protocol in meeting rooms at all times – Prepare meeting rooms by reducing chairs so a minimum of 1m side by side and 1.8m opposite is observed 8.1.3 Never share pens or notebooks, especially when signing attendance sheets 8.1.4 Always wash and sanitise hands before and after a meeting 8.2.1 Never move chairs into a pre-laid meeting room	**Cr**	**U**	**L**

		and close the social distance gaps 8.2.2 Utilise IT and display minutes to avoid possible cross contamination 8.2.3 Ensure all meeting attendees have received a temperature check that day			
9.Travelling in work vehicles	9.1Body to body contamination (resulting hand to mouth)	9.1.1 Maximum number of people in one Expo vehicle is 3. Driver and one person at each side of the rear seats 9.1.2 The driver and passengers should always wash and sanitise their hands-on arrival at site and return to the office 9.1.3 Always ensure you identify your vehicle to the Expo fleet cleaner each time you return from site, so it can be sanitized			
10 Working on Expo Site	10.1 Hand to mouth contamination from contaminated items on site	10.1.1 Always wear gloves without exception, inclusive of driving the vehicle 10.1.2 Always regularly use site ablutions to wash and sanitise your hands 10.1.3 Never take food or drinks on any construction			

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		project within the Expo 10.1.4 When ladders, scaffolds etc have been touched for essential movement on site, wash your hands and sanitise before leaving site			
11.PPE	11.1 Contamination of PPE from site	11.1.1 Always wash your gloves and hi vis jacket regularly 11.1.2 Never wear safety boots without socks 11.1.3 Always wash any clothes that may have been contaminated at the end of the day			
12. Arrival home from work	12.1Possible hand to mouth contamination 12.2Contamination from doors and lift buttons 12.3Personal contact in lifts with other occupants	12.1.1 Wherever possible wash site work clothes daily in a good detergent 12.1.2 Shower before physically greeting family 12.1.3 Place work clothes in an area to avoid contact with your wife/husband and children 12.2.1 Always try and open doors with the elbow or back, when not possible carry a piece of tissue that can be			

		discarded once used to grasp the handle 12.2.2 Press lift buttons using your knuckle with a tissue. 12.3.1 Once selected the floor in your lift, face the wall of the lift and not other people. If you feel the lift is or becomes crowded, remove yourself from the asset and wait for another			

WASTE MANAGEMENT

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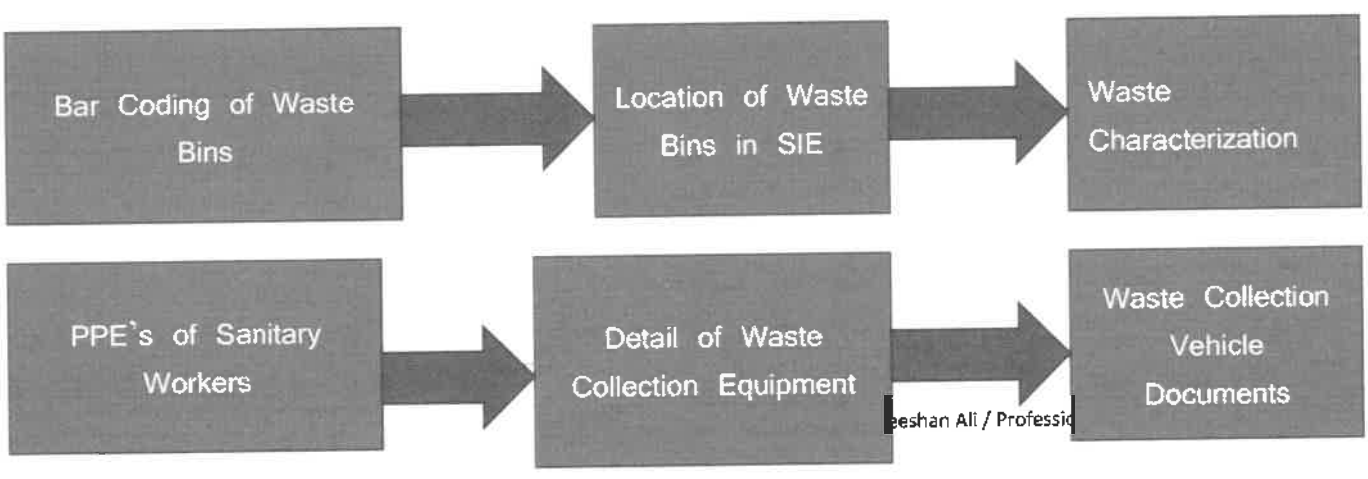
	Punjab Industrial Estate Development And Management Company	DOC. #: PIEDMC-QABP-HSE/MANL-001	
	HSE MANUAL	Issue No.1	Issue Date

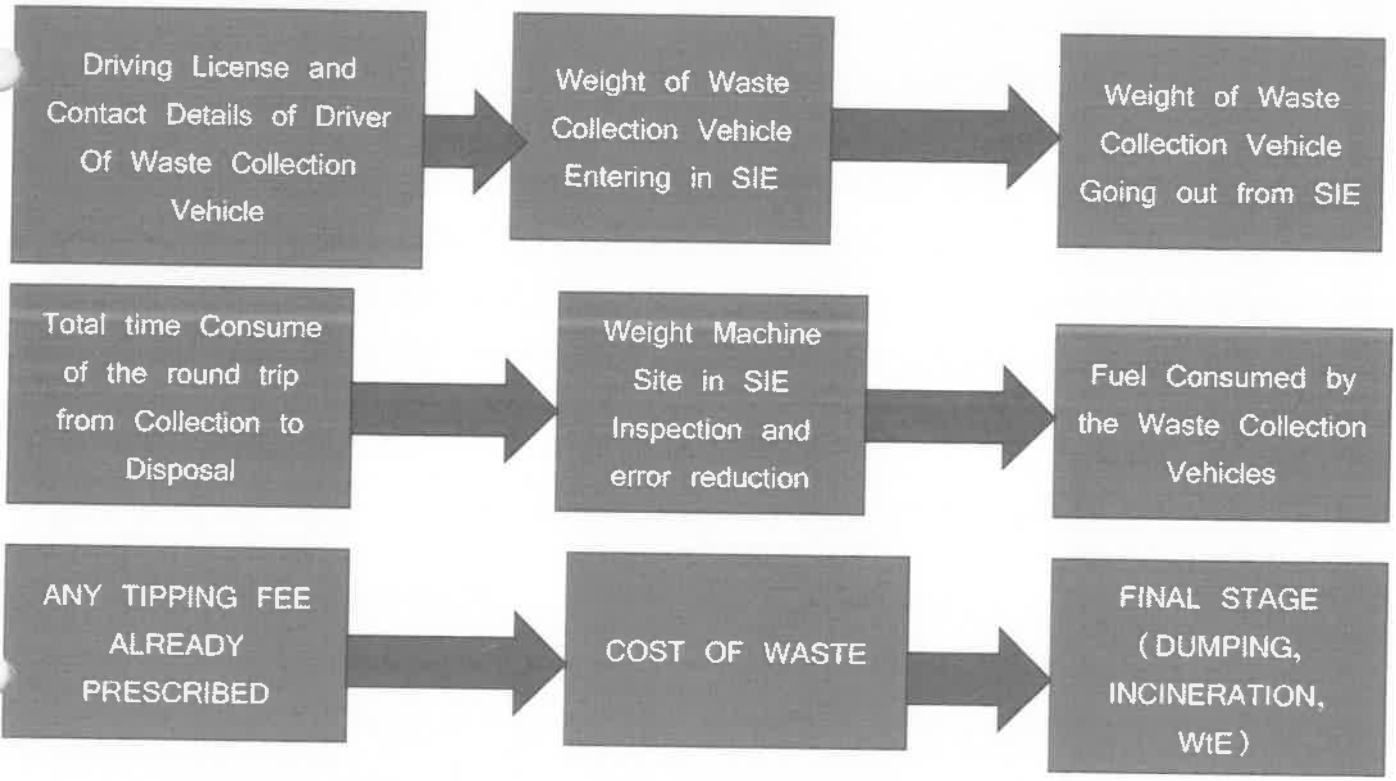
PLAN

WASTE MANAGEMENT:

CURRENTLY BOMSIE is dealing with non-hazardous waste in Sundar Industrial Estate.



eeshan Ali / Professio



ENVIRONMENT MEANS

a) Air, water and land;

b) All layers of the atmosphere;

c) All organic and inorganic matter and living organisms;

d) The ecosystem and ecological relationships;

e) Buildings, structures, roads, facilities and works;

f) All social and economic conditions affecting community life

The National Assembly of Pakistan passed the Pakistan Environmental Protection Act 1997 on September 3, 1997, and by the Senate of Pakistan on November 7, 1997. The Act received the assent of the President of Pakistan on December 3, 1997. It is an Act to provide for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and promotion of sustainable development.

Environmental Standards" means qualitative and quantitative standards for discharge of effluent and wastes and for emission of air pollutants and noise either for general applicability or for a particular area, or from a particular production process, or for a particular product, and includes the National Environmental Quality Standards (NEQS) / PEQS given in Table- (a)&(b) established under Pakistan Environmental Act and the rules & regulations.

Table (a) NEQS o for Industrial Gaseous Emission

S. No.	Chemical	NEQS (mg/Nm3)
1	Sulfur Oxides (SOx)	1700/ % sulfur in fuel
2	Nirogen Oxides (NOx)	600
3	Carbon Monoxide (CO)	800
4	Particulate Matter (PM)	300
5	Hydrogen Chloride (HCl)	400
6	Chlorine (Cl)	150
7	Hydrogen Sulfide (H2S)	10
8	Smoke	Scale 40% or 2 Ringlemann Scale or equivalent smoke number

Table (b)NEQS for Municipal and Liquid Industrial Effluents

S. No.	Chemical	NEQS (mg/l)
1	PH	6 – 9
2	Temperature	= < 3°C
3	Total Suspended Solids (TSS)	200
4	Total Dissolved Solids (TDS)	3500
5	Oil and Grease	10
6	Chemical Oxygen Demand (COD)	150
7	Biological Oxygen Demand (BOD)	80
8	Phenolic Compound	0.1
9	Chloride (Cl)	1000
10	Fluoride (F)	10
11	Sulphate (SO4)	600
12	Lead	0.5
13	Total Toxic Metals	2.0
14	Chlorine	1.0
15	Mercury	0.01
16	Ammonia (NH3)	40
17	Iron	8.0
18	Zinc	5.0
19	Sulphide (S)	1.0
20	Silver	1.0

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VISITORS & CONTRACTORS

HSE of QABP Department will ensure the good health and safety of our contractors and visitors while in QABP Offices / Ware House / Store / Electric Grid SIE or any plot in QABP.
We ensure they are not harmed by our working environment and that our employees are also not harmed by our contractor's work.

HEALTH AND SAFETY OF CONTRACTORS AND VISITORS

All visitors and contractors must report to the office/reception. We ask them to read and sign the Risk Assessment of COVID-19 which is the Part of Health, Safety and Environment Manual & Policy.
HSE Department of QABP will all restricted areas are clearly sign-posted to protect visitors and contractors.

QABP HEALTH SAFETY AND ENVIRONMENT RULES FOR VISITORS

Welcome to QABP. Please read the following information and sign the form provided.

- Do not go into the work area unaccompanied.
- Please wear personal protective equipment (PPE) when asked to do so.
- If you have an accident, please report to the receptionist and ensure it is recorded in the accident register.
- If you see anything hazardous, please let us know.
- If there is an emergency and you are required to evacuate, please leave the building

immediately. Approach the nearest Assembly Point.

- Do not use the lifts. Follow staff or fire wardens to the assembly point.

Name: Designation Contact No.

CONTRACTORS AND VISITORS RECORD TABLE

Sr. No	Date	Name	Read the safety information		Time In	Time out	Signature	Remarks
			Yes	NO				

COVID – 19 Self-Assessment Check List For all Types of Visitors

Visitor Name		Gender	
Organization / Deptt		Age	
Department or Person to be Visited		Contact No.	

Check List **Yes** **No** **Marks**

Overseas personal travel within last 14 days	01
Consistent Flu	01
Consistent Dry Cough	01
Low Grade Fever (99.3 F)	01
Shortness of Breath	01
Lost of Taste / Smell Senses	01
Expouser with Corona Patient or those dealing With Corona Patients	01
Exposure with friends / relatives having travel history And exhibiting Covid-19 symptoms.	01

INTERPRETATION

- IF SCORE IS ZERO = SAFE, WORK AT OFFICE MAY BE ALLOWED
- IF FALL BETWEEN 1-3 MARKS = ISOLATE AT HOME AND OBSERVE
- IF FALL BETWEEN 4-6 MARKS = REPORT TO GOVT HEALTH AUTHORITY OR HELP LINE 1166 / 1032 .
- IF FALL BETWEEN 7-10 MARKS =MANDATORY COVID-19 TEST

Note:

It is mandatory for every visitor to submit his or her Self declaration on Visit to any QABP Office Building or Plot.

SCAFFOLDING

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Introduction

In a recent study conducted by OSHA 72% workers are injured in scaffold accidents, which attributed the accident either to the planking or support give way, or to the employee slipping or being struck by a falling object. So by implementing the standards regarding scaffolding, these accidents can be eliminated.

Scaffold: Temporary elevated working platform for supporting both workers and materials. Scaffolding includes the necessary vertical, diagonal, and horizontal pipes that support the working-surface platform.

Planking or Working platform: A working space for persons, elevated above the surrounding floor or ground, such as a balcony or working surface above the operation of machinery and equipment.

Any work at 2m (6ft 6in) or more above ground level (as per OSHA standard) is to be considered, as work at height and for working at heights, where permanent platforms are not available there must be scaffolding erected. Scaffoldings are mostly constructed of metal poles/ pipes, planks and clamps. It must be designed to support at least four

times the anticipated weight. The main parts for construction of scaffolding are as under.

a) Base plate
b) Scaffolding pipes
c) Guardrail
d) Mid rail
e) Toe board
f) Clamps
g) Cross bracing
h) Planks
i) Ladder

Requirements

The following standards shall be used in design of, and specifications for, scaffolds, platforms, and other "work surfaces":

1. A "Competent Person" shall supervise the erection, dismantlement, alteration or movement of any scaffolding.
2. All personnel constructing or utilizing scaffolding shall be instructed in their proper and safe use.
3. All equipment shall be inspected for defects before each use. Bent corroded, cracked or otherwise damaged end frames, braces, or accessories should not be used.
4. Scaffolds shall be designed to support at least four times the anticipated weight of workers and materials and must never be overloaded.

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5. Before erecting any scaffolding it is necessary to prepare foundations for it if necessary. The ground which is to be used for base must be levelled off and compacted so that there will be no settling once the scaffolding is erected.
6. Scaffold poles shall bear on base plates that have adequate firm foundations. Base plates shall be levelled, rigid, and capable of supporting the loaded scaffold without settling or displacement.
7. The standard height to width ratio of scaffolding is 4: 1.
8. The construction must be rigid, properly braced and adequately tied to ensure stability. Vertical standards (Post) should be not more than 1.2m (4ft) apart for load bearing scaffolding and not more than 2.4m (8ft) for working platforms.
9. Cross bracing shall be provided between the inner and outer sets of poles for the scaffold, which is above 1.8m (6ft) height. The free ends of scaffold shall be cross-braced.
10. Diagonal bracing shall be provided in both directions to prevent the poles from moving in a direction parallel with the wall of the building and to support loads equivalent to a uniformly distributed load of 500 pounds (227 kg) or more per square foot (929 sq cm).
11. Each platform unit shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch (2.54cm) wide, except where the employer can demonstrate that a wider space is necessary (for example, to fit around uprights when side brackets are used to extend the width of the platform).

Each end of a platform 10 feet or less in length shall not extend over its support more than 12 inches (30 cm) unless the platform is designed and installed so that the cantilevered portion of the platform

12. is able to support employees and/or materials without tipping, or has guardrails which block employee access to the cantilevered end.
13. Each platform greater than 10 feet in length shall not extend over its support more than 18 inches (46 cm), unless it is designed and installed so that the cantilevered portion of the platform is able to support employees without tipping, or has guardrails which block employee access to the cantilevered end.
14. Each scaffold platform and walkway must be at least 18 inches (46 centimetres) wide. When the work area is less than 18 inches (46 centimetres) wide, guardrails and/or personal fall arrest systems must be used.
15. To protect employees from falling hand tools and other small objects, install toe boards, screens, guardrail systems, debris nets, or barricades.
16. Guardrails and toe boards shall be installed on all open sides and ends of scaffold platforms more than 10 feet above the ground or floor. Wire mesh screening should be used between toe board and guard railings whenever persons are required to pass near scaffolding.
17. Where work is being performed in close proximity to dangerous equipment, tanks, or pits containing dangerous chemicals, these open-sided floors shall be guarded with railing and toe boards regardless of height. It is, in fact, recommended that such guards always be provided regardless of height.
18. Working platform should be provided with toe boards not less than 150mm (6in) high.

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19. Mid-rails must be installed approximately halfway between the guardrail and the platform surface. When a cross point of cross bracing is used as a mid-rail, it must be between 20 inches (0.5 meters) and 30 inches (0.8 m) above the work platform.
20. The height of the guardrail for scaffolds must be between 38 inches (0.9 meters) and 45 inches (1.1 meters).
21. When the cross point of cross bracing is used as a guard rail; it must be between 38 inches (0.9 m) and 45 inches (1.1 meters) above the work platform.
22. Working platforms should be as close as possible to the face of the building or the wall. If work is to be done in a seated position, the gap should not be greater than 200mm (8in).
23. A scaffold platform should consist of scaffolding planks not less than 25mm (1in) thick, and project beyond the transoms or putlogs at least 50mm (2in), but not more than four times its thickness, unless effectively secured to prevent tipping.
24. The width of the platform must allow free movement consistent with the type of work being carried out on it.

    ii) When used only as a footing - three boards 650mm (25in) total width.

    iii) When used as a footing and for stacking materials - four boards, 864mm (34in) total width. Whenever materials are stacked a clearance of 432mm (17in) must be maintained.

    iv) When used as a support for a higher platform or when working with stacked materials, to allow 635mm (25in) clear for a barrow - five boards, 1067mm (42in) total width.