APPLICATION FOR

GRANT OF GENERATION LICENSE

BY

MADINA SUGAR MILLS LIMITED (MSM)

FOR

70.84 MW BAGASSE FUEL THERMAL POWER PLANT AS "CAPTIVE POWER" AND FOR DELIVERY & SALE OF ELECTRIC POWER TO ADJACENT SISTER CONCERN (S), FAISALABAD ELECTRIC SUPPLY COMPANY LIMITED AND OTHER INTENDING BULK POWER CONSUMERS, WITH NECESSARY APPROVALS AND THE AUTHORIZATIONS

THROUGH

RASIKH CONSILIUM
(ADVOCATES & CONSULTANTS)

1 – C, LDA APARTMENTS, 55 – LAWRENCE ROAD, LAHORE, PAKISTAN

T: + 92 42 36282595 F: + 92 42 36282594 W: www.rasikh.pk

Madina Sugar Mills Ltd

Formerly Madina Sugar & Chemicals (Pvt.) Limited
(A Project of Madina Group of Industries Established 1948)
Incorporated Under Section 32 of the Companies Ordinance 1984, Government of Pakistan
Member: Faisalabad Chamber of Commerce and Industries, Pakistan Sugar Mills Association

The Registrar
National Electric Power Regulatory Authority
NEPRA Tower Ataturk Avenue (East)
Sector G-5/1, Islamabad
Pakistan

Subject: **Application for grant of the "Generation License"**

Sir,

1. I, **Muhammad Hanif**, Chief Executive Officer, being the duly authorized representative, of Madina Sugar Mills Limited (Pvt.) Limited, hereinafter referred to as "MSM", by virtue of Board Resolution dated 23rd Day of November, 2016, hereby apply to the National Electric Power Regulatory Authority for the grant of a generation license to MSM for its power plant having a captive capacity of 70.84 MW and situated at 10-KM Chiniot-Faisalabad Road, District Chiniot, Punjab Province, pursuant to Section 15 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

2. It is further submitted that MSM intends to deliver, supply and sell surplus/ additional electricity to: (i) its sister concerns namely **M/s Mukhtar Saleem Limited** and **Madina Enterprises Limited** (which are situated adjacent to its generation facility), (ii) **Faisalabad Electric Supply Company Limited** (FESCO), and (iii) other Bulk Power Consumers who may wish to buy electricity from MSM in future.

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3. I certify that the documents-in-support attached with this application are prepared and submitted in conformity with the provisions of the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) Regulations, 1999, and undertake to abide by the terms and provisions of the above-said regulations. I further undertake and confirm that the information provided in the attached documents-in-support is true and correct to the best of my knowledge and belief.

4. A Demand Draft bearing No. 11061609 in the sum of Rs. 375,480.00 drawn on Payable at any branch, being the nonrefundable licence application fee calculated in accordance with Schedule II to the National Electric Power Regulatory Authority Licensing (Application and Modification Procedure) Regulations, 1999, is also attached herewith.

Yours truly,

MADINA SUGAR MILLS LTD. Chiniot

MUHAMMAD HANIF
Chief Executive Officer

Madina Sugar Mills Ltd

Formerly Madina Sugar & Chemical Industries Ltd.
A Member of Madina Group of Industries
Incorporated Under Section 32 of the Companies Ordinance 1984, Government of Pakistan
Member: Faisalabad Chamber of Commerce and Industries, Pakistan Sugar Mills Association

EXTRACTS OF RESOLUTION PASSED IN THE MEETING OF THE BOARD OF DIRECTORS OF M/S MADINA SUGAR MILLS LIMITED HELD AT THEIR OFFICE, 11:00 AM, SARGODHA ROAD, THE UNIVERSITY OF FAISALABAD, ON 23.11.2016.

"RESOLVED THAT MR MIAN MUHAMMAD HANIF HAVING CNIC 33102-8009410-9 CHIEF EXECUTIVE OF THE COMPANY SINGLY BE AND HEREBY AUTHORIZED TO DO ANY OR ALL OF THE FOLLOWING ACTS, DEEDS AND THINGS, ON BEHALF OF THE COMPANY, IN CONNECTION WITH GENERATION LICENSE APPLICATION TO BE FILED WITH NATIONAL ELECTRIC POWER REGULAROTY AUTHORITY ("NEPRA") UNDER THE REGULATION OF GENERATION, TRANSMISSION AND DISTRIBUTION OF ELECTRIC POWER ACT, 1997 AND THE NATIONAL ELECTRIC POWER REGULAROTY AUTHORITY LICENSING (APPLICATION AND MODIFICATION PROCEDURE) REGULATION, 1999:

(A) REPRESENT THE COMPANY BEFORE NEPRA, AND IN DOING SO PERFORM ALL ALWFULL ACTS, DEEDS AND THINGS WHICH E SHALL BE ENTITLED OR PERMITTED TO DO OURSELVES, INCLUDING BUT NOT LIMITED TO FILING, SIGNING, PRESENTING, MODIFYING, AMENDING, WITHDRAWING APPLICATIONS AND OTHER DOCUMENTS, RESPONDING TO ANY QUERIES AND MEETING ANY OBJECTIONS, RECEIVING NOTICES AND DOCUMENTS; AND

(B) FINALIZE ALL AGREEMENTS IN THIS RESPECT AND OTHER DOCUMENTS AS MAY BE REQUIRED AND DO ALL ACTS, DEEDS AND THINGS, WHICH ARE ANCILLARY AND INCIDENTAL TO THE AFORESAID PURPOSE AND ISSUANCE OF GENERATION LICENSE."

FURTHER RESOLVED THAT A CERTIFIED TRUE COPY OF RESOLUTION BE FURNISHED TO THE DEPARTMENT FOR ITS RECORDS.

CERTIFIED TO BE TRUE COPY

MADINA SUGAR MILLS LTD. Chiniot

NAEEM ANWER
(COMPANY SECRETARY)

CERTIFICATE OF INCORPORATION

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SECP

SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

CERTIFICATE OF INCORPORATION

(Under section 32 of the Companies Ordinance, 1984 (XLVII of 1984)

Company Registration No. 0000001371 5/20070207

I hereby certify that MADINA SUGAR AND DISTILLERY (PRIVATE) LIMITED is this day incorporated under the Companies Ordinance, 1984 (XLVII of 1984) and that the company is limited by Shares

Given under my hand at Karachi this 23rd day of February two thousand and seven

Fee Rs. 639,500/- (Six Hundred Thirty nine Thousand Five Hundred Only)

(SIDNEY C. PEREIRA)
JOINT REGISTRAR

S.No-10825/426/2/2007

Company Registration Office Karachi Securities and Exchange Commission of Pakistan

Certified to be True Copy
Joint Registrar of Companies
10/4/15

SECURITIES & EXCHANGE COMMISSION OF PAKISTAN

SECP

CERTIFICATE OF INCORPORATION ON CHANGE OF NAME

[Under section 40 of the Companies Ordinance, 1984 (XLVII of 1984)]

Company Registration No. K-00013715

I hereby certify that pursuant to the provisions of section 39 of the Companies Ordinance, 1984 (XLVII of 1984), the name of ***MADINA SUGAR AND DISTILLERY (PRIVATE) LIMITED*** *has been changed to* ***MADINA SUGAR AND CHEMICALS (PRIVATE) LIMITED*** *and that the said company has been duly incorporated as a company limited by* ***Shares as a Private company*** *under the provisions of the said Ordinance.*

This change is subject to the condition that for period of one year from the date of issue of this certificate, the company shall continue to mention its former name alongwith its new name on the outside of every office or place in which its business is carried on and in every document or notice referred to in clauses (a) and (c) of section 143.3

Given under my hand at Karachi this 18TH day of JUNE two thousand and Seven.

Fee Rs.1000/-

(JAWED HUSSAIN)
ADDITIONAL REGISTRAR OF COMPANIES

S.No. 9912 7/8/16/07

Company Registration Office Karachi

Certified to be True Copy

Joint Registrar of Companies

10/4/17

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BQ01541

SECURITIES AND EXCHANGE COMMISSION OF PAKISTAN

Annexure D
[See regulation 6(c)]

CERTIFICATE ON COVERSION OF PRIVATE COMPANY INTO PUBLIC COMPANY

[Under section 41(3) of the Companies Ordinance, 1984 (XLVII of 1984)]

Company Registration No. 0059634

I hereby certify that pursuant to the provisions of Section 45 read with sub- section (3) of section 41 of the Companies Ordinance, 1984 (XLVII of 1984), MADINA SUGAR MILLS (PRIVATE) LIMITED has complied with the requirements precedent and incidental to the conversion of a private company into a public company. The said company stands converted into a public company with effect from 26.03.2014.

Given under my hand at Karachi this 07th day of April Two Thousand and Fourteen.

(Sidney C. Pereira)
Joint Registrar/Incharge
Company Registration Office,
Karachi

Fee Rs. 25

Joint Registrar of Companies

10/9/15

MEMORANDUM OF ASSOCIATION

THE COMPANIES ORDINANCE, 1984

.....

(COMPANY LIMITED BY SHARES)

.....

MEMORANDUM OF ASSOCIATION

OF

MADINA SUGAR MILLS LIMITED

I. The name of the Company is "MADINA SUGAR MILLS LIMITED".

II. The Registered Office of the Company shall be situated in the Province of Sindh.

III. The Objects for which the Company is established, are all or any of the following:-

1. To purchase, manufacture, refine, produce, prepare, market, import, export or deal in sugar, gur, sugar-cane, sugar-beats, sugar-cubes, molasses, glucose and other allied products, and to set-up and establish production and re-fining plants thereof.

2. To carry on the business of working a distillery in all its branches and to produce, refine, prepare and sell spirits, rectified spirits, alcohol syrups, chemicals and all types of related products and in connection therewith to acquire, construct and operate factories for the manufacture of the aforesaid products or by-products and/or to acquire plant, machinery and equipments for any of the above purposes.

3. To carry on in Pakistan or elsewhere all or any business in all its respective branches of sugar manufactures and to purchase, produce, boil, refine, import, export, sell and generally deal in sugar, sugar cane sugar candy, jaggary, sugar beet, molasses, syrups, alcohol, spirits and all sugar products including confectionary, glucoses, canned fruit, golden syrup, aerated water and /or by products thereof such as belty alcohol, acetone, carbon dioxide, hydrogen, potash, canewax, fertilizers and food products generally and in connection therewith to acquire, construct and operate factories for the manufacture of sugar or any of its products and by products and /or to acquire plant, machinery and equipment for any of the above purpose.

4. To carry on the business of sale, purchase, import, export and generally deal in sugar, sugar-cane sugar candy, jaggary, sugar-beet molasses, and all sugar products including confectionery, glucose, canned fruit, golden syrup and aerated waters and/ or by-products thereof such as methyl, acetone, carbon-dioxide, hydrogen, potash, canewax, fertilizers, and food products generally and in connection therewith, to acquire, construct to acquire plant, machinery and equipment for any of the above purpose.

5. To buy, sell, grow, plant, cultivate, or otherwise acquire sugar-cane, sugar-beet, fruits, vegetables and cereals of any variety or varieties on the Company's own lands or on lands of others on such terms and conditions as the Company may deem fit from time to time and advance moneys and loans to growers, farmers, land-owners and contractors and provide them with seeds, manure, tools, machinery and /or other facilities, on such terms and conditions as the Company may deem fit and to consume all such grown, owned or acquired sugar-cane, sugar-beet, fruits, vegetable or corn, in Company's own undertakings or to dispose of, supply, export or sell all or any of these commodities to any dealers, distributors, manufacturers, exporters, and others on such terms and conditions as the Company may deem proper.

6. To take land on lease and cultivate the same for any purpose and particularly for sugar-cane.

7. To receive goods on consignment, from any company, firm, association of persons, body, whether incorporated or not, individuals, Government, Semi-Government or any local authority and sell the same as agents or on principal to principal basis.

8. To carry on the business of importers and exporters of all kinds of goods, articles and things whether manufactured, semi-manufactured or raw materials and to carry on the business of sales representatives either on commission or on profit sharing basis of all kinds of goods and materials.

9. To establish exclusively to install and setup a power generation plant for sale and distribute of electricity to its associates undertaking, sister concern, government, other industrial unit and for all other purposes for which electrical energy can be employed.

10. To carry on business of purchase, sales, manufacture, produce prepare or deal in all kinds of poly propylene, polymer, packing material and all other allied products and to import, set up establish production plant thereof.

11. To purchase, acquire, and takeover the properties and assets, undertaking and liability of the business carried on by any person, firm or company having similar objects of this company, alongwith the name, goodwill, licenses, quotas, tenancy rights, agencies, concessions or any other rights

and privileges which the company may think necessary or convenient for the purposes of its business.

12. To carry on and undertake trading business of all sorts and to act as indenters, importers, exporters, traders, suppliers manufactures and commission agents and retailers of products, commodities and materials in any form or shape manufactured or supplied by any company, firm, association of persons, body, whether incorporated or not, individuals, Government, Semi-Government or any local authority.

13. To carry on the business of general order suppliers including Government, Semi-Government Agencies, Armed Forces, Army, Military or Defense and commission agents, indenters, traders and as general merchants, wholesalers, retailers dealers, distributors, stockiest agents, sub-agents in any goods or products or within the scope of the object of the Company, subject to any permission required under the law.

14. To carry on in or outside Pakistan the business of manufacturers, importers, exporters, indenters, transporters, dealers in all articles and commodities akin to or connected with any of the business of the Company capable of being conveniently carried on or necessary for the promotion of the objects herein contained, as permissible, under law.

15. To carry on business and obtain licenses for shipping agents, clearing and forwarding agents, purchasing and indenting agents, selling agents, (except managing agent) on such terms and conditions as the Company may think proper subject to any permission as required under the law.

16. To carry on agency business (except managing agency) and to acquire and hold selling agencies and to act as selling agents, commission agents, manufacturers, representatives and distributing agents of and for the distribution of all kinds of merchandise, goods, commodities, products materials, substances, articles and things whether finished, semi-finished, raw, under process, refined, treated or otherwise pertaining to trade and commerce and for that purpose to remunerate them and to open and maintain depots and branches.

17. To purchase, take on lease or in exchange, hire, apply for or otherwise acquire and hold for any interest, any rights, privileges, lands, building, easements, trade marks, patents, patent right, copyrights, licenses, machinery, plants, stock-in-trade, and any movable and immovable property of any kind necessary or convenient for the purposes of or in connection with the Company's business or any branch or department thereof and to use, exercise, develop, grant licenses in respect of or otherwise turn to account any property, rights and information so acquired, subject to any permission required under the law.

18. To acquire by concession, grant, purchase, barter, licence either absolutely or conditionally and either solely or jointly with others any

lands, buildings, machinery, plants, equipments, privileges, rights, licenses, trade marks, patents, and other movable and immovable property of any description which the Company may deem necessary or which may seem to the Company capable of being turned to account, subject to any permission as required under the law.

19. To act as representative, for any person, firm or company and to undertake and perform sub-contracts, and also act in the business of the Company through or by means of agents, sub-contractors and to do all or any of the things mentioned herein in any part of the world and either alone or in collaboration with others and by or through agents, sub-contractors, or otherwise.

20. To go in for, buy or otherwise acquire and use any patent design, copyright, licence, concession, convenience, innovation, invention, trade marks, or process, rights, or privileges, plants, tools or machinery and the like in Pakistan or elsewhere, which may for the time being appear to be useful or valuable for adding to the efficiency or productivity of the Company's work or business, as permissible under the law.

21. To acquire and carry on all or any part of the business or property of any person, firm, association or company suitable for any of the purposes of the Company to carrying on any business which this Company is authorized to carry on and in consideration for the same, to pay cash or to issue shares of the Company and to undertake the liabilities of associated undertakings.

22. To enter into arrangements which the government or authority (supreme, municipal, local or otherwise) or any corporation, company, or persons that may seem conducive to the Company's objects or any of them and to obtain from any such government, authority, corporation, company or person any charters, contracts, rights, privileges and commission which the Company may think desirable and to carry on exercise and comply which any such charters, contracts, decrees, rights, privileges and concessions.

23. To enter into partnership, to amalgamate, or merge movable with immovable and/ or to buy on all interests, assets, liabilities, stocks, or to make any arrangement for sharing profits, union of interests, co-operation, joint venture, reciprocal concession or otherwise with any person, firm or company carrying on or proposing to carry on any business with this Company is authorized to carry on or which is capable of being conducted so as directly or indirectly to benefit this Company and to have foreign collaborations and to pay royalties/technical fees to collaborators subject the provisions of the Companies Ordinance, 1984.

24. To establish, promote or assist in establishing or promoting and subscribe to or become a member of any other company, association or club whose objects are similar or in part similar to the objects of this Company or the establishment or promotion of which may be beneficial to the Company, as permissible under the law.

25. To open accounts with any Bank or Banks and to draw, make, accept, endorse, execute, issue, negotiate and discount cheques, promissory notes, bills of exchange, bills of lading, warrants, deposit note, debentures, letter of credit and other negotiable instruments and securities.

26. To arrange local and foreign currency loans from scheduled banks, industrial banks and financial institutions for the purpose of purchase, manufacture, market, supply, export and import of machinery, construction of factory, building and for the purpose of working capital or for any other purpose.

27. To sell or otherwise dispose of the whole or any part of the undertaking of the Company, either together or in portions for such consideration as the Company may think fit and in particular, for shares, debenture-stock or securities of any Company purchasing the same

28. To borrow money by means of loans or other legal arrangements from banks, or sister concerns, or other financial institutions, or Directors in such manner as the Company may think fit and in particular by issue of debenture, debenture stock, perpetual or otherwise convertible into shares and to mortgage, or charge the whole or any part of the property, assets of the Company, present or future, by special assignment or to transfer or convey the same absolutely or in trust as may seem expedient and to purchase, redeem or pay off any such securities.

29. To pay all costs, charges, and expenses preliminary or incidental incurred in formation or about the promotion and establishment of the Company and to remunerate any person, firm or company for services rendered or to be rendered in or about the formation or promotion of the company or the conduct of its business.

30. To give any servant or employee of the Company commission in the profits of the company's business or any branch thereof and for the purpose to enter into any agreement or scheme of arrangement as the Company may deem fit and to procure any servants or employees of the Company to be insured against risk of accident in the course of their employment by the company.

31. To establish and support or aid in the establishment and support of associations, institutions, funds and conveniences calculated to benefit persons who are or have been Directors of or who have been employed by or who are serving or have served the Company or any other Company which is a subsidiary or associate of the Company or the dependents or connection of such persons and to grant pensions, gratuities, allowances, reliefs and payments in any other manner calculated to benefit the persons described herein.

32. To distribute any of the Company/s property and assets among the members in specie or in any manner whatsoever in case of winding up of the Company.

33. To guarantee the performance of contracts, agreements, obligations or to take loan or discharge any debt of the company or on behalf of any company or in person in relation to the payment of any financial facility including but not limited to loans, advances, letter of credits or other obligations through creation of any or all types of mortgages, charges, pledges, hypothecation, on execution of the usual banking documents or instruments or otherwise encumbrance on any or all of the moveable and immoveable properties/assets of the company, either present or future or both and issuance of any other securities or sureties by any other means in favor of bank, Non Banking Finance Company (NBFCs) or any other financial institutions and to borrow money for purpose of the company on such terms and conditions as may be considered proper for the purpose of the company or on behalf of any associated / subsidiary company / firm or person. Likewise, the company can seek any such accommodation / facility, engagement in its own favor from its affiliates, subsidiaries or from third party.

34. To carry out joint venture agreements with other companies or countries within the scope of the objects of the Company.

35. To cause the Company to be registered or recognized in any foreign country.

36. To do and perform all other acts and things as are incidental or conducive to the attainment of the above objects or any of them.

37. To apply for and obtain necessary consents, permissions and licenses from any Government, State, Local and other Authorities for enabling the Company to carry on any of its objects into effect as and when required by law.

38. It is declared that notwithstanding anything contained in the foregoing object clauses of this memorandum of Association nothing contained therein shall be construed as empowering the Company to undertake or to indulge in business of banking company, banking, leasing, investment, managing agency or insurance business directly or indirectly as restricted under the law or any unlawful operations.

39. It is further declared that notwithstanding anything stated in any object clause, the Company shall obtained such other approval or licence from the competent authority, as may be required under any law for the time being in force, to undertake a particular business.

IV. The liability of the members is limited.

V. The Authorized Capital of the Company is Rs. 3,400,000,000/- (Rupees Three Billion Four Hundred Million only) divided into 340,000,000 ordinary shares of Rs. 10/- (Rupees Ten) each with powers to increase and reduce the Capital of the Company and to divide the shares in the Capital for the time being into several classes in accordance with the provisions of the Companies Ordinance, 1984.

Certified to be True Copy

Joint Registrar of Companies

8/3/16

We, the several persons whose names and addresses are subscribed below, are desirous of being formed into a Company, in pursuance of this memorandum of Association, and we respectively agree to take the number of shares in the Capital of the Company as set opposite to our respective names.

Name and Surname (Present & Former) in Full (in Block Letters)	Father's Name in Full	Nationality with any former Nationality	Occupation	Residential Address (in Full)	Number of shares taken by each sub-scriber	Signature
1. MR. MUHAMMAD HANEEF 33102-5009410-9	Mr. Muhammad Saleem	Pakistani	Industrialist	House No. 18/391, Mohallah Chak No. 119, Jeem Bay Sargodha Road, Faisalabad	5,000,000	-sd-
2. MR. MUHAMMAD RASHEED 33100-1128624-3	Mr. Muhammad Saleem	Pakistani	Industrialist	P-297, Jinnah Colony Faisalabad	5,000,000	-sd-
3. MR. MUHAMMAD USMAN 33102-5054823-1	Mr. Muhammad Saleem	Pakistani	Industrialist	House No. 18/391, Mohallah Chak No. 119, Jeem Bay Sargodha Road, Faisalabad	5,000,000	-sd-

Company Registration Office Karachi Securities & Exchange Commission

Dated this 22nd day of February 2007

Witness to the above Signature:

Full Name **Mr. Nayyar Hayat**
Cost and Management Accountant
CNIC No:**33100-0816393-1**

Father's /Husband's
Full Name **Muhammad Hayat**

.....

Signature.....-sd-.....

Nationality : **Pakistani**

Occupation. **Private Service**

Full Address: **91-A, Fawara Chowk, Peoples Colony No.2, Faisalabad.**

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ARTICLES OF ASSOCIATION

THE COMPANIES ORDINANCE, 1984

(COMPANY LIMITED BY SAHRES)

ARTICLE OF ASSOCIATION

OF

MADINA SUGAR MILLS LIMITED

PRELIMINARY

1. The marginal notes hereto shall not effect the construction hereof and in these presents. Unless there be something in the subject or context in consistent therewith:

"The Company" means **"MADINA SUGAR MILLS LIMITED"**

"Special Resolution" have the meanings assigned thereto by section 2(1) (36) of the Companies Ordinance 1984.

"The Directors" means the Director of the Company for the time being acting in conformity with these articles.

"The Board" means the Board of Directors for the time being of company or the Directors present at a duly convened meeting of Directors at which a quorum is present.

"The Office" means the Registered Office for the time being of the Company.

"The Seal" means the Common Seal of the Company and shall include those common seals which are for use in territories outside Pakistan.

"The Ordinance" means the Companies Ordinance 1984, applicable to Pakistan or any modification or re-enactment thereof for the time being in force.

"Section" means the sections of the Companies Ordinance 1984.

"The Register" unless the context otherwise requires, means the register of members.

"Dividends" includes bonus.

"Persons" include corporation association and firms as well as individuals.

"Month" means calendar moth according to the English Calendar.

"Proxy" means an instrument in writing whereby a member authorizes another to vote for him at a meeting or meetings and include attorney duly constituted under a power of attorney.

"Secretary" means any individual appointed to perform the secretarial, administrative or other duties ordinarily performed by the secretary of a Company.

"These Articles" means these Articles of Association as originally framed or as altered from time to time, by Special Resolution.

"Members and Shareholders" mean the duly registered share holders of the Company from time to time.

"Chief Executive" in relation to a company means as individual who, subject to control and directions of the directors, is entrusted with the whole or substantially the whole of the powers of management of the affairs of the Company and includes a director or any other person occupying the position of a chief executive by whatever name called, and whether under a contract of service or otherwise.

"Authority" means the Corporate law Authority constituted under section 11 of the Ordinance.

"Registrar" means a registrar, an additional registrar, a joint registrar a deputy registrar or an assistant registrar performing under the companies Ordinance 1984 the duties of registration of companies.

Unless the context otherwise requires, words or expression contained in these articles shall have the same meaning as in the Ordinance, and words importing the singular shall include the plural, and vice versa and words importing the masculine gender shall include females, and words importing persons shall include bodies corporate.

"ADBP" means the Agricultural Development Bank of Pakistan.

"IDBP" means the Industrial Development Bank of Pakistan.

"ICP" means the Investment corporation of Pakistan.

Table A to apply

2. The regulations contained in table A of the first Schedule to the Companies Ordinance 1984 shall apply to the Company so for as the same are applicable to a public Company Limited by share except any modification made hereunder but subject to the provisions of the Companies Ordinance 1984.

Public Company

3. The Company shall be a public Limited Company within the meaning of the Companies Ordinance 1984 or any modification thereof for the time being in force.

Business of the Company

4. The business of the Company shall include the several objects expressed in the memorandum of Association or any of them.

Registered office of the Company

5. The Company shall have its registered office in the Province of Sindh Pakistan.

6. None of the funds of the Company be employed in the purchase of or lent or shares of the Company and the Company shall not except as authorized by section 95 (2) of the Ordinance give and financial assistance for the purposes of, or in connection with the purchase of shares in the Company.

Funds not to be Employed for Purchase of Company's Shares

SHARE CAPITAL

7. The Authorized Share Capital of the Company is Rs. 3,400,000,000 (Rs. Three Billion Four Hundred Million) Divided into 340,000,000 Ordinary Shares of Rs. 10/- (Rupees Ten) each.

Minimum Subscription

8. The Directors shall observe restrictions on allotment in sub clause (a) and (b) of clauses 5 of Part I of Second Schedule of the Companies Ordinance 1984 and the directors shall have the option of either issue the prospectus of filling the statement in lieu of prospectus and in the latter even the minimum subscription upon which the Directors may proceed to allotment shall be Rs. 15,000,000 and the Director may proceed to make the first allotment of share capital as soon as the shares of the nominal value of Rs.15,000,000 have been subscribed to be taken up for each.

Share under the control of Directors

9. The share taken by the subscribers to the Memorandum of Association shall be duly issued by the Board Subject as aforesaid the shares (whether forming part of the initial Capital or not) shall be at the disposal of the Board who may allot the same to such persons (including any Director) and on such terms as it shall think fit, but that no shares shall be issued at a discount or partly paid shares.

SHARE CERTIFICATES

10. Every person whose name is entered as a Member in the Register of Members shall without payment be entitled to receive within two months after allotment or within forty five days of the application for registration of transfer a certificate under the common seal of the Company specifying the shares or shares held by him and the amount paid upon thereon; the Company shall not be bound to issue more than one certificate except as may be prescribed by the Directors and delivery of a certificate for a share to the joint holder named first in the Register or members shall be sufficient delivery to all.

Member's right to certificate

11. Save as herein otherwise provided the Company shall be entitled to treat the person whose name appears on the Register as the holder of any share as the absolute owner thereof and accordingly shall not (except as ordered by court or competent jurisdiction or as by law required) be bound to recognize any benami trust or equitable contingent or other claim to or interest in such share on the part of any other person whether or not it shall have express or implied notice thereof.

Registered Holder to be Treated as Absolute Owner

12. The Certificate of title to shares shall be issued under the seal of the Company and signed by at least one Director and countersigned by a second Director or some other person appointed for the purpose by the Directors.

Certificate

13. If a share certificate is defaced lost or destroyed it may be renewed on payment of such fee if any not exceeding one rupee and on such terms, if any as to evidence and indemnity and payment of expenses incurred by the Company in investigation title as the directors think fit.

As to issue of New certificate in place of one defaced lost or destroyed

UNDERWRITING AND COMMISSION

14. The Company may at any time pay a commission to any person for subscribing or agreeing to subscribe (whether absolutely or conditionally) for any shares, debentures debenture stock or participation terms certificate of the Company procuring or agreeing to procure subscriptions absolute or conditional) for any shares. debenture, debenture stock participation terms certificate of the Company, provided however that the amount or rate of commission shall not exceed 2.5% of the amount under written out of the shares debentures debenture stock or participation terms certificate offered to the general public in addition to a commission not exceeding 2.5% on the amount actually taken by paid or payable out of capital the statutory requirements and conditions shall be observed shares debentures, debenture-stock or participation terms certificate in each case subscribed or to be subscribed. The commission may be paid or satisfied either wholly or in part in each or in shares debentures debenture stock or participation terms certificate.

Payment of Commission of subscription

15. The Company may on the issue of shares pay brokerage or commission to any person employed in the sale or underwriting for such shares but such commission or brokerage shall not exceed 1% of the paid up value of the shares sold through the brokers. The Company may make any allotment on the terms that the person to whom such allotment is made shall have the right to call for further shares at such time or time and at such price or prices (not below par) as may be thought fit.

Brokerage for placing shares

TRANSFER OF SHARES

16. The transfer of shares shall be effected by an instrument in writing in the usual common form modified so as to suit the circumstances of the parties shall be executed both by the transferor and the transferee and duly stamped according to law whose execution shall be attested by at least one witness who shall add his address and occupation and the transferor shall be deemed to remain the holder of such share until the name of the transferee shall have been entered in the Register of members in respect thereof.

Instrument of Transfer to be Executed by Transferor and Transferee and stamped

17. Shares in the Company shall be transferred in the following form or in any usual or common from which the Directors shall approve.

Form of transfer

I/We.....of.....in consideration of the sum of Rupees.....paid to me/us herein after called Transferee/transferees do hereby transfer to the said transferee.....share or shares number.....to .....inclusive in the undertaking called Madina Sugar Mills Limited, to hold unto the said transferee/transferees his/their executors administrators and assigns subject to the several conditions on which I/We held the same at the time of the

execution thereof and I/We the said transferee/transferees do hereby agree to take the said share or shares subject to the condition aforesaid.

As witness our hands this.....day of .....

Joint Holders

18. The Share may be registered in the joint names not more than four persons as joint holders.

Transfer of Share may be declined

19. The Directors shall not refuse to transfer any fully paid shares unless the transfer deed is defective or invalid. The Directors may also suspend the registration of transfers during ten days immediately preceding a general meeting or prior to the determination of entitlement or rights of the share holders by giving seven days prior notice in the manner provided in the Ordinance. The Directors may decline to recognize any instrument or transfer unless:-

(a) a fee not exceeding two rupees as may be determined by the Directors is paid to the company in respect thereof; and

(b) the duly stamped instrument of transfer is accompanied by the certificate of the shares to which it relates, and such other evidence as the Directors may reasonably require to show the right of the transferor to make the transfer.

Notice of Refusal to Register

20. If the Directors refuse to register a transfer of any share, they shall within one month after the date on which the transfer deed was lodged with the company send to the transferee and the transferor notice of the refusal indicating the defect or invalidity to the transferee, who shall, after removal of such defect or invalidity be entitled to re-lodge the transfer deed with the company.

Liability or Responsibility of the Company on registering the transfer of shares

21. The Company shall incur no liability or responsibility whatsoever in consequence of its registering on giving effect to any transfer of share made or purporting to be made by any apparent legal owner thereof (as shown or appearing in the Register of Members) to the prejudice of persons having or claiming any equitable right, title or interest to or in same share not with standing that the Company may have had notice of such equitable right, or interest or notice prohibiting registration of such transfer, and may have entered such notice, or refereed thereto in any book of the Company, and the Company shall not be bound or required to regard or attend or give effect to any notice which may be given to it of any equitable right, title or interest, or be under any liability whatsoever for refusing or neglecting so to do, though it may have been entered to in some book of the Company; but the Company shall nevertheless, be at liberty to regard and attend to any such notice and give effect thereon, if the board of Directors shall so think fit.

TRANSMISSION OF SHARES

Transmission of Registered Shares

22. The executors, administrators, heirs, or nominees, as the case may be of a deceased sole holder of a share shall be the only persons recognized by the company as having title to the share. In the case of a share registered in the names of two or more holders, the survivor, or the executors or administrators

of the deceased survivor shall be the only persons recognized by the company as having any title to the share.

23. Any person becoming entitled to a share by reason of the death or insolvency of a member shall, upon such evidence being produced as may from time to time be required by the Directors, have the right, either to be registered as a member in respect of the share or instead of being registered himself, to make such transfer of the share as the deceased or insolvent person could have make; but the directors shall, in either case, have the same right to decline or suspend as they would have had in the case of a transfer of the share by the deceased or insolvent person before the death or insolvency.

As to transfer of shares on Death or incapacitation of members

24. A person becoming entitled to a share by reason of the death or insolvency of the holder shall be entitled to the same dividends and other advantages to which he would be entitled if he were the registered holder of the share, except that he shall not, before being registered as a member in respect of the share, be entitled in respect of it to exercise any right conferred by membership in relation to meetings of the Company.

ALTERATION OF CAPITAL

25. The Directors may, with the sanction of the shareholder in an Extra Ordinary General Meeting by a Special Resolution, increase the share capital by such sum to be divided into fully paid shares of such amount, as the Special Resolution shall prescribe.

The company may increase the capital

26. Subject t the provisions of the Ordinance, all new shares shall, before issue, be offered to such persons as at the date of the offer are entitled to receive notices from the company of general meeting in proportions, as nearly as the circumstances admin, to the amount of existing shares to which they are entitled. The offer shall be made by notice specifying the number of share offered, and limiting a time within which the offer, if not accepted, will be deemed to be declined, and after the expiration of that time, or on the receipt of an intimation from the person to whom the offer is made that he declines to accept the shares offered, the directors may dispose of the same in such manner as they think most beneficial to the company. The directors my likewise so dispose of any new shares which (by reason of the ratio which the new shares bear to shares held by persons entitled to an offer of new shares) cannot, in the opinion of the directors, be conveniently offered under this regulation.

Issue of New Shares

The new shares shall be subject to the same provisions with reference to transfer, transmission and otherwise as the shares in the original share capital.

27. The Company may, by special resolution,

Consolidation of Shares

(a) Consolidate and divide its share capital into shares of larger amount than its existing shares.

(b) Sub-divide its existing shares, or any of them into shares of smaller amount than is fixed by the memorandum of association, subject, nevertheless, to the provisions of clause

(d) of sub section (1) of section 92 of the Ordinance:

(e) Cancel any shares which, on the late of passing of the resolution, have not been taken or agreed to be taken by any person.

28. The company may, be special resolution, reduce its share capital in any manner and with and subject to, any incident authorized and consent required by law. During the currency of loan of a lending institution reduction of capital will be carried out with the prior approval of such institutions. Reduction in Share Capital

GENERAL MEETING

29. The Company shall duly convene and hold a statutory meeting in accordance with the requirements of section 157 of the Companies Ordinance 1984 viz in a period of not less than three months more than six months from the Date at which the Company is entitled from converting the status of the Company from Private Limited Company to Public Limited Company. Statutory Meeting

The Directors shall, at least twenty one days before the date on which the meeting is held, forward a report as given in the Ordinance to every member which will be referred to as the Statutory Report.

30. A general meeting to be called annual general meeting, shall be held, in accordance with the provisions of section 158 of the Ordinance within eighteen months from the date of Company's incorporation and thereafter once at least in every calendar year within a period of four months following the close of its financial year and not more than fifteen months after the holding for its last preceding Annual General meeting as may be determined by the Directors. General Meeting

31. All General Meetings of a Company other than held under Section 158 of the Ordinance shall be called extra-ordinary general meetings. Extra Ordinary General Meeting

32. The Directors may, whenever they think fit, call an extra-ordinary general meeting, and extra-ordinary general meetings shall also be called on such requisition or in default, may be called by such requisitionists, as in provided by section 159 of the Ordinance. If at any time they are not within Pakistan sufficient directors capable of acting to form a quorum, any director of the company may call an extraordinary general meeting in the same manner as nearly as possible as that in which meeting s may be called by the directors. How and when Extra Ordinary General Meeting Called

NOTICE AND PROCEEDINGS OF GENERAL MEETINGS

33. At least twenty one days notice (exclusive of the day on which the notice is served or deemed to be served, but inclusive of the day for which notice is given) specifying the place; the day and the hour of meeting and, in case of special business, the general nature of that business, shall be given in manner provided by the Ordinance for the general meeting, to such persons as are, Under the Ordinance or the regulations of the company, entitled to receive such notice from the company; but the accidental omission to give notice to or Notice of Meeting

the non receipt of notice, by any member shall not invalidate the proceedings at any general meeting.

Business to be transacted as General Meeting

34. All business shall be deemed special that is transacted at an extra ordinary general meeting, and also all that is transacted at an annual general meeting with the exception of declaring a dividend, the consideration of the accounts, balance sheet and the reports of the directors and auditors, the election of directors, the appointment of, and the fixing of the remuneration of, the auditors.

Quorum

35. No business shall be transacted at any General Meeting unless a quorum of members is present at the time when the meeting proceeds to business save a herein provided not less than three members present personally who represent not less than twenty five percent of the total voting power, either of their own account as proxies shall be a quorum.

When if Quorum Not present Meeting to be Dissolved and when to be adjourned

36. If within half an hour from the time appointed for the meeting a quorum is not present, the meeting, if called upon 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 the members present being not less than two, shall be a quorum.

Chairman to General Meeting

37. The Chairman of the Board of Directors, if any shall preside as Chairman, or if at any meeting he is not present within fifteen minutes after the time appointed for the meeting or is unwilling to act as Chairman, any one of the Directors present may be elected to be Chairman, or if none of the Directors is present, or willing to act as Chairman, the members present shall choose one of their member to be Chairman.

Power to Adjourn General Meeting

38. 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 but no business shall be transacted a any adjourned meeting other than the business left unfinished at the meeting from which the adjournment took place. When a meeting is adjourned for then 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 the business to be transacted at an adjourned meeting.

Voting to be by show of hands in the first instance

39. At any general meeting, a resolution put to the vote of the meeting shall unless a poll is demanded, be decided on a show of hands.

Chairman's declaration of Result of Voting by show of hands to be evidence

40. At any general meeting a declaration by the Chairman that on a show of hands, a resolution has or has not been carried, or has not been carried either unanimously or by a particular majority, and an entry to that effect in the books containing the minutes of the proceedings of the company shall until the contrary is proved, be evidence of the fact, without proof of the number or proportion of the votes cast in favor of, or against such resolution.

Demand for Poll

41. (1) Before or on the declaration of the result of the voting on any resolution on a show of hands, a poll may be ordered to be taken by the

Chairman of the meeting of his own motion, and shall be ordered to be taken by him on a demand made in that behalf by the persons or person specified below, that is to say:

(a) at least five members having a right to vote on the resolution and present in person or by proxy;

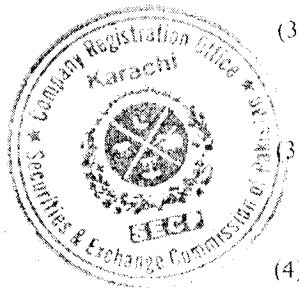
(b) by any member or members present or by proxy and having not less than one tenth of the total voting power in respect of resolution.

(2) The demand for a poll may be withdrawn at any time by the person or persons who made that demand.

Time of taking Poll

42. (1) A poll demanded on the election of a chairman or on a question of adjournment shall be taken forthwith and a poll demanded, on any other question shall be taken at such time, not more than fourteen days from the day on which it is demanded as the chairman of the meeting may direct.

(2) When a poll is taken, the chairman or his nominee and a representative of the members demanding the poll shall scrutinize the votes given on the poll and the result shall be announced by the Chairman.



(3) Subject in the provisions of the ordinance, the chairman shall have power to regulate the manner in which a poll shall be taken.

(3) Subject in the provisions of the ordinance, the chairman shall have power to regulate the manner in which a poll shall be taken.

(4) The result of the poll shall be domed to be the decision of the meeting on the resolution on which the poll was taken.

Chairman

43. In the case of an equality of votes, whether on a show of hands or on a poll the Chairman of the Meeting at which the show of hands takes place or at which the poll is demanded, shall have and exercise a second or casting vote

VOTES OF MEMBERS

Entitled to a casting vote

44. Subject to any rights or restrictions for the time being attached to any class or classes of shares, on a show of hands every member present in person shall have one vote except for election of directors in which case the provisions of section 178 of the Ordinance shall apply. On a poll every member shall have voting rights as laid down in section 160 of the Ordinance.

Right to vote

45. In case of joint holders, the votes of the senior who tenders a vote, whether in person or by proxy, shall be accepted to the exclusion of the votes of the other joint holders; and for this purpose seniority shall be determined by the order in which the names stand in the register of members.

46. A member of unsound mind, or in respect of whom an order has been made by any court having jurisdiction in lunacy, may vote, whether on show of hands or on a poll, by his committee or other legal guardian, and any such committee or guardian may on a poll, vote by proxy.

Poll of un-sound mind

47. On a poll votes may be given either personally or by proxy.

Proxies Permitted

48. The instrument appointing a proxy shall be in writing under the hand of the appointer or of his attorney duly authorized in writing. A proxy must be a member. A member shall not be entitled to appoint more than one proxy to attend any one meeting.

Instrument Appointment Proxy to be in writing

49. The instrument appointing a proxy and the power of attorney or other authority (if any) under which it is signed, or a notarially certified copy of that power or authority, shall be deposited at the registered office of the company not less than forty eight hours before the time for holding the meeting at which the person named in the instrument proposes to vote and in default the instrument of proxy shall not be treated as valid.

Instrument be deposited in Office

50. An instrument appointing a proxy may be in the following form, or a form as near thereto may be.

Form of Instrument Appointing proxy

MADINA SUGAR MILLS LIMITED

I .....of.....in the district of .....being a member of the **MADINA SUGAR MILLS LIMITED** hereby appoint..... of .....as my proxy to vote for me and on my behalf a the (annual, extraordinary, as the case may be) day of .....and at any adjournment thereof, signed this .....day of .....

51. A vote given in accordance with the terms of an instruments or proxy shall be valid notwithstanding the previous death or insanity of the principal or revocation of the proxy or of the authority under which the proxy or of the authority under which the proxy was executed, or the transfer of the share in respect of which the proxy is given, provided that no intimation in writing of such death, insanity, revocation or transfer as aforesaid shall have been received by the company at the office before the commencement of the meeting or adjourned meeting at which the proxy is used.

Restriction On Voting

DIRECTORS

52. Notwithstanding anything contained in any other law for the time being enforce the minimum number of Directors in case of unlisted company shall not be less than three.

Minimum Number of Directors

53. Only a natural person shall be a director and no director shall be the variable representative of a body corporate.

Only natural Persons to be directors

54. Save a provided in Section 187 no person shall be appointed as a director unless he is a member of the company.

Shareholder to be a directors

55. Unless otherwise determined by the Company in General meeting the qualification of a Director other than nominee director(s) shall be holding shares of the nominal value Rs. 5,000/-in his own name. A director may be elected before acquiring his qualification shares but must acquire the same within two months from the date of appointment. Qualification of Directors

56. The First Directors of the Company shall be the subscribers to the Memorandum of Association of the Company as under who will hold office upto to conclusion of the first Annual General Meeting. First Directors and Their Terms

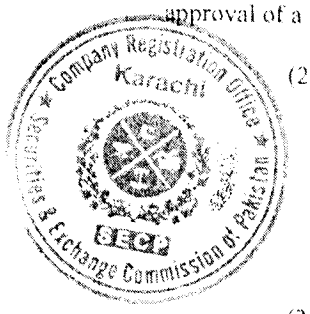
1.	MUHAMMAD HANIF	CHIEF EXECUTIVE
2.	MUHAMMAD RASHEED	M-D/DIRECTOR
3.	MUHAMMAD USMAN	DIRECTOR

57. On the date of the First annual general meeting all directors of the Company for the time being who are subject to election shall stand retired from office and thereafter all such directors shall retire on the expiry of the term laid down in section 180 of the Ordinance. Retirement of Directors

Provided that the directors so retire shall continue to perform their functions until their successors are elected.

Provided further that the directors to continuing to perform their functions shall take immediate steps to hold the election of directors and in case of any impediment report the circumstances of the case of Registrar within fifteen days of the expiry of the term laid down in section 180 of the Ordinance.

58. (1) The directors shall, subject to section 174 of the Ordinance, fix the number of elected directors of the Company not later than thirty five days before the convening of the general meeting at which Directors are to be elected and the number so fixed shall not be changed except with the prior approval of a general meeting of the Company. Procedure for election of directors



(2) The notice of the meeting at which director are proposed to be elected shall among other matters, expressly state.

(a) the number of elected directors fixed under article 58 (1); and

(b) the names of the retiring directors.

(3) Any person who seeks to contest an election to the office of director shall, whether he is a retiring director or otherwise, file which the Company, not later than fourteen days before the date of the meeting at which election are to be held, a notice of his intention to offer himself for election as a director. Notice for Election of Directors

Provided that any such person may, it any time before the holding of election, withdraw such notice.

(4) All notice received by the Company in pursuance of sub- Notice to be

section (3) of this article shall be transmitted to the members not later than sever days before the date of the meeting, in the manner provided for sending of a notice of general meeting in the normal manner and if provided by law by publication at least in one issue each of a daily newspaper in English language and a daily news paper in Urdu language having circulation in the province in which the stock exchange on which its securities are listed is situated.

Transacted to members

(5) The Directors having a share capital shall unless the number of persons who offer themselves to be elected is not more than the number of directors fixed under sub section (1) above, elected by the members of the company in general meeting in the following manner, namely.

(a) A member shall have such number of votes as is equal to the product of the number of voting shares or securities held by him and the number of directors to be elected

(b) A member any give all this votes to a single candidate or divide them between more than one of the candidates in such manner as he may choose; namely.

(c) The candidate who gets the highest number of votes shall be declared elected as director and then the candidate who gets the next highest number of votes shall be so declared and so on until the total number of director to be elected has been so elected.

59. The Court may, on the application of members, holding not less than twenty percent of the voting power in the Company, made within thirty days of the date of election, declare election of all directors or any one or more of them invalid if it is satisfied that there has been material irregularity in the holding of the elections and matters incidental or relating therein.

Circumstances in which Election of Directors may be Declared invalid

60. (1) A director elected under section 178 shall hold office for a period of three years unless he earlier resigns, becomes disqualified from being a director or otherwise ceases to hold office.

Term of Office of Directors

(2) Any casual vacancy occurring among the directors may be filled up by the directors and the person so appointed shall hold office for the remainder of the term of the director in whose place he is appointed.

Casual vacancy of Directors

(3) Subject to the provisions of the Ordinance the Company may from time to time in Annual General Meeting increase or decrease the number of directors.

Increase in Number of Directors

61. A company may be resolution in general meeting remove a director appointed under section 176 or section 180 or elected in the manner provided for in section 178.

Removal of Directors

Provided that a resolution for removing a director shall not be deemed to have been passed unless the umber of votes cast in favor of such a resolution is not less than:-

(1) The minimum number of votes that were cast for the election of a director at the immediately proceeding election of directors, if the resolution relates to removal of a director elected in manner provided in sub-section (5) of section 178 of the Ordinance: or

(2) The total number of votes for the time being computed in the manner laid down in sub-section (5) of Section 178 of the Ordinance divided by the number of directors for the time being if the resolution relates to removal of a director appointed under section 176 or section 180 of the Ordinance.

Creditors May nominate directors

62. In addition to the directors elected or deemed to have been elected by shareholders, there may be directors nominated by the Company's creditors or other special interests by virtue of contractual arrangements.

Certain Provision not to apply to Directors Representing Special Interests

63. Nothing in section 178, section 180 or section 181 of the Ordinance shall apply to:-

(a) Directors nominated by the Pakistan Industrial Credit and Investment Corporation Limited or by a corporation or company formed under any law in force and owned or controlled, whether directly or indirectly by the Federal Government or a Provincial Government of the board of directors of a company in or to which the said Corporation or such corporation or company had made investment or otherwise extended credit facilities.

(b) Directors nominated by the Federal Government or a Provincial Government on the board of directors of the Company, or

(c) Directors nominated by foreign equity holders on the board of the Pakistan Industrial Credit and Investment Corporation Limited, or of any other banking Company or a Company sect up under a regional co-operation or other co-operation arrangement approved by the Federal Government.

Provided that where a director referred to in clause (a), (b) or (c) is nominated, such number of the votes computed in the manner laid down in sub-section (5) of Section 178of the Ordinance as is equal to the minimum number of votes which would have been sufficient to elect such director if he had offered himself for elected shall stand extended from the total number of votes otherwise available at an election of the directors to authority or person nominating him.

Provided further that a director nominated under section 182 shall hold office during the pleasure of the corporation company, Government or authority which nominates him.

Consent to act as director to be Filed with register

64. (1) No person shall be appointed or nominated a director of Chief Executive of a company or represent as hold such office, nor shall any person describe or name any other person as a director or proposed director or chief executive or proposed chief executive of any company, unless such person or such other person has given his consent in wiring to such appointment or nomination and that consent has been filed by the Company with the registrar before such appointment or nomination or being described or named as a director or proposed director or chief executive or proposed chief executive of the Company s the case may be.

(2) Within seven days of the issue of certificate of incorporation of a company, the subscribers to the memorandum of association will file with the registrar a list of persons who have consented to act as directors of the company alongwith their consent to do so.

(3) The provisions as given in this Article shall not apply to subsidiary company of a Public Limited Company.

Validity of acts of directors

65. No act of director or of a meeting of directors attended by him shall be invalid merely on the ground of any defect subsequently discovered in his appointment to such office.

Disclosure of Interest by Director

66. (1) Every director of a company who is in any way, whether directly or indirectly, concerned of interested in any Contract of arrangement entered into or to be entered into, by or on behalf of the company shall disclose the nature of his concern or interest at a meeting of the directors.

Provided that a director shall be deemed also to be interested or concerned if any of his relatives, i.e. his spouse and minor children is so interested or concerned.

(2) The disclosure require to be made b a director under subsection (1) above shall be made:-

(a) in the case of a contract or arrangement to be entered into at the meeting of the directors at which the question of entering into the contract or arrangement is first taken into consideration, or if the director was not on the date of that meeting, concerned or interested in the contractor arrangement, at the first meeting of the directors held after be becomes so concerned or interested in the contract or arrangement.

(3) For the purpose of the sub section (1) and (2) above, a general notice given to the directors to the effect that a director is a director or a member of a specified body corporate or a member of a specified firm and is to be regarded as concerned or interested in any contract or arrangement which may, after the date of notice, be entered into with that body corporate or firm shall be deemed to be a sufficient disclosure of concern or interest in relation to any contract or arrangement so made.

(4) Any such general notice shall expire at the end of the financial year in which it is given but may be renewed for further period of one financial

year at a time, by a fresh notice given in the last month of the financial year in which it would otherwise expire.

(5) No such general notice and no renewal thereof, shall be of effect unless either it is given at a meeting of the directors, or the director concerned take reasonable steps s to ensure that it is brought up and read at the first meeting of the directors after it is given.

(6) A director who fails to comply with sub-section (1) or sub-section (2) shall be liable to a fine which may extend to five thousand rupees.

(7) Nothing in this Article shall be taken to prejudice the operation of any law restricting a director of a company from having any concern or interest in any contract or arrangement with the Company.

Interest Director not to Participate or Vote in Proceedings of Directors

67. No Director of a company shall, as a director, take any part in the discussion of, or vote on, any contract or arrangement entered into or to be entered into by or on behalf of the company, if he is in any way whether directly or indirectly concerned or interested in the contract or arrangement, not shall his presence Count for the purpose of forming a quorum at the time of any such discussion or vote; and if he does vote, his vote shall be void.

Ineligibility of Certain persons to become directors

68. No person shall be appointed as a director, of a company if he

(a) is a minor;
(b) is of unsound mind;
(c) has applied to be adjudicated as an insolvent and his application is pending;
(d) is an undercharged insolvent;
(e) has been convicted by a court of law
(f) has been debarred from holding such office under any provisions of the Ordinance;
(g) has betrayed lack of fiduciary behavior and a declaration to this effect has been made by the Court under section 217 of the ordinance at any time during the preceding five years.
(h) is not a member;

Provided that clause (h) shall not apply in the case of:

(i) a person representing the Government or an institution or authority which is a member;
(ii) a whole time director who is an employee of the company;
(iii) a chief executive; or
(iv) a person representing a creditor.

Vacation of Office by the Director

69. (1) A director shall ipso facto cease to hold office if:-

(a) he becomes ineligible to be appointed a director on any one or more of the grounds enumerated in clauses (a) to (h) of Article 67;

(b) he absents himself from tree consecutive meetings of the directors or from all the meetings of the director for a continuous period of three month, whichever is the longer, without leave of absence from the, directors.

(c) he or any firm of which he is partner or any private company of which he is a director

(i) without the sanction of the company is general meeting accepts or holds and office of profit und the company other than that of chief executive or a legal of technical adviser or a banker; or

(ii) accepts of loan or guarantee from the company in contravention of section 195.

(2) Nothing contained in sub-section (1) shall he deemed to preclude the Company from providing by its articles that the office of director shall be vacated on any ground additional to those specified in that sub-section.

Restriction on director's Remuneration Etc.

70. The remuneration of a director for performing extra services, including the holding of the office of a Chairman, shall be determined by the directors or the Company in general meeting in accordance with the provisions in the Company's articles.

Fee for Attending Board Meeting or Committee of Directors

71. Until otherwise determined by the Company a general Meeting a subject to the pro visions of Capital issues (exemption) Order, 1967, each director other than the regularly paid Chief Executive and full time working Directors shall be entitled to be paid as remuneration for his services, a fee not exceeding Rs. 500.00 per meeting attended by him. Each Director (including each Alternate Director), shall be entitled to be reimbursed his reasonable expenses incurred in consequences of his attendance at meetings of the Directors or of Committee of Directors.

Restriction on Assignment of Office by Directors

72. (1) If any director desires to assign his duties to any other person such director or directors are hereby empowered to assign his office as such to another person. Any assignment of office made in pursuance of the said provision shall, notwithstanding anything contained in the said provision, be of no effect unless and until it is approved by a special resolution of the Company.

Appointment of Alternate Directors

(2) Notwithstanding anything contained in sub-section (1), the appointment by a director, with the approval of the directors, of an alternate or substitute director to act for him, during his absence from Pakistan of not less than three months, shall not be deemed to be an assignment of office.

(3) The Alternate Directors appointed under sub section (2) above shall ipso facto vacate office if and when the director appointing him returns to Pakistan.

POWER OF THE BOARD OF DIRECTORS

General power of Company Vested in Directors

73. (1) The business of the Company shall be managed by the directors, who may pay all expenses incurred in promoting and registering the Company, and may exercise all such powers of the Company as are not by the Company in general meeting.

Appointment of Alternate Directors

(2) The directors of the Company shall exercise the following powers on behalf of the Company, and shall do so by means of a resolution passed at their meeting namely:-

(a) To issue shares;

(b) To issue debentures for participation Terms Certificate;

(c) To borrow moneys otherwise than no debentures;

(d) Enter into and execute a credit agreement with the ICBP, PICIC or ADBP for the purpose of raising foreign and/ or local financing on such terms and conditions as they may deem fit and towards this end Commit assign and pledge any or all assets of the Company and such actions on behalf of the Company shall be binding on the Company.

(e) Enter into and execute agreement with scheduled banks or other financial institutions like the ICP, State Life Insurance Corporation of Pakistan, NIT, etc for the purposes for raising local financing including bridge financing in pursuance of equity underwriting arrangements and to assign, pledge or commit any or all assets of the Company for issuance of commitment, to third parities by such banks and institutions.

(f) Raise or borrow any sum of money for and on behalf of the Company from the members of together persons body corporate, companies or banks or the directors may themselves advance money to the Company o such terms and conditions as may be approved in meeting of the Broad of Directors;

(g) Secure the payment of such money in such manner and upon such terms and conditions in all respect of the purpose of the Company as they think fit and in particular by the issue of debentures, participation terms certificate of bonds of the Company;

(h) Purchase and sale of all or any fixed assets of the Company, subject to the approval of the shareholders in the Annual General meeting;

(i) To invest the funds of the Company keeping in view the

provisions of section 208 of the Companies Ordinance, 1984. The Company may invest money/term capital, in reputed/financially sound, financial institutions, insurance company, and make such investment by purchase of the shares in the name of company or through any other security as permitted by law;

(j) To make loans/

(k) To unauthoriz a director or the firm of which he is partner or any partner of such firm or a private company of which he is member or director to enter into any contract with the Company for making sale, purchase or supply of goods or rendering services with the Company.

(l) To approve annual accounts as are required to be circulated to the members;

(m) To approve bonus to employees; and

(n) To incur capital expenditure exceeding two lacs rupees on any single item or dispose of a fixed asset of the value exceeding one lac rupees.

(3) The directors of the Company and its subsidiary Company, if any, shall not except with the consent of the general meeting either specifically or by way of an authorization, do any of the following thing, namely:-

(a) Sell, lease or otherwise dispose of the undertakings or a sizeable part thereof, unless the main business of the company comprise of such selling or leasing; and

(b) Remit, give any relief or give extension of time for the repayment of any debit outstanding against any person specified in the subsection (1) of section 195.

CHIEF EXECUTIVE

Appointment of First Chief executive

74. (1) Every company, other than a company managed by a managing agent, shall have a chief executive appointed in the manner provided in this article and section 199 of the Ordinance.

(2) The directors of every company shall as from the date from which it commences business or as from a date not later than the fifteenth day after the date of its incorporation, whichever is earlier, appoint any individual to be the chief executive of the Company.

(3) The chief executive appointed as aforesaid shall, unless he earlier resigns or otherwise ceases to hold office, upto the first annual general

meeting of the company or if a shorter period is fixed by the directors at the time of his appointment, for such period.

Appointment of Subsequent Chief Executive

75. (1) within fourteen days from the date of election of directors under section 178 or the office of the chief executive falling vacant, as the case may be the director of the Company shall appoint any person, including an elected director to be the chief executive but such appointment shall not be for a period exceeding three years from the date of appointment. On the expiry of his term of office under section 198 or sub-section (1) of section 198 a chief executive shall be eligible for re-appointment.

(2) The chief executive retiring under section 198 or section 199 shall continue to perform his functions until his successor is appointed unless non-appointment of his successor is due to any fault on his part or his office is expressly terminated.

Terms of Appointment of Chief Executive and filling up of casual vacancy

76. (1) The terms and conditions of appointment of a chief executive shall be determined by the directors or the company in general meeting in accordance with the articles of association.

(2) The Chief Executive shall, if he is not already a director of the Company, be deemed to be its director and be entitled to all the rights and privileges, and subject to all the liabilities, of that office.

Power of Chief Executive

77. Unless otherwise decided by the Board of Directors or the Company in general Meeting the chief executive shall exercise, during the period of his office, the following powers, subject to the control and supervision of the Board of Directors.

(a) Engagement and dismissal of managers, secretaries and all other employees of the Company on such terms and remuneration as he may decide.

(b) Execute and sign all contracts and to draw, sign, accept, endorse and negotiate on behalf of the Company all bills of exchange, promissory notes, cheques and other financial documents.

(c) Open and operate all bank accounts of the Company.

(d) Appoint and terminate the services of lawyers, attorneys, consultants, etc. for such purpose and with such lawyers and for such period and subject to such conditions as he may think fit and issue powers of attorney in their favour as may be necessary.

(e) Cause accounts to be maintained properly and generally to provide for compliance of all statutory requirements.

(f) Delegate all or any of his powers to one or more directors, employees or any other person as he, may deem fit.

(g) Issue order for the common seal of the Company to be affixed on any instrument provided that it is signed by him personally in the

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presence of at least one director or the secretary who should also sign along with him he may further authorize the fixation of the seal by any two Directors in the presence of the Secretary. Instruments so signed shall be binding of the company.

(h) To institute, prosecute, compromise, withdraw, or abandon any legal proceedings by or against the Company or its officers or otherwise concerning the affairs of the Company.

(i) To provide for the welfare of the employees or ex-employees of the Company, or their wives, widows or families or the dependents or connection of such persons in such manners as may be thought fit.

Specific power of Directors

78. The Directors shall duly comply with the provisions of the Companies Ordinance, 1984 or any statutory modification thereof for the time being in force and in particular with the provisions in regard to the registration of the particulars of mortgages and charges affecting the property of the Company or created by it, and by keeping a register of Directors and to sending to Registrar and annual list of Members, and a summary of particulars relating thereto and notice of any consolidation or increase of share and copies of special resolution and a copy of the Register of Directors and notifications of any change therein.

Minutes to the made

79. The directors shall cause minutes to be made in books provided for the purpose:

(a) of all appointment of officers made by the directors;

(b) of the names of the directors present at each meeting of the directors or any committee of the directors;

(c) or all resolutions and proceedings at all meeting of the Company and of the directors and of Committees of directors;

And every director present at any meeting of directors or committee of directors shall sign his name in a book to be kept for that purpose.

PROCEEDINGS OF DIRECTORS

Meeting of Directors

80. The Directors may meet together for the dispatch of business adjourn and otherwise regulate their meeting, as they think fit. Question arising at any meeting shall be decided by a majority of votes.

Directors may Requisition meetings

81. A Director may, and the secretary on the requisition of a Directors shall at any time, summon a meeting of Directors.

Quorum

82. The quorum necessary for the transaction of the business of the directors shall not be less than one third of their members or our which ever is greater.

83. The continuing Directors may act as a Board at any time notwithstanding any vacancy in their body, provided always that in case the Directors shall at any time be reduced in number, be less than the minimum prescribed by or in accordance with these Articles, it shall be lawful for him or them to act as director or directors for the purpose of filling up vacancies in their body, or of summoning a General Meeting of the Company but not for any other purpose. Continuing Directors

84. The Directors may elect a Chairman of their meetings from among their number and determine the period for which he is to hold office; but if no such chairman is elected, or is at any meeting the chairman is not present within fifteen minutes after the time appointed for holding the same or is not willing to act as Chairman the directors present may choose any one of the directors present to be the chairman of the meeting. Chairman

85. A resolution in writing, signed by all the Directors for the time being in Pakistan shall be as valid and effectual as if it had been passed at a meeting of the Directors duly called and constituted. Such resolution may be contained in one document or in several documents in like form each signed by one or more of the Directors. Resolution by circulation

THE SEAL

86. The Directors shall provide for the safe custody of the seal and the seal shall not be affixed to any instrument except by the authority of a resolution of the board of directors or by a committee of directors authorized in that behalf by the directors or director or secretary or such other person as the directors may appoint for the purpose; and director or secretary or other authorized person as aforesaid shall sign every instrument to which the seal of the company is so affixed in their presence. Use of Seal

SECRETARY

87. A Secretary may be appointed by the directors on such terms and at such remuneration and upon such conditions as they think fit, and any Secretary so appointed may be removed by them. Secretary

DIVIDENDS AND RESERVE

88. The Company in General Meeting may declare dividends but no dividend shall exceed the amount recommended by the Directors. How profits shall be divisible

89. Directors may from time to time pay to the Members such interim dividends as appear to the Directors to be justified by the profits of the Company. Interim dividend

90. No dividends shall be paid otherwise than out of the profits of the year or any other undistributed profits. Dividend to be Paid out of Profits

91. The Directors may, before recommending any dividend set aside Appropriation of Profits

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out of the profits of the Company such sums as they think proper as a reserve or reserves which shall, at the discretion of the Directors, be applicable for meeting contingencies, or for equalizing dividends, or for any other purpose to which the profits of the Company may be properly applied, and pending such application may, at the like discretion either be employed in the business of the Company or be invested in such investment (other than shares of the Company) as the Directors may from time to time think.

Dividend to joint holders

92. If several persons are registered as joint holders of any share, only the first named holder in the register may give effectual receipts for any dividend payable on the share.

Notice of Dividend

93. Notice of any dividend that may have been declared shall be given in manner hereinafter mentioned to the persons entitled to share therein.

No Interest on Dividend

94. No dividend shall bear interest against the Company.

Effects of Transfer

95. A transfer of shares shall not pass the right to any dividend declared thereon before the registration of the transfer.

Payment by Post

96. Unless otherwise directed any dividend may be paid by cheques or warrants, by a pay – slip or receipt having the force of a cheque or warrant, sent through the post to the registered address of the members or person entitled to, in case of joint holders to that one of them first named in the Register in respect of the joint holding. Every such cheque or warrant shall be payable to the order of the person to whom it is sent. The Company shall not be liable or responsible for any cheque or warrant or pay-slip lost in transmission, or for any dividend lost to the member of or person entitled thereto, by the forged endorsement of any cheque or warrant or the forged signature of any pay slip or receipt or the fraudulent recovery of the dividend by other means.

Notice of Dividend Payable

97. Notice of dividends to become payable shall be given to each Member entitled thereto.

Dividend in Specie

98. Any General Meeting sanctioning or declaring a dividend in terms of these Articles may director payment of such dividend, wholly or in part, by the distribution of specific assets and in particular of paid up shares, debentures or debenture stock of the Company or of any other Company, or in any one or more of such ways, and the Directors shall given effect to such direction, and where any difficulty arises in regard to the distribution they may settle the same as they think expedient.

CAPITALIZATION OF PROFITS

Capitalization of Reserve

99. The Company in General Meeting may upon the recommendation of the Directors resolve that it is desirable to capitalize any part of the amount for the time being standing to the credit of any of the Company's reserve accounts or to the profits and loss account or otherwise available for distribution, and accordingly that such sum be set free for distribution amongst the Members who would have been entitled thereto if distributed by way of

dividend and in the same proportion on condition that the same be not paid in cash but be applied in or towards paying up in full unissued shares or debentures of the Company to be allotted and distributed credited as fully paid up to and amongst such Members in the proportion aforesaid and the Directors shall give effect to such resolution.

Issue of Bonus Shares

100. Whenever such a resolution as aforesaid shall have been passed the directors shall make all appropriations and applications of the undivided profits resolved to be capitalized thereby, and all allotments and issue of fully-paid shares or debentures, if any, and generally shall do all acts and things required to give effects thereto.

ACCOUNTS

Books of Account to be kept

101. The Directors shall cause to be kept proper books of account as required under Section 230 with respect to:

(a) all sums of money received and expended by the Company and the matters in respect of which the receipts and expenditure take place;

(b) all sale and purchases of goods by the Company;

(c) The assets and liabilities of the Company.

Where to be kept

102. The books of account shall be kept of the registered office of the Company or at such other place as the directors shall think fit and shall be open to inspection by the directors during business hours.

Inspection by members

103. The Directors shall from time to time determine whether and to what extend and at what times and places and under what conditions or regulations the accounts and books of the Company or any of them shall be open to the inspection of Members not being Directors, and no member (not being a Director) shall have any right of inspecting any account or book or document of the Company except as conferred by law or authorized by the Directors or by the Company in General Meeting.

Profit and Loss Account

104. The Directors shall, as required by Section 233 & 236, cause to be prepared and to be laid before the Company in General Meeting such profit and loss accounts income and expenditure, balance sheets, and reports as are referred to in the Ordinance.

Presentation of Accounts

105. The profit and loss account shall show, arranged under the most convenient heads, the amount of gross expenditure distinguishing the expenses of the establishment, salaries and other like matters. Every item of expenditure fairly chargeable against the year's income shall be brought into account, so that a just balance of profit and loss may be laid before the meeting, and, in cases where any term of expenditure which

may in fairness be distributed over several years has been incurred in any one year, the whole amount of such item shall be stated, with the addition of the reasons why only a portion of such expenditure is charged against the income of the year.

Balance Sheet etc

106. A balance sheet shall be made out in every year and laid before the Company in General Meeting made up to a date not more than four months before such meeting. The balance sheet shall be accompanied by a report of the Directors as to the state of the Company's affairs, and the amount (if any) they recommend to be paid by way of dividend, and the amount (if any) which they propose to a reserve fund.

A copy to be sent to members

107. A Company of the balance sheet and auditors and directors report shall, not less than twenty one days prior to the meeting, be sent to the persons entitled to receive notice of General Meeting in the manner in which notices are to be given hereunder.

Directors to comply with

108. The Directors shall in all respects comply with the provisions of section 230 to 236 of the Company Ordinance 1984, or any statutory modifications thereof for the time being in force.

AUDIT

Appointment of Auditor

109. The first auditor or auditors shall be appointed by the Directors within sixty days of the date of incorporation of the Company, and shall hold office until the first Annual General Meetings, subsequent auditors shall be appointed by the Company at the Annual General Meeting in each year. The remuneration of the first auditors shall be determined by the Director and that of subsequent auditors shall be determined by the Company by the Company in General Meeting. Any retiring auditor shall be eligible for re-election.

Accounts to be Audited Annually

110. Once at least in a year the Account of the Company shall be examined and the correctness of the balance sheet and Profit and loss account ascertained by one or more auditors.

When one auditor Only is Appointed

111. If one auditor only is appointed, all the provisions herein contained relating to auditors shall he applied to him.

Casual Vacancy in the Office of Auditor

112. If any casual vacancy occurs in the office of auditors, the Directors may and shall forthwith fill up same until the next Annual General Meeting.

Auditor shall have A right of Access to the Books and Notice of General Meeting

113. The auditors of the Company shall have a rights of access at all times, to the books accounts and vouchers of the Company, and shall be entitled to require from the Chief Executive, the Directors and other officers of the Company such information and explanations as may be

necessary for the performance of their duties as auditors. The auditors shall receive notice of and be invited to attend any General Meeting at which any accounts which have been examined or reported on by them are to be laid before the Company and may make any statement or explanation they desire with respect to the accounts.

How notice to be Sent to members

114. (a) A notice may be given by the Company to any Member or Director either personally or by sending it by post to him to his registered address or (if he has no registered address in Pakistan) to the address, if any, within Pakistan supplied by him to the Company for the giving of notice to him.

When notice by post deemed to be served

(b) Where a notice is sent by post, service of then notice shall be deemed to be effected by properly addressing prepaying and posting letter containing the notice and, unless the contrary is proved to have been effected at the time at which the letter would be delivered in the ordinary course of post.

Notice when no address

115. If a Member or Director has no registered address in Pakistan and has not supplied to the Company an address within Pakistan for the giving of notices to him, a notice addressed to him advertised in a newspaper circulating in the neighborhood of the registered office of the Company shall he deemed to be duly given to him on the day on which the advertisement appears.

Notice to joint holders

116. A notice may be given by the Company to the joint – holders of a share by giving the notice to the joint-holder named first in the register in respect of share.

Notice to persons entitled in consequence of death of one or more of joint holders

117. A notice may be given by the Company to the persons entitled to a share in consequence of the death of one or more of the joint holders or insolvency of a member by sending it through the post in a prepaid letter addressed to the survivor or survivors by name at the address (if any) in Pakistan supplied for the purpose, or by giving the notice in any manner in which the same might have been given if the death or insolvency had not occurred.

Notice of General Meeting

118. Notice of every General Meeting shall be given in same manner hereinbefore authorized to every Member and every Director of the Company except those Member and Directors who (having no registered address in Pakistan) have not supplied to the Company an address in Pakistan for giving of notices to them, and also every person entitled to a share an consequence of the death or insolvency of a member who but for his death or insolvency would be entitled to receive notice of the meeting.

When notice may be given by advertisement

119. Any notice required to be given by the Company to the Members, or any of them, and not expressly permitted for in these presents shall be sufficiently given if given by advertisement.

120. Any notice required being or which may be given by advertisement shall be advertised once in one or more daily newspaper in the city of the Office and Karachi and shall be published in the English language.

How notice to be advertised

121. Any notice given by the advertisement shall be deemed to have been given on the day on which the advertisement shall first appear.

When notice by advertisement deemed to be served

122. Every person, who by operation of law, transfer or other means whatsoever, shall become entitled to any share shall be bound by every notice in respect of such share, which previously to his name and address being entered on the Register, shall be duly given to the person from whom he derives his title to such share.

Transferees etc bound by prior notice

123. Any notice or document delivered or sent by post left at the registered address of any Member in pursuance of these presents shall, notwithstanding such Member in pursuance of these presents shall, notwithstanding such Member be then deceased and whether or not the Company has notice of his death, be deemed to have been duly served in respect of any registered shares whether held solely or jointly with other persons by such Member, until some other person be registered in his stead as the holder of joint holder thereof and such service shall for all purpose of these presents be deemed a sufficient service of such notice or jointly interested with him or her in any such shares.

Notice valid though member deceased

124. The signature to any notice given by the Chairman may be written or printed.

How notice to be signed

WINDING UP

125. (1) If the Company is wound up, the liquidator may, with the sanction of special resolution of the company and any other sanction required by the Ordinance, divide amongst the members, in specie or kind, the whole or any part of the assets of the Company, whether they consist of property of the same kind or not.

Distribution of Assets

(2) For the purpose aforesaid, the liquidator may set such value as he deems fair upon any property to be divided as aforesaid and may determine how such division shall be carried out as between the members or different classes of members.

(3) The liquidator may, with the like sanction, vest the whole or any part of such assets in trustees upon such trusts for the benefits of the contributories as liquidator, with the like sanction, thinks fit, but so that no member shall be compelled to accept any shares or other securities whereon there is any liability.

COMPROMISE, ARRANGEMENTS AND RECONSTRUCTION

126. The Board of Directors will comply with the provisions of sections 284 to 289 for the purpose of compromise, arrangements and reconstruction as are applicable to Public Limited Company.

Reconstruction and Re-organization

ARBITRATION

127. (1) A Company may be written agreement refer to arbitration, in accordance with the Arbitration Act. 1940 (X of 1940) an existing or future difference between itself and any other company or person.

Arbitration

(2) Companies, parties to the arbitration, may delegate to the arbitrator power to settle any term or to determine any matter capable of being lawfully settled or determined by the companies themselves, or by their directors or other managing body.

(3) The provisions of the Arbitration Act 1940 (X of 1940), shall apply to all arbitration between companies and persons in pursuance of the Ordinance.

INDEMNITY

128. Every officer or agent for the time being of the Company may be indemnified out of the assets of the Company against any liability incurred be him in defending any proceedings, whether civil or criminal, arising out of his dealing in relation to the affairs of the Company, except these brought by the Company against him, in which judgment is given in his favour or in which he is acquitted, or in connection with any application is given in his favour or in which he is acquitted, or in connection with any application under section 488 of the Ordinance in which relief is granted to him by the Court.

Certified to be True Copy

Joint Registrar of Companies

We, the several persons whose names and addresses are subscribed below, are desirous of being formed into a Company, in pursuance of this articles of Association, and we respectively agree to take the number of shares in the Capital of the Company as set opposite to our respective names.

Name and Surname (Present & Former) in Full (in Block Letters)	Father's Name in Full	Nationality with any former Nationality	Occupation	Residential Address (in Full)	Number of shares taken by each subscriber	Signature
1. MR. MUHAMMAD HANEEF 33102-8009410-9	Mr. Muhammad Saleem	Pakistani	Industrialist	House No. 18/3/1, Mohallah Chak No. 119, Jeem Bay Sargodha Road, Faisalabad	5,000,000	-sd-
2. MR. MUHAMMAD RASHEED 33100-1128624-3	Mr. Muhammad Saleem	Pakistani	Industrialist	P-397, Jinnah Colony Faisalabad	5,000,000	-sd-
3. MR. MUHAMMAD USMAN 33102-5054823-1	Mr. Muhammad Saleem	Pakistani	Industrialist	House No. 18/3/1, Mohallah Chak No. 119, Jeem Bay Sargodha Road, Faisalabad	5,000,000	-sd-

Securities & Exchange Commission of Pakistan ★ Company Registration Office Karachi ★

Dated this 22nd day of February 2007

Witness to the above Signature:

Full Name **Mr. Nayyar Hayat**
Cost and Management Accountant
CNIC No:**33100-0816393-1**

Father's /Husband's
Full Name **Muhammad Hayat**

Signature.....**-sd-**.....

Nationality : **Pakistani**

Occupation: **Private Service**

Full Address: **91-A, Fawara Chowk, Peoples Colony No.2, Faisalabad.**

PROSPECTUS

Of

MADINA SUGAR MILLS LIMITED

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1. BRIEF INTRODUCTION OF APPLICANT:

Madina Sugar Mills Limited, a part of Madina Group of Industries, earlier operating as part of ***Madina Enterprises Limited,*** hasBagasse fired captive generation facility of 70.48 MW with rice husk as alternate and diesel (HSD) as startup fuel and is operating at 10 – KM Faisalabad Sargodha Road, Tehsil & District Chiniot as independent company since 2007.

2. SALIENT FEATURES OF THE FACILITY:

The Generating Facility at Madina Sugar Mills Limited is based on high pressure co-generation having six generating units of various capacities as detailed below:

DESCRIPTION	UNIT-1	UNIT-2	UNIT-3	UNIT-4	UNIT-5	UNIT-6	TOTAL (MW)
Installed Capacity	12	9	14	18	2.8	15	70.8
De-Rated Capacity	10	7	12	11	2.5	13	55.5
Auxiliary Consumption	0.48	0.36	0.56	0.72	0.11	1.2	3.43
Net Capacity	9.52	6.64	11.44	10.28	2.39	11.8	52.07

3. PROPOSED INVESTMENT:

Madina Sugar Mills Limited, is already installed facility having approximately 12 MW load requirement during crush season. As such it has surplus capacity of about 40.07 MW during crushing

season and about 49.07 MW during off season. The MSM intends to sell surplus capacity to:-

S. No.	Consumer Name	MW
1	M/s MukhtarSaleem Limited	1
2	M/s Madina Enterprises Limited	13
3	M/s Faisalabad Electric Supply Company Limited	10
4	Any other Consumer/ other affiliated concerns/ DISCO	16.07

4. SOCIAL AND ENVIRONMENTAL IMPACT OF THE PROPOSED FACILITY:

The Environmental Impact Study has been got conducted through renowned consultants that has been submitted to relevant authorities and expected to be approved shortly. The consultants reported that the project has no adverse impact on the environment.

The Project shall facilitate the inhabitants of locality as it will cause job opportunities besides provision of the energy to the consumers in this era when there is dearth of electricity and the Government and the People of Pakistan are in dire need.

INFORMATION PER SCHEDULE-III

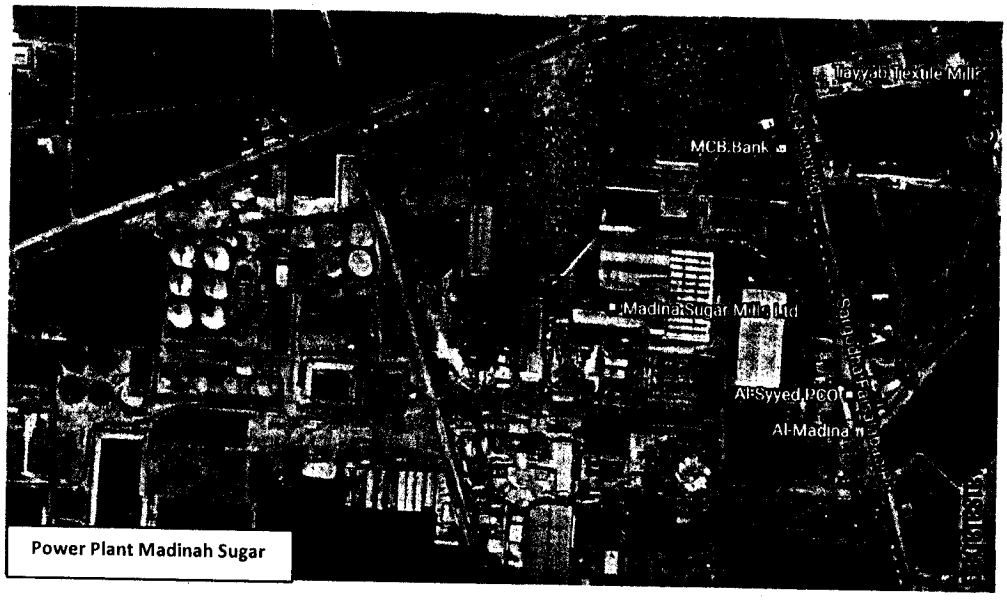
OF NEPRA LICENSING (APPLICATION & MODIFICATIONPROCEDURE) REGULATIONS, 1999

INFORMATION REQUIRED UNDER SCHEDULE III OF THE NEPRA LICENSING (APPLICATION & MODIFICATION PROCEDURE) REGULATIONS, 1999

1. **Location maps, Site map, Land:**

The power generation facility of MSM, for which the instant generation license is being sought, (the **"Facility"**) is set up on a piece of land measuring in total about 30 acres and situated at 10-KM Chiniot-Faisalabad Road, District Chiniot, Province of Punjab.

The location map of the site is as under:



The link / coordinates of the Facility are given as under:

https://www.google.com/maps/dir/31.6395437,73.0095821/31.6335742,73.0081694/@31.6349369,73.0112781,197m/data=!3m1!1e3

2. **Technology, size of the plant, number of units:**

The Facility is using Bagasse as the primary fuel and Rice Husk as alternate fuel and is based on the Conventional Steam Turbine based power plant with combined capacity of 70.84 MW (Gross) at mean site conditions, from all six units, the detail whereof is given in table below:

Number of Units/ Size	UNIT-1	UNIT -2	UNIT -3	UNIT -4	UNIT -5	UNIT -6
	12.00 MW	9.00 MW	14.00 MW	18.00 MW	2.80 MW	15.00 MW
Boiler	60bar pressure	60bar pressure	60bar pressure	60bar pressure	60bar pressure	60bar pressure
Steam Turbine	Siemens Germany(Backpressure)	AEG KANIS Germany(Back pressure)	Siemens Germany(Backpressure)	AEG KANIS Germany(Backpressure)	BLOHM + VOSS AG, Germany(Back pressure)	SKODA JINMA China(Condensing)
Generator	Siemens Germany	Brush Germany	Siemens Germany	AEG KANIS Germany	INGILSTANDGermany	NANYANG China
Year of Commissioning	2012	2010	2012	2010	2014	2009
Expected Useful Life (Commissioning)	25 years	25 years	25 years	25 years	25 years	25years
Expected Remaining Useful Life	20 years	18 years	20 years	18 years	22 years	17 years

3. **Installed Capacity, De-Rated Capacity (at Mean Site condition), Auxiliary Consumption, Net Capacity**:

DESCRIPTION	UNIT-1	UNIT-2	UNIT-3	UNIT-4	UNIT-5	UNIT-6	TOTAL (MW)
Installed Capacity	12	9	14	18	2.8	15	70.8
De-Rated Capacity	10	7	12	11	2.5	13	55.5
Auxiliary	0.48	0.36	0.56	0.72	0.11	1.2	3.43
Net capacity	9.52	6.64	11.44	10.28	2.39	11.8	**52.07**
Net Efficiency	18%	18%	18%	18%	18%	18.5/ 26%	

4. Fuel/ Raw Material Details:

i.	Primary Fuel	Bagasse		
ii.	Alternate Fuel	Rice Husk		
iii.	Start up Fuel	High Speed Diesel		
iv.	Fuel Source (imported/ indigenous)	**Primary Fuel**	**Alternate Fuel**	**Start Up Fuel**
		Indigenous	Indigenous	HSD
v.	Fuel Supplier	**Primary Fuel**	**Alternate Fuel**	**Start Up Fuel**
		Sugar crushing by MSM or other entity	Khushi Brothers Husk Supplier	Local oil marketing companies
vi.	Supply Arrangement	**Primary Fuel**	**Alternate Fuel**	**Start Up Fuel**
		Via conveyor/ belts/ trucks/ trolleys etc	Via trucks / trolleys etc	Tanker
vii.	Crushing Capacity	12,000 Tons per day		
viii.	Bagasse Production Capacity	3,600 Tons per day		
ix	Fuel Storage Facilities	**Primary Fuel**	**Alternate Fuel**	**Start Up Fuel**
		Bulk storage	Bulk storage	Bulk storage
x.	Storage Capacities	**Primary Fuel**	**Alternate Fuel**	**Start Up Fuel**
		40,000 T	10,000 MT	60,000 liters

5. Emission Values:

Sr. #	Descriptions	Primary Fuel	Alternative Fuel
i.	SO_x	0%	<400mg/ m^3
ii.	NO_x	2%-5%	<400mg/ m^3
iii.	CO_2	13.5%	12% - 13%
iv.	CO	2%-3%	<3%
v.	PM_{10}	Nil	0.107 mg/m^3

6. **Infrastructure:**

The infrastructure required for the complex / Facility, road, staff colony, and other amenities are already existing at site.

7. **Cooling Water Source:**

The source of cooling water is from underground water through deep-well turbine pump / closed loop / Reverse Osmosis Plant.

8. **Connectivity with the Grid:**

Sister Concerns, to whom the supply is intended, are situated in the same premises.

However, for the supply of surplus power to BPCs/ FESCO, the Grid Inter-Connection/ System Study, including Load Flow, Short Circuit, Stability and Reliability, got conducted by the applicant from a consultant, on the panel of the National Grid Company i.e. National Transmission and Despatch Company Limited is attached as **Annex-III/A**. The report has been accepted/ approved and No Objection Certificate has been granted by FESCO which is attached as **Annex-III/B**.

9. **ESSA (Environmental and Social Soundness Assessment):**

Environmental Assessment Report is attached at **Annex-III/C**.

10. **Safety Plans, Emergency Plans:**

The Health, Safety and Environment Manual is attached at **Annex-III/D**, which includes the safety and emergency plans such as installation of water hydrants in the Facility.

Further CO_2 (fire extinguishers) are installed at prominent places.

As the safety measure, in case of unwanted incident, complete first aid facility at plant is available that includes the ambulance (for 24 hours) in premises and the safety equipment, tools and kits to the staff at the Facility.

11. **Metering, Control, Instrumentation & Protection:**

The Metering, Instrumentation, Control and Protection are already installed that comply with the prudent electrical practices for captive generation facilities.

A single line diagram showing the layout of metering, instrumentation, control and protection equipment is attached as **Annexure-III/E**.

12. Plant Characteristics:

The plant characteristics are detailed herein below:

S. No	Description	UNIT-1	UNIT-2	UNIT-3	UNIT-4	UNIT-5	UNIT-6
1	Generation & Supply Voltage	11-kV	11-kV	11-kV	6.6-kV	11-kV	11-kV
2	Frequency	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
3	Power Factor	0.8 lagging 0.9 leading	0.8 lagging 0.9 leading	0.8 lagging 0.9 leading	0.8 lagging 0.9 leading	0.8 lagging 0.9 leading	0.8 lagging 0.9 leading
4	Automatic Generation Control	Yes	Yes	Yes	Yes	Yes	Yes
5	Ramping Rate	2 MW/ MIN	2 MW/ MIN	2 MW/ MIN	2 MW/ MIN	1 MW/ MIN	2 MW/ MIN
6	Time required to synchronize with grid	30 - 45 second	30 - 45 second	30 - 45 second	30 - 45 second	30 - 45 second	30 - 45 second
7	Time for cold start	5 hours	5 hours	5 hours	5 hours	5 hours	5 hours
8	Net Efficiency of power plant at Mean Site Conditions (%)	18%	18%	18%	18%	18%	18.5% / 26%

13. Proposed Consumers:

Out of the NET Capacity of Facility (52.07 MW), the average requirement of Madina Sugar Mill / captive, during crushing season is approximately 12 MW. As such, surplus capacity during crushing season is of **40.07 MW**.

During off season, average requirement of the MSM is about 3 MW. As such, during off season the surplus capacity is about **49.07 MW**.

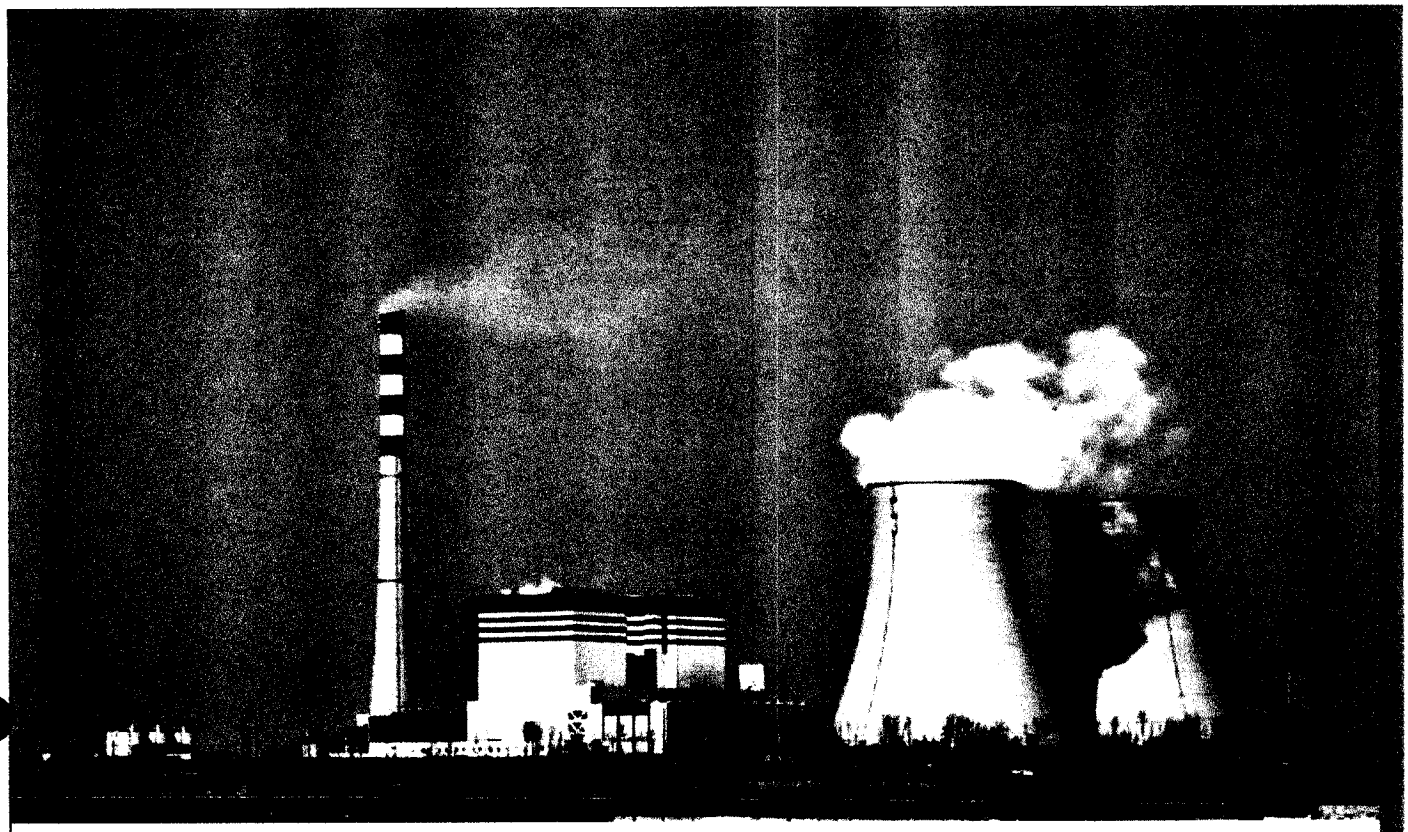
The applicant intends to sell **24 MW** of electric power out of surplus capacity from the total Net capacity of the Facility to:-

S. No.	Consumer Name	MW
1	M/s Mukhtar Saleem Limited	1
2	M/s Madina Enterprises Limited	13
3	M/s Faisalabad Electric Supply Company Limited	10
4	Any other Consumer/ other affiliated concerns/ DISCO	16.07

The sister concerns of MSM, to whom it intends to sell electric power, are adjacent to the Facility within the same boundary hence does not involve crossing of any public road / service territory of any other licensee for provision of electric power to them. A layout diagram of the Facility and the sister concerns of MSM within the same boundary is attached as **Annexure-III/F**.

GRID INTER-CONNECTION /SYSTEM STUDY INCLUDING LOAD FLOW, SHORT CIRCUIT, STABILITY, RELIABILITY

ANNEX-III/A



GRID INTERCONNECTION ASSESSMENT OF 10MW MSM BAGASSE BASED THERMAL POWER PLANT

ARCO Energy

Draft
Report
March, 2017

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Annex A: Project Specific Data.
Annex C: Pre-Project Steady State Analysis Results.
Annex D: Post-Project Steady State Analysis Results.
Annex E: Dynamic Stability Analysis Results.
Annex F: Short Circuit Analysis Results.

Executive Summary

This Grid Interconnection Assessment (GIA) report provides the documentation of an assessment that has been performed for the interconnection of a 10MW bagasse based thermal power generation project for Madina Sugar Mills (MSM) Limited to the Faisalabad Electric Supply Company (FESCO) power system at 11kV. This 10MW bagasse based thermal power generation project is located at 10 km Faisalabad Road, Chiniot, Pakistan. It has a commercial operation date (COD) of July, 2018 and base case has been developed for September 2018.

GIA includes the following three types of analyses:

i) Steady State Analysis

ii) Dynamic Stability Analysis

iii) Short Circuit Analysis.

Gross capacity of the power plant is 29.4MW using two generators of 14.4MW and 15MW capacity connected at 11kV and the available maximum net power to be injected into the FESCO system will be 10MW after 19.4MW of auxiliary consumption and Madina Sugar Mill's internal load.

The project will be connected to the grid station of FESCO at 11kV by lying three 11kV circuits of 4km length on Osprey conductor from MSM to 132/11 kV Kamalpur Grid Station. These three circuits will be connected with transformers T-1, T-2 and T-3 of 132/11 kV Kamalpur Grid Station.

Steady state power flow assessment has been performed for September 2018, January 2019 and September 2021 peak load conditions, using the network data provided by FESCO. Pre project power flow study was conducted to analyze the magnitude and phase angles of bus voltages, line loadings and power flows under steady-state conditions. Post project power flow analysis has also been performed after the interconnection of the proposed project with the FESCO transmission system. The power flow results for the system intact and for the contingency conditions shows that the power flows on all the transmission line branches are within their normal thermal loading limit. There is no capacity constraint in terms of power flow or voltage ratings within the study area.

Dynamic stability analysis has been performed to access the dynamic impact of the thermal power plant on national grid system due to disturbances at the power plant and vice versa. The results of dynamic stability analysis show that the power system is stable for the interconnection scheme and it also fulfils all the criteria for generation connection with the power system.

Short circuit analysis has been performed to evaluate the impact of the proposed project on fault currents level at substations in the electrical vicinity of the proposed thermal power plant. Fault

currents have been computed based on simulation of three-phase and single-line-to-ground faults by applying the criteria as mentioned in the IEC-60909 standard. Results of the analysis show that the calculated fault currents are below circuit-breaker interrupting ratings.

Power and energy loss has also been calculated, that came out to be 1.569 % in normal condition and 2.1 % in N-1 contingency condition which is well less than the benchmark criteria of 2.5%.

Based on the study results, it is concluded that proposed generation interconnection assessment for 10MW bagasse based thermal power plant meets the NEPRA grid code planning criteria.

1 Introduction

1.1 Project Description

This Grid Interconnection Assessment (GIA) report provides the documentation of an assessment that has been performed by ARCO Energy in response to a request made by Madina Sugar Mills (MSM) Pakistan Limited (the "Project Owner" or "PO") for the connection of a 10MW bagasse based Generation Project ("Project") to the Faisalabad Electric Supply Company (FESCO) Power System at 11kV. The PO has proposed a commercial operation date (COD) of July, 2018 for the Project.

The project is located at 10 km Faisalabad Road, Chiniot, Pakistan. Figure 1.1 shows google site map of the project and Figure 1.2 shows geographical representation of power plant.

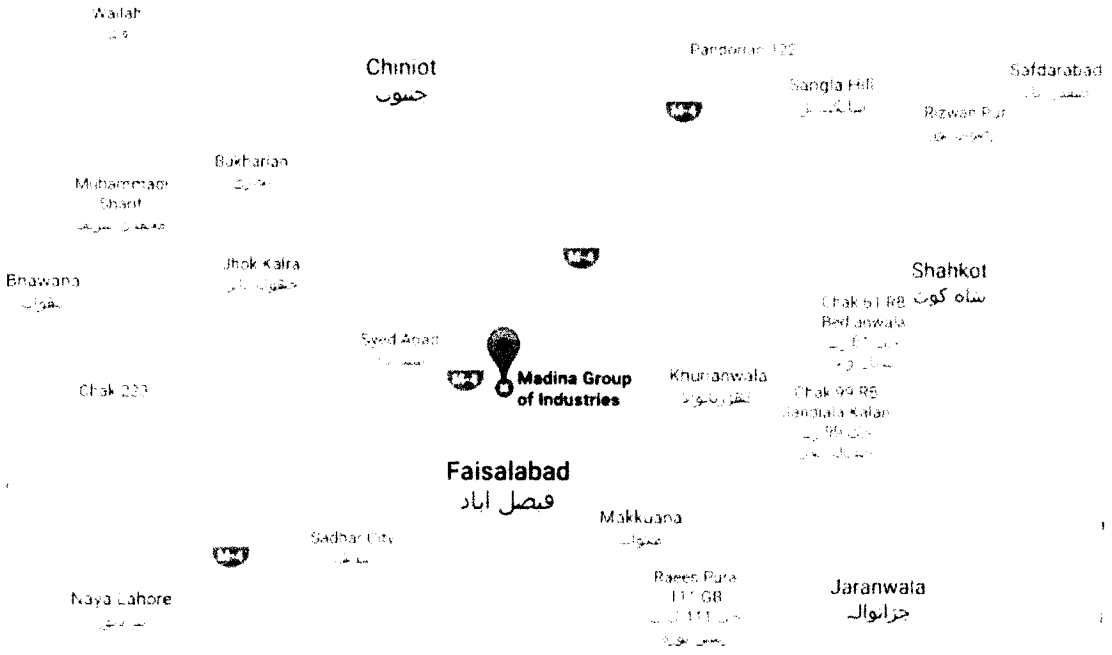

Figure 1.1: Google site map of the project

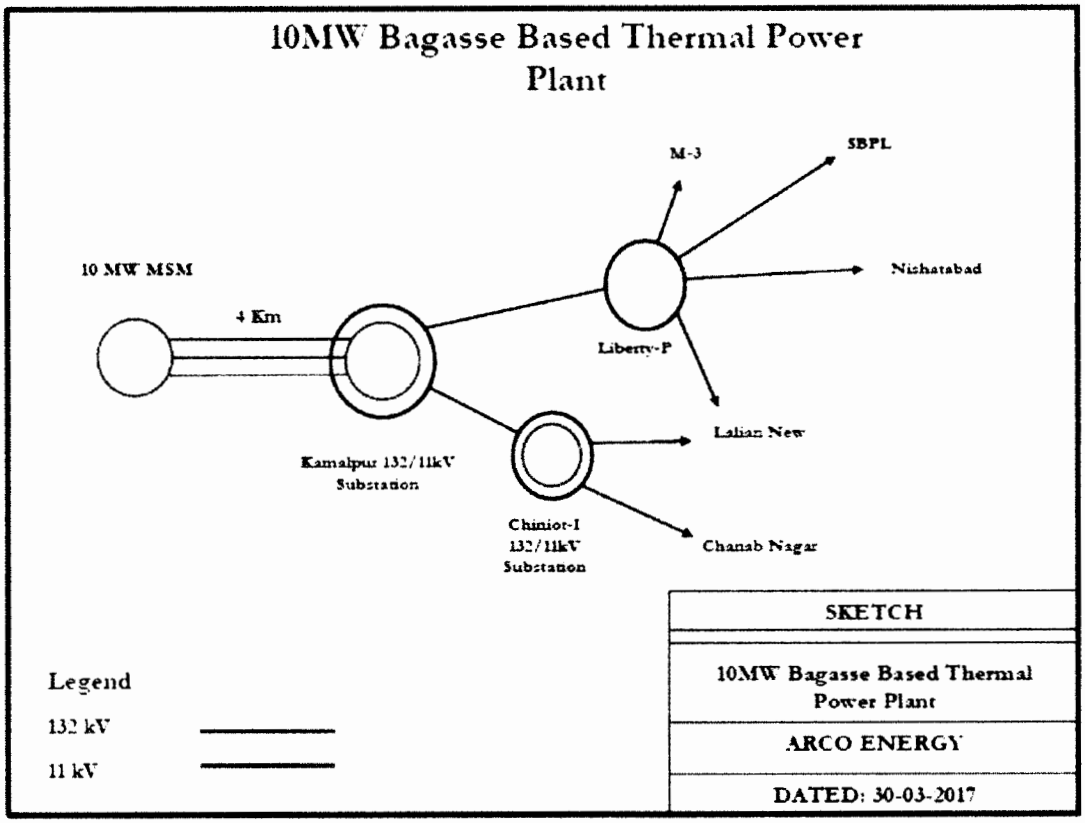

Figure 1.2: Geographical representation of power plant

Gross capacity of the power plant is 29.4MW and the available maximum net power to be injected into the FESCO system will be 10MW after 19.4MW of auxiliary consumption and Madina Sugar Mill's internal load.

1.2 Grid Interconnection Arrangement

The project will be connected with the grid system of FESCO at 11kV by lying three 11kV circuits of 4km length on Osprey conductor from power plant to 132/11kV Kamalpur Grid Station. The three circuits will be connected with transformers T-1, T-2 and T-3 of 132/11kV Kamalpur Grid Station. The objective of the GIA is to evaluate the impact of the proposed thermal power plant on the FESCO power system.

1.3 Study Components

This GIA includes the following three types of analyses to evaluate the impact of interconnecting the proposed project:

i) Steady State Analysis

ii) Dynamic Stability Analysis

iii) Short Circuit Analysis.

This report documents the results of the steady state, dynamic stability and the short circuit analyses. The steady state analysis includes pre project and post project power flow assessment. Dynamic stability analysis includes the post project dynamic stability assessment. Short circuit analysis includes post project short circuit current levels assessment at different buses in the vicinity of the project.

2 Study Methodology

2.1 Study Criteria

GIA has been carried out based on the National Electric Power Regulatory Authority (NEPRA) Grid Code planning criteria. Key parameters and their corresponding limits have been summarized in table below.

Parameter		Range
Voltage	System Intact	±5 % pu
	Contingency	±10 % pu
Thermal loading	System Intact	100%
	Contingency	100%
Frequency	Nominal	50 Hz
	Steady State Variation	49.8 Hz - 50.2 Hz
	Contingency Band	49.4 Hz - 50.5 Hz
Power Factor	Lagging	0.80
	Leading	0.90
Breaker Short Circuit Rating	132 kV	40kA
	11 kV	25kA

2.2 Steady State Analysis

The purpose of steady-state analysis is to analyse the impact of the proposed thermal power plant on transmission system facilities under steady-state conditions. It involves two distinct analyses: thermal loading analysis and voltage analysis. Power flow solutions using the PSS/E® program (Version 33.4) has been performed.

A "study area" was defined to represent the areas of interest which includes the following substations within FESCO:

- Madina Sugar Mill
- Kamalpur
- Liberty
- Chiniot
- Nishatabad
- Chak Jhumra

2.2.1 System Intact Analysis

The incremental impact of the project on thermal loading of transmission facilities under system intact conditions was evaluated by comparing transmission system power flows without and with the proposed project. Overloaded transmission facility loadings without and with the project were tabulated and compared. The criteria to flag thermal overloads are 100% of continuous facility rating (Rate A in the power flow model).

2.2.2 Contingency Analysis

The contingency analysis for this study consists of single branch outage of 11kV or 132kV in the study area.

2.2.3 Thermal Loading Analysis

Transmission facilities rated 11kV and 132kV in the study area have been monitored.

2.2.4 Voltage Analysis

Voltages at buses inside the study area have been monitored for possible pre and post project voltage violations in accordance with NEPRA Grid Code guidelines. In accordance with these guidelines, those buses that have a voltage change of more than ±5% pu (System Intact condition) and ±10% pu (contingency condition) are considered affected.

2.3 Dynamic Stability Analysis

The purpose of dynamic stability analysis is to analyse the impact of the proposed thermal power plant on transmission system facilities under dynamic conditions. The system is considered to be stable if the system recovers with good damping after the transients die out and the synchronism is retained.

Fault clearing time for different voltage levels in accordance with NEPRA Grid Code guidelines is presented in table below.

Voltage Level	Fault Clearing Time
132 kV(Stuck Breaker)	9 Cycles (180 msec)
11 kV(Stuck Breaker)	9 Cycles (180 msec)

2.4 Short Circuit Analysis

The purpose of short-circuit analysis is to investigate the fault current levels at nearby substations with the proposed project online to check whether the calculated post-project fault currents are within circuit breaker interrupting ratings. Short circuit analysis has been carried by applying the criteria as mentioned in the IEC-60909 standard. Key assumptions in IEC-60909 are given below:

- Tap ratios to unity
- Line charging to zero
- shunts are set to zero in positive sequence
- Desired voltage magnitude at bus bars is set to 1.1 pu and 0.9 pu in maximum and minimum fault levels respectively.

3 Steady State Analysis

3.1 Model Development

Project specific data was provided by the plant owner and it has been compiled and presented in Annexure-A. The steady state model of the power plant is presented in table below:

GENERATOR 1	Data
Generator size (MVA)	18
Active Power Pgen. (MW)	14.4
Power Factor	0.8 lagging, 0.9 leading
Qmin, Qmax (MVAR)	-7.846, 10.8
Rated Frequency	50 Hz
Generation Voltage	11 kV
Xsource	0.182 pu

GENERATOR 2	Data
Generator size (MVA)	18.75
Active Power Pgen. (MW)	15
Power Factor	0.8 lagging, 0.9 leading
Qmin, Qmax (MVAR)	-8.17, 11.25
Rated Frequency	50 Hz
Generation Voltage	11 kV
Xsource	0.195 pu

Gross capacity of the power plant is 29.4MW and the available maximum net power to be injected into the FESCO system will be 10MW after 19.4MW of auxiliary consumption and Madina Sugar Mill's internal load.

3.2 Pre Project Power Flow Assessment

A pre project power flow study was conducted to analyze the magnitude and phase angles of bus voltages, line loadings and power flows under steady-state conditions.

3.2.1 Base Year 2018: Peak Loading Summer

Power flow analysis has been performed for September 2018 peak load conditions, using the already available network data of FESCO system. This base case includes a detailed representation of the FESCO system in the study area.

The power flow results for the system intact conditions show that the power flows on all the transmission line branches are within their normal thermal loading limit. There is no capacity constraint in terms of power flow or voltage ratings within the study area. The results of the pre project power flow analysis are plotted in **Annexure-C**.

3.3 Post Project Power Flow Assessment

Post project power flow study was conducted to determine the reliability impact of the proposed 10MW bagasse based thermal power plant project on the FESCO power system. This includes the performance of a contingency analysis to identify any facility overload or voltage condition that violates the NEPRA planning criteria. Any such violation that is either directly attributable to this project or for which it will have a shared responsibility is included in this report with a least cost plan identified to mitigate them.

3.3.1 Base Year 2018: Peak Loading Summer

A base case has been developed for September 2018 peak load conditions that allow us to judge the maximum impact of MSM on the FESCO network.

Post project power flow analysis has been performed after the interconnection of the proposed project with the FESCO power system. This includes the detailed representation of the power plant and its switchyard. A simulation of all possible contingencies within the NEPRA Grid Code planning criteria has also been carried out.

The power flow results for the system intact and for the contingency conditions show that the power flows on all the transmission line branches are within their normal loading limit. There is no capacity constraint in terms of power flow or voltage ratings within the study area. Results from the power flow analysis are presented in table below.

The results of the post project power flow analysis are plotted in **Annexure-D**

Condition	Contingent Branch	Figure No.	Steady State Result
System Intact	N.A.	Figure D-1	No overloading
Contingency	MSM to KAMALPUR T-2 line out	Figure D-1.1	No overloading
	KAMALPUR to LIBRTY-P line out	Figure D-1.2	No overloading
	KAMALPUR to CHNIOT-I line out	Figure D-1.3	No overloading

3.3.2 Base Year 2018: Off Peak Loading Summer

A base case has been developed for September 2018 off peak load conditions that allow us to judge the maximum impact of MSM power plant on the FESCO network.

Post project power flow analysis has been performed after the interconnection of the proposed project with the FESCO power system. This includes the detailed representation of the power

plant and its switchyard. A simulation of all possible contingencies within the NEPRA Grid Code planning criteria has also been carried out.

The power flow results for the system intact and for the contingency conditions show that the power flows on all the transmission line branches are within their normal loading limit. There is no capacity constraint in terms of power flow or voltage ratings within the study area. Results from the power flow analysis are presented in table below.

The results of the post project power flow analysis are plotted in **Annexure-D**

Condition	Contingent Branch	Figure No.	Steady State Result
System Intact	N.A.	Figure D-2	No overloading
Contingency	MSM to KAMALPUR T-2 line out	Figure D-2.1	No overloading
	KAMALPUR to LIBRTY-P line out	Figure D-2.2	No overloading
	KAMALPUR to CHNIOT-I line out	Figure D-2.3	No overloading

3.3.3 Base Year 2019: Peak Loading Winter

A base case has been developed for January 2019 peak load conditions that allow us to judge the maximum impact of MSM power plant on the FESCO network.

Post project power flow analysis has been performed after the interconnection of the proposed project with the FESCO power system. This includes the detailed representation of the power plant and its switchyard. A simulation of all possible contingencies within the NEPRA Grid Code planning criteria has also been carried out.

Power flow results for the system intact and for the contingency conditions show that the power flows on all the transmission line branches are within their normal loading limit. There is no capacity constraint in terms of power flow or voltage ratings within the study area. Results from the power flow analysis are presented in table below.

The results of the post project power flow analysis are plotted in **Annexure-D**.

Condition	Contingent Branch	Figure No.	Steady State Result
System Intact	N.A.	Figure D-3	No overloading
Contingency	MSM to KAMALPUR T-2 line out	Figure D-3.1	No overloading
	KAMALPUR to LIBRTY-P line out	Figure D-3.2	No overloading
	KAMALPUR to CHNIOT-I line out	Figure D-3.3	No overloading

3.3.4 Base Year 2019: Off Peak Loading Winter

A base case has been developed for January 2019 off peak load conditions that allow us to judge the maximum impact of MSM power plant on the FESCO network.

Post project power flow analysis has been performed after the interconnection of the proposed project with the FESCO power system. This includes the detailed representation of the power plant and its switchyard. A simulation of all possible contingencies within the NEPRA Grid Code planning criteria has also been carried out.

Power flow results for the system intact and for the contingency conditions show that the power flows on all the transmission line branches are within their normal loading limit. There is no capacity constraint in terms of power flow or voltage ratings within the study area. Results from the power flow analysis are presented in table below.

The results of the post project power flow analysis are plotted in **Annexure-D**.

Condition	Contingent Branch	Figure No.	Steady State Result
System Intact	N.A.	Figure D-4	No overloading
Contingency	MSM to KAMALPUR T-2 line out	Figure D-4.1	No overloading
	KAMALPUR to LIBRTY-P line out	Figure D-4.2	No overloading
	KAMALPUR to CHNIOT-I line out	Figure D-4.3	No overloading

3.3.5 Future Year 2021: Peak Loading Summer

A future case has been developed for September 2021 peak load conditions that would allow us to judge the maximum impact of MSM power plant on the FESCO network.

Power flow results for the system intact and for the contingency conditions show that the power flows on all the transmission line branches are within their normal loading limit. There is no capacity constraint in terms of power flow or voltage ratings within the study area. Results from the power flow analysis are presented in table below.

The results of the post project power flow analysis are plotted in **Annexure-D**.

Condition	Contingent Branch	Figure No.	Steady State Result
System Intact	N.A.	Figure D-5	No overloading
Contingency	MSM to KAMALPUR T-2 line out	Figure D-5.1	No overloading
	KAMALPUR to LIBRTY-P line out	Figure D-5.2	No overloading
	KAMALPUR to CHNIOT-I line out	Figure D-5.3	No overloading

3.4 Power and Energy Loss Calculations

Power and energy loss calculations have been given below:

3.4.1 System Intact Conditions

Refer to Figure D-1 for system intact conditions, the power loss and energy loss is calculated as:

$$\text{Power Loss} = \frac{Power\ sent(MW) - Power\ received(MW)}{Power\ sent(MW)}$$

$$\%\ \text{Power Loss} = \frac{3.695 - 3.637}{3.695} \times 100$$

$$\%\ \text{Power Loss} = 1.569\ \%$$

$$\text{Energy Loss} = \frac{Energy\ sent(MWh) - Energy\ received(MWh)}{Energy\ sent(MWh)}$$

$$\%\ \text{Energy Loss} = \frac{32368.2 - 31860.12}{32368.2} \times 100$$

$$\%\ \text{Energy Loss} = 1.569\ \%$$

3.4.2 N-1 Contingency Conditions

Refer to Figure D-1.1 for N-1 contingency conditions, the power loss and energy loss is calculated as under;

$$\text{Power Loss} = \frac{Power\ sent(MW) - Power\ received(MW)}{Power\ sent(MW)}$$

$$\%\ \text{Power Loss} = \frac{10 - 9.79}{10} \times 100$$

$$\%\ \text{Power Loss} = 2.1\ \%$$

$$\text{Energy Loss} = \frac{Energy\ sent(MWh) - Energy\ received(MWh)}{Energy\ sent(MWh)}$$

$$\%\ \text{Energy Loss} = \frac{87600 - 85760.4}{87600} \times 100$$

$$\%\ \text{Energy Loss} = 2.1\ \%$$

4 Dynamic Stability Analysis

Dynamic stability analysis has been performed to access the dynamic impact of the thermal power plant on national grid system due to disturbances at the power plant and vice versa.

4.1 Dynamic Model Development

Generic dynamic models, available in the PSSE model library, for the thermal power plant have been used to develop the dynamic model of the power plant. Dynamic model for the two generators of power plant is presented in table below:

14.4MW Machine	Model
Generator	GENROU
Excitation System	EXST1
Speed Governing System	TGOV1

15MW Machine	Model
Generator	GENROU
Excitation System	EXAC1
Speed Governing System	TGOV1

4.2 Post Project Dynamic Stability Assessment

4.2.1 Base Year 2018:

Dynamic stability analysis has been carried out for the base year 2018 conditions. To access the dynamic behavior of power plant and system towards the disturbances, simulations have been carried out for the following faults:

i. 3 Phase fault at MSM cleared in 9 cycles (Stuck Breaker).
ii. 3 Phase fault at KAMALPUR T-1 cleared in 9 cycles (Stuck Breaker).
iii. 3 Phase fault at 132 kV KAMALPUR cleared in 9 cycles (Stuck Breaker).

Each simulation has been performed for one second to depict steady state condition. Then fault is applied and system has been simulated for the fault clearance time. Post-fault condition has been simulated, from clearance of fault followed by a certain contingency, till twenty seconds.

4.2.2 3 Phase fault at MSM cleared in 9 cycles (Stuck Breaker)

Three phase fault has been applied at MSM, fault has been cleared in 180msec (9 cycles) with a particular N-1 contingency and dynamic stability response of the system is monitored, the same has been summarized in the table below.

Fault E-1: 3 Phase fault at MSM cleared in 9 cycles (Stuck Breaker Opening in 180 msec)

No.	Contingency	Monitored Element	Figure No.	System Response
E-1.1	11kV line from MSM to KAMALPUR T-1	Bus Voltages of: i) 11kV MSM, ii) 11kV KAMALPUR T-1 iii) 11kV KAMALPUR T-2 iv) 11kV KAMALPUR T-3 v) 132kV KAMALPUR vi) 132kV LIBRTY-P	E-1.1A	Stable
		Bus Frequency of: i) 11kV MSM	E-1.1B	Stable
		MW and MVAR of bus: i) 11kV MSM	E-1.1C	Stable
		Rotor Angles (w.r.t. HUBCO Swing Bus) of: ii) 11kV MSM, iii) 132kV LIBRTY-P iv) 132kV GTPS-CC v) 11kV PPDCL-PP	E-1.1D	Stable
		MW and MVAR flows at 11kV line from bus: i) MSM to KAMALPUR T-2	E-1.1E	Stable
E-1.2	11kV line from MSM to KAMALPUR T-2	Bus Voltages of: i) 11kV MSM, ii) 11kV KAMALPUR T-1 iii) 11kV KAMALPUR T-2 iv) 11kV KAMALPUR T-3 v) 132kV KAMALPUR vi) 132kV LIBRTY-P	E-1.2A	Stable
		Bus Frequency of: i) 11kV MSM	E-1.2B	Stable
		MW and MVAR of bus: i) 11kV MSM	E-1.2C	Stable
		Rotor Angles (w.r.t. HUBCO Swing Bus) of: i) 11kV MSM, ii) 132kV LIBRTY-P iii) 132kV GTPS-CC iv) 11kV PPDCL-PP	E-1.2D	Stable
		MW and MVAR flows at 11kV line from bus: i) MSM to KAMALPUR T-2	E-1.2E	Stable

No.	Contingency	Monitored Element	Figure No.	System Response
E-1.3	11kV line from MSM to KAMALPUR T-3	Bus Voltages of: i) 11kV MSM, ii) 11kV KAMALPUR T-1 iii) 11kV KAMALPUR T-2 iv) 11kV KAMALPUR T-3 v) 132kV KAMALPUR vi) 132kV LIBRTY-P	E-1.3A	Stable
		Bus Frequency of: i) 11kV MSM	E-1.3B	Stable
		MW and MVAR of bus: i) 11kV MSM	E-1.3C	Stable
		Rotor Angles (w.r.t. HUBCO Swing Bus) of: i) 11kV MSM, ii) 132kV LIBRTY-P iii) 132kV GTPS-CC iv) 11kV PPDCL-PP	E-1.3D	Stable
		MW and MVAR flows at 11kV line from bus: i) MSM to KAMALPUR T-2	E-1.3E	Stable

4.2.3 3 Phase fault at KAMALPUR T-1 cleared in 9 cycles (Stuck Breaker)

Three phase fault has been applied at KAMALPUR T-1, fault has been cleared in 180msec (9 cycles) with a particular N-1 contingency and dynamic stability response of the system is monitored, the same has been summarized in the table below.

Fault E-2: 3 Phase fault at KAMALPUR T-1 cleared in 9 cycles (Stuck Breaker Opening in 180msec)

No.	Contingency	Monitored Element	Figure No.	System Response
E-2.1	11kV line from MSM to KAMALPUR T-1	Bus Voltages of: i) 11kV MSM, ii) 11kV KAMALPUR T-1 iii) 11kV KAMALPUR T-2 iv) 11kV KAMALPUR T-3 v) 132kV KAMALPUR vi) 132kV LIBRTY-P	E-2.1A	Stable
		Bus Frequency of: i) 11kV MSM	E-2.1B	Stable
		MW and MVAR of bus: i) 11kV MSM	E-2.1C	Stable

No.	Contingency	Monitored Element	Figure No.	System Response
		Rotor Angles (w.r.t. HUBCO Swing Bus) of: i) 11kV MSM, ii) 132kV LIBRTY-P iii) 132kV GTPS-CC iv) 11kV PPDCL-PP	E-2.1D	Stable
		MW and MVAR flows at 11kV line from bus: i) MSM to KAMALPUR T-2	E-2.1E	Stable

4.2.4 3 Phase fault at 132 kV KAMALPUR cleared in 9 cycles (Stuck Breaker)

Three phase fault has been applied at 132 kV KAMALPUR bus, fault has been cleared in 180msec (9 cycles) with a particular N-1 contingency and dynamic stability response of the system is monitored, the same has been summarized in the table below.

Fault E-3: 3 Phase fault at KAMALPUR cleared in 9 cycles (Stuck Breaker Opening in 180msec)

No.	Contingency	Monitored Element	Figure No.	System Response
E-3.1	132kV line from KAMALPUR to LIBRTY-P	Bus Voltages of: i) 11kV MSM, ii) 11kV KAMALPUR T-1 iii) 11kV KAMALPUR T-2 iv) 11kV KAMALPUR T-3 v) 132kV KAMALPUR vi) 132kV LIBRTY-P	E-3.1A	Stable
		Bus Frequency of: i) 11kV MSM	E-3.1B	Stable
		MW and MVAR of bus: i) 11kV MSM	E-3.1C	Stable
		Rotor Angles (w.r.t. HUBCO Swing Bus) of: i) 11kV MSM, ii) 132kV LIBRTY-P iii) 132kV GTPS-CC iv) 11kV PPDCL-PP	E-3.1D	Stable
		MW and MVAR flows at 11kV line from bus: i) MSM to KAMALPUR T-2	E-3.1E	Stable

No.	Contingency	Monitored Element	Figure No.	System Response
E-3.2	132kV line from KAMALPUR to CHNIOT_I	Bus Voltages of: i) 11kV MSM, ii) 11kV KAMALPUR T-1 iii) 11kV KAMALPUR T-2 iv) 11kV KAMALPUR T-3 v) 132kV KAMALPUR vi) 132kV LIBRTY-P	E-3.2A	Stable
		Bus Frequency of: i) 11kV MSM	E-3.2B	Stable
		MW and MVAR of bus: i) 11kV MSM	E-3.2C	Stable
		Rotor Angles (w.r.t. HUBCO Swing Bus) of: i) 11kV MSM, ii) 132kV LIBRTY-P iii) 132kV GTPS-CC iv) 11kV PPDCL-PP	E-3.2D	Stable
		MW and MVAR flows at 11kV line from bus: i) MSM to KAMALPUR T-2	E-3.2E	Stable

Dynamic Stability Analysis Results are attached in **Annexure-E**.

5 Short Circuit Analysis

Short circuit analysis has been performed to determine the need for any breaker replacements due to impacts of the thermal power plant project. Single-line-to-ground and three-phase fault current values have been calculated for buses in the vicinity of the thermal power plant project. The calculated fault currents observed at these buses were compared with the interrupting current capabilities of corresponding circuit breakers to determine need for upgrading existing circuit breakers. Short circuit assessment has also been done on the bus of the thermal power plant project.

5.1 Short Circuit Model Development

Short circuit database provided by FESCO has been used as a base case to perform short circuit assessment. The study project has been added to the base case to develop the post-project case. The short circuit model of the power plant is presented in table below.

Generator Data (14.4MW)	
X (+ve)	0.182 pu
X (-ve)	0.2131 pu
X (zero)	0.081 pu

Generator Data (15MW)	
X (+ve)	0.195 pu
X (-ve)	0.2384 pu
X (zero)	0.083 pu

5.2 Post Project Short Circuit Assessment

With the addition of power plant, short circuit current at each bus bar is increased, so the circuit breaker capacity has analysed. Post project short circuit assessment has been performed to evaluate the short circuit levels on the bus of the thermal power plant project.

5.2.1 Maximum Short Circuit: Base Year September 2018

The maximum short circuit levels have been computed according to IEC-60909 standard. Post project maximum short circuit levels at the buses within the study area in the base year September 2018 have been presented in table below.

Bus Name	Bus kV	1-Φ Fault Level (kA)	3-Φ Fault Level (kA)	Already Installed Switchgear Capacity (KA)
MSM	11	20.65	18.01	-
KAMALPUR T-1	11	12.56	12.27	25
KAMALPUR T-2	11	8.29	8.21	25
KAMALPUR T-3	11	6.01	8.20	25
KAMALPUR	132	5.90	8.36	40

Post project maximum short circuit analysis report of base year 2018 is attached in **Appendix F-1.**

5.2.2 Maximum Short Circuit: Future Year September 2021

The maximum short circuit levels have been computed according to IEC-60909 standard. Post project maximum short circuit levels at the buses within the study area in the future year September 2021 have been presented in table below.

Bus Name	Bus kV	1-Φ Fault Level (kA)	3-Φ Fault Level (kA)	Already Installed Switchgear Capacity (KA)
MSM	11	20.68	18.84	-
KAMALPUR T-1	11	12.61	12.33	25
KAMALPUR T-2	11	8.32	8.24	25
KAMALPUR T-3	11	6.03	8.23	25
KAMALPUR	132	5.96	8.59	40

Post project maximum short circuit analysis report of future year 2021 is attached in **Appendix F-2.**

Note:

In the attached short circuit study reports, both three phase and single phase fault currents with polar coordinates and detailed output showing contribution from adjoining sources (i.e. lines and transformers connected to the bus bar) to the fault currents are included.

6 Conclusion

6.1 Steady State Assessment

Power flow analysis has been performed for September 2018, January 2019 and September 2021 peak load conditions. Pre project power flow study was conducted to analyze the magnitude and phase angles of bus voltages, line loadings, and power flows under steady-state conditions. Post project power flow analysis has also been performed after the interconnection of the proposed project with the FESCO transmission system. The power flow results for the system intact and for the contingency conditions showed that the power flows on all the transmission line branches are within their normal thermal loading limit. There is no capacity constraint in terms of power flow or voltage ratings within the study area.

6.2 Dynamic Stability Assessment

Dynamic stability analysis has been performed to access the dynamic impact of the thermal power plant on national grid system due to disturbances at the power plant and vice versa. The results of dynamic stability analysis show that the power system is stable for the proposed interconnection scheme and it fulfils the criteria for generation connection with the power system.

6.3 Short Circuit Assessment

Short circuit analysis has been performed to evaluate the impact of the proposed project on fault currents at substations in the electrical vicinity of the proposed thermal power plant. Fault currents have been computed based on simulation of three-phase and single-line-to-ground faults by applying the criteria as mentioned in the IEC-60909 standard. Short circuit analysis has also been done on the bus of the thermal power plant. Results of the analysis show that the calculated fault currents are below circuit-breaker interrupt ratings.

Hence, on the basis of the study results it is concluded that proposed generation interconnection assessment for 10MW MSM bagasse based thermal power plant meets the NEPRA grid code planning criteria.

List of Annexures

Annex F: Short Circuit Analysis Results.

Annex F-1: Post project maximum short circuit report of base year 2018.
Annex F-2: Post project maximum short circuit report of future year 2021.

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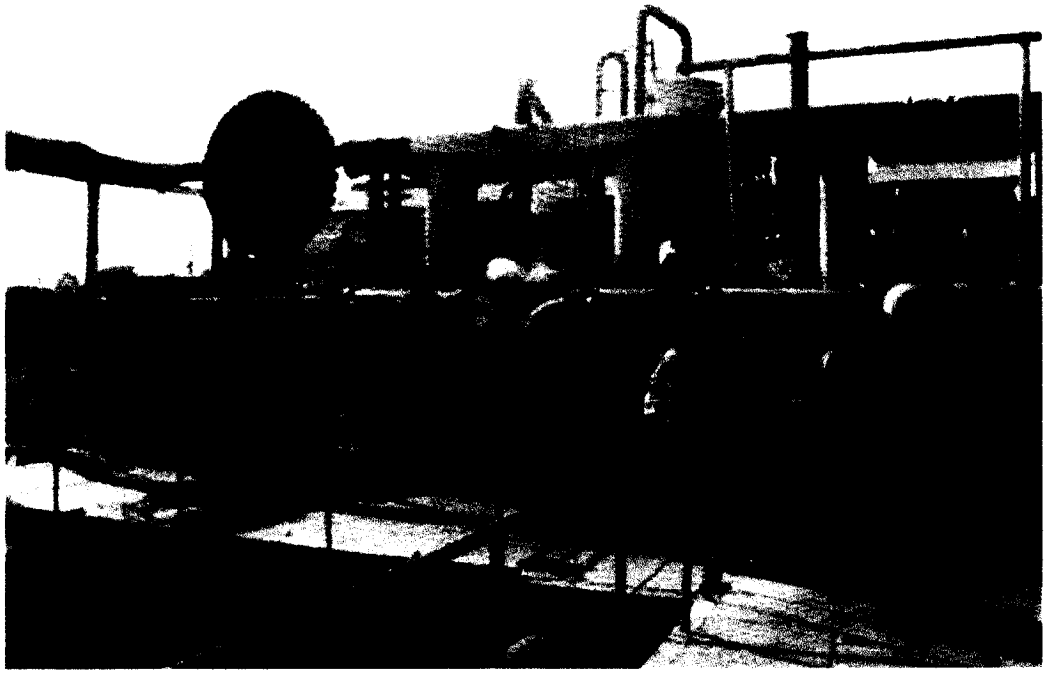
ENVIRONMENTAL IMPACT ASSESSMENT

MADINA SUGAR MILLS LIMITED



10 – KM FAISALABAD ROAD, CHINIOT

EXECUTIVE SUMMARY

i- Introduction

Madina Sugar Mills and Distillery Unit is one of the leading and most diversified business groups in Pakistan. The Group ranks amongst the important business houses of the area. **Madina Sugar Mill Unit** is already operating for the production of sugar since decades. **Sugar** is being produced from the evaporation of the juice that is extracted from the crushed cane. The byproduct generated from the manufacture of sugar is **'molasses'**, which holds out interesting possibilities, it can be sold untreated on one hand; on the other; it can be used as the principal feedstock for the manufacture of ethanol and a host of downstream chemicals. Keeping in view the worth of molasses and to safeguard the environment as well, Messer **Madina Sugar Mills Ltd,** are in process to install a **Distillery Unit** for the manufacturing of bio fuels like ethanol, industrial ethanol etc from the molasses at **Madina Sugar Mills Ltd, 10-Km, Faisalabad road, Chiniot**.

ii- Contact Person

[redacted]

[redacted]

Head Office: Gate no. 3, Head Office - Madina Group of Industries, Sargodha Road, Faisalabad - Pakistan

Site: 10-Km, Faisalabad road, Chiniot

iii- Location

The project site is located at 10-Km, Faisalabad road, Chiniot. The area is agricultural and industrial around the project and there is no

population within a radius of 2-Km. The project in its vicinity has infrastructure like roads, transport, electricity, telephone, land and even the environment is of ideal conditions. According to the Tehsil Municipal Administration (TMA) the area is agricultural in nature. The land is already owned by the project proponent.

iv- Objectives of Project

The main objective of the Proposed Project is to generate cleaner, economical and reliable bio fuel from byproduct of the sugar unit which will not only provide a better alternate source of energy but also cause a boost to energy sector. It will also reduce environmental hazards caused by molasses a byproduct of sugar.

v- Type and Category of the Project

The project for installation of Distillery unit under the name of "**Madina Sugar Mills & Distillery Unit**". The area is agricultural and industrial in nature as declared by the competent authorities. The proposed project is likely to generate sound commercial activities and ample number of employment in the area. The raw material is easily available at the site. According to the Environmental Protection Agency, Government of the Punjab, Lahore- "List of Projects", project under consideration categories in the category of the projects requiring Environmental Impact Assessment (**EIA**). Therefore, to fulfill the legal requirements of the Section-12 of the PEPA-2012, the client is required to submit the EIA report in the Environmental Protection Agency, Government of the Punjab, Lahore to obtain the required Environmental Approval (EA).

The project under discussion is the distillation of the molasses to make the bio fuel like ethanol, spirit etc for industrial and commercial use.

vi- Raw Materials

Molasses are the only raw material in the Ethanol Distillation Unit.

vii- Raw Material Source

The molasses is the by-product of the Sugar manufacturing unit; in present case Madina Sugar Mill Ltd; which holds out interesting possibility for the manufacture of ethanol and a host of downstream chemicals.

viii- Production Capacity: 125,000.0 litre per day.

ix- Construction Period and Cost

The project cost has been estimated as 1.50 billion rupees. The quantities have been worked out from the design drawings. The rates for cost estimates are based on construction work, contractor cost, and cost of the raw materials with 10 % escalation for the year 2013. The proposed activities to be carried out within a period of twenty months from the starting date.

x- Energy

The power load of the sugar mill and distillery project is anticipated as 24 Megga Watt which will be self produced and will be sponge by the Sugar mill. However, Water and Power Development Authority (WAPDA) through its Faisalabad Electric Supply Corporation (FESCO) has also supplied the electricity in the area.

xi- Availability of Water

Adequate quantity of underground water is available to meet even all the project requirements. The quality of water is also satisfactory. This factor also supports the decision regarding sitting of the project at the existing site. However, the water for all project activities will be withdrawn from the underground water pumps already present at the project site.

During construction phase of the project the water requirement will be 15000-20000 gallons per day while it is estimated that about 25,000 m^3/day of water will be required during the regular operation of the project.

xii- Size or Magnitude of the Operation, Including Capital Cost, and Associated Activities

Total area of the project is 25.6 acre. The land is already owned by M/S Madina Group of Industries; therefore; there will be no issue of the displacement or resettlement

xiii- Environmental Problems Associated With Construction

The construction will also sometimes go round the clock, therefore, during all construction activities the followings will be the major pollutants/wastes or project related pollution aspects:

- Soil erosion
- Particulate matter/dust and gaseous emissions from construction machinery and vehicles transporting materials.
- Noise from construction machinery and vehicles transporting materials
- Garbage as construction waste including clay, sand, crush stones, paper, plastic, wood pieces, iron and steel as scarp, wires, rags, ropes etc
- Dust during raw materials unloading and its use in construction
- Sewage and solid wastes from construction camp
- Some social impacts due to accumulation of workers may arise
- Some problems to utilities infrastructure of the area may occur especially due to labor negligence

A number of machinery and equipment is in operation for the construction which includes:

- Batching plants
- Excavators
- Truck
- Transport vehicles
- Concrete mixers
- Vibrators
- Welding plants
- Generators etc.

Most of these are using diesel engines that generate noise and exhaust emissions. The possibility of exhaust emissions increases when old vehicles/plants are utilized for the execution purposes. Generally, the above activity is generating particulate- matter (PM_{10}), smoke, dust, CO and NO_x in the ambient air, which is deteriorating the air quality and resulting in adverse impacts on human health, fauna and flora. The movement of heavy machinery and vehicles on the dirt tracks is also causing fugitive dust emissions.

Due to the movement of vehicles, noise and vibration will be increased and residents of the nearby settlements will be affected.

Source of air pollution for this project activities are unpaved roads. Dust plumes behind vehicles moving along unpaved roads represent a typical occurrence, since as the vehicle travels over an unpaved road, the force of the wheels on the road surface causes pulverization of the surface material. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake (behind the vehicle) continues to act on the road surface after the vehicle has

passed. As an approximation, fugitive dust (dust generated from unpaved roads is termed "fugitive dust" because it is not discharged into the atmosphere in a confined-flow stream) from unpaved roads can be considered to average about 75 lb per vehicle-mile of travel. This dust would be a problem for the surrounding communities.

xiv- Mitigation Measures of Impacts on Air and Noise Resources

Tuning of vehicles should be made mandatory to reduce the emissions of NO_x, SO_x, CO and PM_{10}.

Emissions from the batching plants will be controlled with appropriate control equipment (such as fabric filters or cyclone separators).

Equipment and vehicles powered with diesel should be well maintained to minimize particulate emissions.

Trucks carrying, sand, aggregate and other materials should be kept covered during transportation of materials and during storage at site, with tarpaulin.

For the construction machinery generating noise level in excess of that prescribed in NEQS, Contractor will make arrangements to bring the noise level within applicable limits (including proper tuning of vehicles and mufflers/silencers).

Movements of the trucks and other construction machinery causing high noise levels must be restricted at night time to avoid disturbance to the nearby locality. Truck drivers should be instructed not to play loud music at night and stop use of horn.

It is suggested that noise barriers should be installed at construction site during the construction phase of the project.

The fugitive dust emission will be a problem for the nearby communities which will be mitigated by sprinkling of water.

xv- Environmental Management Plan (EMP)

The Environmental Management Plan **(EMP)** aims to provide:

- An integrated plan for the comprehensive monitoring and control of impacts.
- Auditable commitments displaying practical achievable strategies for management to ensure that environmental requirements are specified and complied with.

For this purpose, an outline of EMP has been developed which includes;

- what has to be managed and monitored, how and why
- when and where
- by whom
- whom to report and who to follow up if there is any problem.

xvi- Environmental Monitoring Program

The monitoring program is designed to ensure that the requirements of the environmental approval awarded by the EPA are met. Monitoring Program **(MP)** provides important information that allows for more effective planning and an adaptive response based on the assessment of the effectiveness of mitigation measures. The monitoring of various parameters will help to determine the extent to which project construction/operation activities will cause environmental disturbance.

Environmental Management and Monitoring Cost

The cost for environmental management and monitoring will be the part of contract of Contractor and Consultants respectively. However, a lump sum amount of Rs. 1.75 million will be allocated by the project proponent as cost for environmental training and monitoring for a period of two years during construction and operation of the project.

xvii- Public Discussions

Public Discussions were held with the inhabitant of the surrounding area. They are quite positive to the project and see the project as growing business and accomplishing towards the positive development in the area at local and in country as whole. The people observe strong positive impacts regarding employment, business and structural development due to this project. EIA findings depict that people perceive overall positive social and economic impacts by the project. Their attitude towards the project installation is highly optimistic. Majority of the people are convinced for development in the area and they correlate this progress with the pace of their social mobility.

SECTION - 1
INTRODUCTION

1. Introduction

Madina Sugar Mills and Distillery Unit is one of the leading and most diversified business groups in Pakistan. The Group ranks amongst the important business houses of the area. **Madina Sugar Mill Unit** is already operating for the production of sugar since decades. **Sugar** is being produced from the evaporation of the juice that is extracted from the crushed cane. The byproduct generated from the manufacture of sugar is **'molasses'**, which holds out interesting possibilities, it can be sold untreated on one hand; on the other; it can be used as the principal feedstock for the manufacture of ethanol and a host of downstream chemicals. Keeping in view the worth of molasses and to safeguard the environment as well, Messer **Madina Sugar Mills Ltd,** are in process to install a **Distillery Unit** for the manufacturing of bio fuels like ethanol, industrial ethanol etc from the molasses at **Madina Sugar Mills Ltd, 10-Km, Faisalabad road, Chiniot**.

1.1 Purpose of Report

Environmental Impact Assessment (**EIA**) report is being submitted to the Environmental Protection Agency (**EPA**), Government of the Punjab, Lahore, in compliance with the legal requirement for the Pakistan Environmental Protection Act-1997 (amended 2012), Section-12 for obtaining the Environmental Approval (EA) for the installation of Sugar Mill and Distillery unit at **10-Km, Faisalabad road, Chiniot** the project site.

The other relevant regulations and guidelines considered while preparing this EIA report include:

1. Policy and procedures for filing, review and approval of environmental assessments.
2. Guidelines for the preparation and review of environmental reports.

3. Guidelines for public participation.
4. Guidelines for sensitive and critical areas.
5. Detailed sectoral guidelines.

Different environmental aspects like social, physical, biological and other related features of the project both during construction and its regular occupancy are highlighted in this EIA report.

The necessary measures to be adopted to mitigate negative environmental impacts on any segment of the environment in and around are also described. All the important project related information is also provided as desired by the Guidelines for the Preparation of IEE/EIA reports-1997, based on which present report has been prepared. This report will also help the decision makers, EPA Punjab in the present case, to take a judicious decision before issuing the desired Environmental Approval (EA)/No Objection Certificate (NOC).

1.2 Contact Person

Major Izhar-ul-Asad (please check and confirm it)
Project Manager

Head Office: Gate no. 3, Head Office - Madina Group of Industries, Sargodha Road, Faisalabad - Pakistan

Site: 10-Km, Faisalabad road, Chiniot

1.3 Consultants Preparing the Environmental Report

Integrated Environment Consultants

Office: Office # 7, 2nd Floor, Anwar Tower,
99-Shadman Chowk,
Lahore, Pakistan.

Phone: + 92 (042) 35960091

Email: inenvconsultants@yahoo.com

1.4 Location

The project site is located at 10-Km, Faisalabad road, Chiniot. The area is agricultural and industrial around the project and there is no population within a radius of 2-Km. The project in its vicinity has infrastructure like roads, transport, electricity, telephone, land and even the environment is of ideal conditions. According to the Tehsil Municipal Administration (**TMA**) the area is agricultural in nature. The land is already owned by the project proponent.

1.5 Need of the IEE/EIA Study

Government of Pakistan in the year 2000 has adopted the regulations for the Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA), under these review regulations, the Environmental Protection Agency (EPA) stipulated relevant procedures for the proponents to be compliance with environmental quality requirements for the preparation of environmental assessment studies (either IEE or EIA). These environmental studies are planning instruments that aim to contribute to design phases of the development as well as functions as management tools to minimize potential negative impacts and maximize benefits during construction and operational phases of a project. To be effective in this role the IEE or EIA needs to form an integral part of the project design process. In this way the environmental implications of various design alternatives can be evaluated and the cost benefits of different trade-offs assessed. The result is the potentially negative impacts can often be avoided and almost always reduced, without compromising the real cost of the project. Conversely, positive environmental outcomes associated with the project can be enhanced.

Moreover, it is also a legal requirement of the Punjab Environmental Protection Act-2012, Section 12, which requires that no proponent of a

project can commence work on ground, even capacity enhancement, unless he has filled the IEE/EIA report, as the case may be, and obtained the Environmental Approval.

1.6 Objective of the Report

Objectives to conduct EIA are as following:

- A legal binding in accordance to Punjab Environmental Protection Act (PEPA)-2012.
- To identify the potential environmental issues pertaining to the proposed site.
- To evaluate the ability of the site in view of social acceptance and environmental soundness.
- To provide the maximum information to the proponent and other stakeholders about the existing environmental conditions and the implications of the proposed project.
- Collection of available data, reports, drawings and other relevant information about area of proposed project.
- Review of applicable existing environmental legislation and national environmental quality standards (NEQS).
- Propose mitigation measures to eliminate or to reduce the negative impacts to an acceptable level.
- Development of well resourced environmental management and monitoring plans to identify mitigation strategies targeted towards avoidance, minimization and rehabilitation of the impacts.

1.7 Extent of the Study

In compliance of PEPA, 2012 requirements, an EIA report has been prepared by M/S **Integrated Environment Consultants, Lahore**. This document covers all environmental impacts, due to proposed project, in and around the

project area comprising the physical, ecological and socio-economic aspects together with identification of the potential positive and negative impacts. Any developmental activities outside the project area and establishment of the other factories outside the project vicinity have not been covered under this EIA study.

1.8 Methodology

The methodology adopted to carry out the EIA study of the proposed project was as follow;

- Orientation
- Planning of Data Collection
- Data Collection
- Site Reconnaissance
- Analysis of Maps and Plats
- Literature Review
- Desk Top Research
- Public Consultations
- Field Studies
- Laboratory Analysis

In addition to the evaluation and review of the available records, data and the facts for the project feasibility studies, detailed discussions were held with the concerned members of the project management as well as other project stakeholders.

Notes and proposals for measures to be taken to mitigate and compensate for any determined/detrimental environmental impacts are contained in the Environmental Management Plan (EMP) as well as a Monitoring Plan, including all parameters that need to be measured, and the frequency of monitoring actions.

A comprehensive qualitative and semi-quantitative methodology was adopted to conduct this study inter-alia in due compliance with the EIA requirements. The study included collection of both primary and secondary data regarding environmental status and other relevant factors.

1.9 Scope of the EIA Study

The EIA report covers the examination of the physical, biological, environmental and socioeconomic impact of the following;

- Construction activities including the erection/installation of machinery.
- Relevant off-site construction activates.
- Operation of the proposed.

The purpose of this EIA study is identification of key environmental and social issues which will likely arise during construction and operation of the proposed project along with the assessment of the significant negative impacts and mitigation measures to be adopted for their minimization.

The ultimate goal of this EIA report, among others, is also to produce an Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMtP) for the Construction and Operation Stages of the proposed project. Compliance of EMP together with the provisions for mitigation measures for the significant negative impacts will ensure the implementation of this project in an environmentally sustainable manner both at Construction as well as Operation stages of the Project. The EIA report ensures compliance to all national and local regulations enforced in Pakistan for such report. This EIA report also discusses the legal and administrative framework within which the EIA is prepared.

A brief project description is included in the EIA report together with a description of the baseline environmental conditions and the actual environmental situation at the proposed site for the project.

The technical section of the report and the environmental baseline situation form the basis for the detailed impact assessment during construction and operation phases of the project. Based on the findings of this report, an environmental management system has been devised, outlining necessary mitigation and compensation measures together with monitoring practices.

1.10 Objectives of Project

The main objective of the Proposed Project is to generate cleaner, economical and reliable bio fuel from byproduct of the sugar unit which will not only provide a better alternate source of energy but also cause a boost to energy sector. It will also reduce environmental hazards caused by molasses a byproduct of sugar.

1.11 Persons Performing the Study (Team Members)

The proponent has assigned the task of preparing EIA report to M/S **Integrated Environment Consultants, Lahore**. The EIA study of the proposed project has been conducted according to Environmental Assessment Procedures-1997, Review of IEE and EIA Regulation-2000 as prescribed by the Federal Environmental Protection Agency (Pak-EPA), Government of Pakistan.

Study team of M/S Integrated Environment Consultants which completed the EIA report consists of following experts:

- **Mr. Ahtasham Raza** — Project Incharge
  M.Phil (Env. Sciences)
  GC University, Lahore
  Ph.D Scholar, (Env. Sciences)
  University of the Punjab, Pakistan
- **Mr. M. A. Nouman** — Team Leader
  M.Sc Environmental Sciences
  M.Phil Environmental Sciences

University of the Punjab, Lahore

- **Mr. Asher Azad** — Monitoring Incharge
  M.Sc Chemistry
  GC University, Lahore
- **Mr. Zaheer Bhatti** — Monitoring Engineer
  M.Sc Chemistry
  GC University, Lahore
- **Mr. Mubroor Hassan** — Monitoring Engineer
  M.Sc Chemistry
  M.Phil Environmental Sciences
- **Mr. Hamaza Ahmad** — Geo Technical Engineer
  B.Sc. Civil Engineering (UET)
  M.Sc. Env. Engineering (UET)
- **Mr. M.A. Sheraz** — Sociologist
  M.A Sociology
  University of the Punjab, Lahore
- **Ms. Hina Gillani** — Environmentalist
  M.Sc. Environmental Sciences
- **Ms. Sidra Khawar** — Ecologist
  M.S. Zoology (LCW)
  M.Phil (Env. Science), PU

The Consultant team members kept close liaison with the client throughout the preparation of this EIA report and comprehensively discussed various aspects of the project. The team members also visited the proposed site, carried out environmental monitoring of the project site, held Public Consultations/ Scoping and attended to various other important aspects related to the project for synthesis of a realistic EIA report of the project.

SECTION - 2
POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 General

This section deals with the policy and legal framework which apply for protection, conservation, restoration, rehabilitation and also related to sustainable development in context of project implementation and its operation. The Project is expected to comply with all the legislations related to the environmental aspects as regards of Pakistan.

2.2 National Policy Framework

Following elements of national policy framework are considered the most relevant to this project:

2.2.1 National Conservation Strategy

The Pakistan National Conservation Strategy (NCS), which was approved by the federal cabinet in March 1992, is the principal policy document on environmental issues in the country (EUAD/IUCN, 1992). The NCS outlines the country's primary approach towards encouraging sustainable development, conserving natural resources, and improving efficiency in the use and management of resources. The NCS has 68 specific programs in 14 core areas in which policy intervention is considered crucial for the preservation of Pakistan's natural and physical environment. The core areas that are relevant in the context of the proposed project are:

- pollution prevention and abatement,
- restoration of rangelands,
- increasing energy efficiency,
- conserving biodiversity,
- supporting forestry and plantations, and
- preservation of the cultural heritage.

2.2.2 National Environment Policy 2005

The national environmental policy 2005 aims to protect conserve and restore the environment in order to improve quality of the life of citizens through sustainable development and resource conservation.

The main objectives of the policy are;

- Conservation, restoration and efficient management of the natural resources.
- Integration of the environmental considerations in policy making and planning process.
- Capacity building of government agencies and other stakeholders at all levels for the better environmental management.
- Meeting international obligations effectively in line with the national aspirations.
- Creation of a demand for environment through mass awareness and community mobilization.

2.2.3 The National Forest Policy 2001 of Pakistan

This policy covers the Renewable Natural Resources (**RNR**) of Pakistan i.e. Forests, Watersheds, Rangelands, Wildlife, Biodiversity and their habitats. The policy seeks to launch a process for eliminating the fundamental causes of the depletion of RNR through the active participation of all the concerned agencies and stakeholders, to realize the sustainable development of the resources. It is an umbrella policy providing guidelines to the Federal Government, Provincial Governments and territories for the management of their RNR. In consonance with it, the Provincial and District Governments may devise their own policies in accordance with their circumstances. The goal of this policy is to foster the sustainable development of RNR of Pakistan, for the maintenance and rehabilitation of its environment and the

enhancement of the sustainable livelihoods of its rural masses especially women, children and other deprived groups.

The elements of the policy are as follow:

1. Population planning in critical eco-systems.
2. Providing substitutes to firewood in the wooded mountains.
3. Reducing the impact of socio-economic causes.
4. Reducing poverty, poverty of opportunity, and powerlessness.
5. Reducing political interference in the Forestry and Wildlife Departments.
6. Renovating and invigorating the institutions of RNR.
7. Supporting Local Governments in the sustainable development of their RNR.
8. Policies for fragile natural Eco-systems.
9. Riverain forests.
10. Irrigated Plantations.
11. Preservation of relict and unique forests.
12. Wildlife.
13. Rangelands and desert eco-systems.
14. Planting of trees and fodders on farmlands.

2.3 Punjab Environmental Protection Act (PEPA) 2012 and Administrative Framework

2.3.1 General

The Punjab Environmental Protection (Amendment) Act 2012 is a fairly comprehensive legislation and provides legislative framework for protection, conservation, rehabilitation and improvement of the environment. It contains concrete action plans and programs for the prevention of pollution and promotes sustainable development.

The salient features of the law are:

- No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by Federal Environmental Protection Agency (EPA) or Provincial EPAs an EIA, and has obtained a No Objection Certificate (NOC)/Environmental Approval (EA).
- Establishment and Formation of the Pakistan Environmental Protection Council.
- Powers and Functions of the Federal and Provincial Environmental Protection Agencies.
- Prohibition of certain discharges or emissions.
- National Environmental Quality Standards (NEQS) for wastewater, air emissions and noise.
- This act also empowers Federal Government to issue notices and to enforce them for the protection of the environment and resource conservation.

For the effective implementation of the provisions of the Punjab Environmental Protection (Amendment) Act, 2012, EPA headed by a Director General has been constituted.

The capability of regulatory institutions for environmental management largely achieves the success of environmental assessment for ensuring that development projects are environmentally sound and sustainable. For decision-making and policy formulation in the environmental and conservation issues, the institutional framework is described below:

2.3.2 Federal Government Institutions

With the approval of the 18th Amendment in the Constitution of 1973 of The Islamic Republic of Pakistan, the subject of environment has largely been delegated to the provinces. The federal Ministry of Environment has been abolished and instead the Ministry of Climate Change has been shaped under

which Pakistan Environmental Protection Council; Pakistan Environmental Protection Agency; Pakistan Environmental Planning and Architectural Consultants Limited; Global Environmental Impact Study Centre; Islamabad policy, legislation, plans, strategies and programmes with regard to disaster management including environmental protection and preservation, coordination, monitoring and implementation of environmental agreements with other countries, international agencies and forums have been put.

The Pakistan Environmental Protection Agency (Pak EPA) looks after the environment related issues for the federally controlled areas and territories. Lacking laws at the provincial levels; the laws, rules, regulations etc those already available at the federal level and operational at the provincial levels will continue as such.

In the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997) the following major amendments were conducted:

(a) for the words "Federal Government", wherever occur, the word "Government" shall be substituted;

(b) for the words "Federal Agency", wherever occur, the words "Provincial Agency" shall be substituted; and

(c) for the word "National", wherever occurs, the word "Punjab" shall be substituted.

2.4 Pakistan Environmental Protection Agency Regulations, 2000 for Review of Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA)

Under Section 12 (subsequent amendment) of the Punjab Environmental Protection Act, 2012, a project falling under any category specified in Schedule I or II requires the proponent to file an IEE or EIA, as the case may be, with the agency (Environmental Protection Agency). Within ten working days of the IEE or EIA having been submitted, the agency will confirm that the

documents submitted are complete for the purpose of review. During this time, should the agency requires the proponent to submit any additional information; the IEE or EIA will be returned to the proponent for revision, clearly listing those aspects that need further discussion. Subsequently, the agency shall make every effort to complete an IEE review within 45 days and an EIA review within 90 days of filing of the complete information of report. After the successful review, the EPA will issue the NOC/EA according to the rules and regulations as prescribed in Regulation 2000. During the project execution the proponents are required to comply with the recommendations of the IEE/EIA and also the conditions of the NOC/EA set forth by the relevant EPA, in present case, EPA, Lahore, Punjab. During the construction or post EIA monitoring and reporting is mandatory according to clause 19 of Regulation-2000. These Regulations requires proponent of all projects to submit environmental monitoring reports during and on completion of construction, and regular operation of the project. Any additional requirements of the report as desired by the EPA are also necessary for the proponent, however, the format and contents of such reports are not specified in the law.

2.5 Pakistan Environmental Impact Assessment Procedures

These guidelines are descriptive documents describing the format and content of IEE/EIA reports to be submitted to Federal and Provincial EPA/EPD for obtaining NOC/EA. Following are the major areas, which are covered by these guidelines:

- The Environmental Assessment report formation (scoping, type and category of project, description of project, alternatives, site selection, baseline data).
- Assessing impacts (identification, analysis and significance).
- Mitigation and impact management and preparing an environmental management plan.

- Reporting (format, main features, shortcomings, other forms of presentation).
- Review and decision making (role, steps, remedial options, checks and balances).
- Monitoring and auditing (systematic follow up, effective data management).
- Project Management (inter-disciplinary teams, programming and budgeting).

2.6 Guidelines for Public Consultation

The EPA provides these guidelines to deal with possible approaches to public consultation and techniques for designing an effective program of consultation that reaches out to all major stakeholders and ensures the incorporation of their concerns in any impact assessment study. These guidelines cover:

- Consultation, involvement and participation of stakeholders
- Effective public consultation (planning, stages of EIA where consultation is appropriate)
- Facilitation involvement (including the poor, women and Non-Governmental Organizations (NGOs)

2.7 National Environmental Quality Standards (NEQS), 2000

The NEQS 2000 specify the following standards:

- Maximum allowable concentration of pollutants (32 parameters) in municipal and liquid industrial effluents discharged to inland waters, sewage treatment facilities, and the sea (three separate sets of numbers).
- Maximum allowable concentration of pollutants (16 parameters) in gaseous emissions from industrial sources.

- Maximum allowable concentration of pollutants (two parameters) in gaseous emissions from vehicle exhaust.
- Maximum allowable noise levels from vehicles.

These standards apply to the gaseous emissions and liquid effluents. Standards for ambient air quality have not been prescribed as yet.

2.7.1 National Ambient Air Quality Standards (NAAQSs)-October 18, 2010

The Government of Pakistan, Gazette Notification dated October 18, 2010 regarding the National Ambient Air Quality Standards (AAQSs) has published the National Ambient Quality Standards for particulate matter and ambient gases.

2.7.2 National Drinking Water Quality Standards (NDWS)-October 18, 2010

The Government of Pakistan, Gazette Notification dated October 18, 2010 regarding the National Drinking Water Quality Standards, has published the National Standards for Drinking water for 32 parameters.

2.8 National Resettlement Policy and Ordinance

As referred above, at present the only legislation relating to land acquisition and compensation is the Land Acquisition Act (LAA) of 1894. Experience with large-scale infrastructure development projects implemented by institutions such as WAPDA has demonstrated the need for a cohesive national policy for resettlement. Following a national consultative process, a national resettlement policy and a related ordinance were drafted known as Draft Resettlement Policy, 2002 which still has to be approved by the government.

The salient applicable features of the Draft Resettlement Policy are given below:

- The Pak-EPA will be responsible for both environment-related as well as resettlement-related matters.
- The responsibilities for implementation at a provincial level are to be delegated to the concerned provincial EPAs with overall control of the provincial Planning and Development (P&D) Departments.
- All categories of 'loss' arising from development projects that entail resettlement, need to be addressed: these include not only loss of land, built-up property, other infrastructure, and crops and trees, but also loss of income, job opportunities, and access to natural resources, etc.
- Vulnerable groups whose issues need to be addressed in particular include: women, children, destitute persons, tribal communities, squatters, those with usurper rights, and landless groups.
- There should be a special emphasis on consultation with affected groups when preparing a Resettlement Action Plan.

2.9 Other Environment Related Statutes

This section outlines the other statutes apart from the Punjab Environmental Protection (Amendment) Act, 2012, which are relevant to the project.

2.9.1 The Land Acquisition Act (LAA), 1894

At this point, the only legislation relating to land acquisition and compensation is the LAA of 1894. The LAA is, however, limited to a cash compensation policy for the acquisition of land and built-up property, and damage to other assets, such as crops, trees, and infrastructure. The LAA does not consider the rehabilitation and resettlement of disrupted populations and the restoration of their livelihoods.

The Project will involve acquisition of proprietary land. The land will be acquired under the LAA 1894. In the Act there are provisions for normal acquisition of land under Section 6 (4) or emergency acquisition under Section 17 (4).

2.9.2 Pakistan Explosives Act, 1884

Under the Explosives Act, the project contractors are bound by regulations on handling, transportation and using explosives during quarrying, blasting, and other purposes.

2.9.3 The Forest Act, 1927

The Forest Act empowers provincial governments to prohibit the clearing of forest for cultivation, grazing, hunting, removing forest produce; quarrying and felling, lopping and toping of trees, branches in reserved or protected areas.

2.9.4 Pakistan Penal Code, 1860

The Pakistan Penal Code deals with offences where public or private property and/or human lives are affected due to the intentional or accidental misconduct of an individual or body of people. In the context of environment, the Penal Code empowers the local authorities to control noise, noxious emissions and disposal of effluents. The NEQS enforced by the EPAs supersede the application of this legislation on industries and municipalities.

2.9.5 Provincial Wildlife Act, 1974

In addition to empowering the provincial wildlife departments to establish game reserves, parks, and wildlife sanctuaries, this Act regulates the hunting and disturbance of wildlife.

SECTION - 3
DESCRIPTION OF THE PROJECT

3.1 General

This Section deals with project components, which are the part of installation of Sugar Mill & Distillery unit under discussion. It also describes the category of the project, availability of construction materials, construction time and cost of the project, construction and operation equipments etc. The information presented in this section is based on project site survey, preliminary design report, and construction drawings provided by the client.

3.2 Type and Category of the Project

The project for installation of Distillery unit under the name of **"Madina Sugar Mills & Distillery Unit"**. The area is agricultural and industrial in nature as declared by the competent authorities. The proposed project is likely to generate sound commercial activities and ample number of employment in the area. The raw material is easily available at the site. According to the Environmental Protection Agency, Government of the Punjab, Lahore- "List of Projects", project under consideration categories in the category of the projects requiring Environmental Impact Assessment (**EIA**). Therefore, to fulfill the legal requirements of the Section-12 of the PEPA-2012, the client is required to submit the EIA report in the Environmental Protection Agency, Government of the Punjab, Lahore to obtain the required Environmental Approval (EA).

The project under discussion is the distillation of the molasses to make the bio fuel like ethanol, spirit etc for industrial and commercial use. A simple flow diagram of the process is described here under.

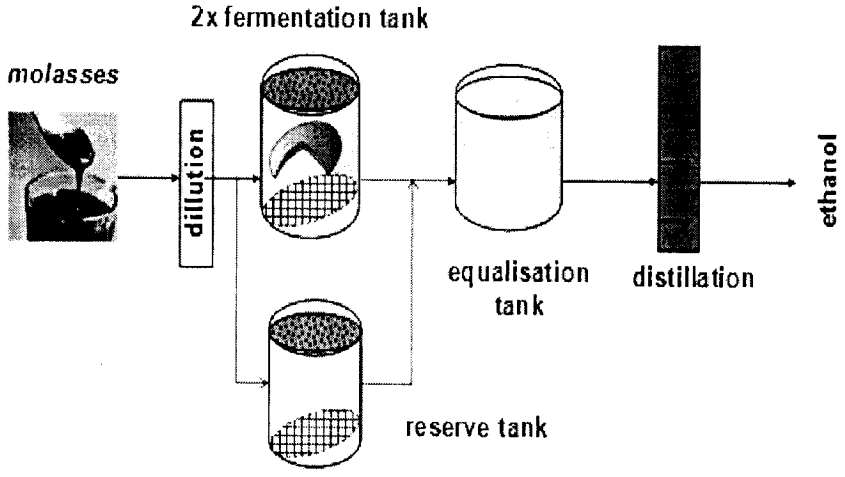


Figure 3.1: A Simple Process Flow of Ethanol Production from Molasses

3.3 Location of Project

The project site is located at 10-Km, Faisalabad road, Chiniot. The area is agricultural and industrial around the project and there is no population within a radius of 2-Km.

3.4 Product Manufacturing Steps/Sections

For the purpose of understanding, the proposed project has been divided into the following major steps:

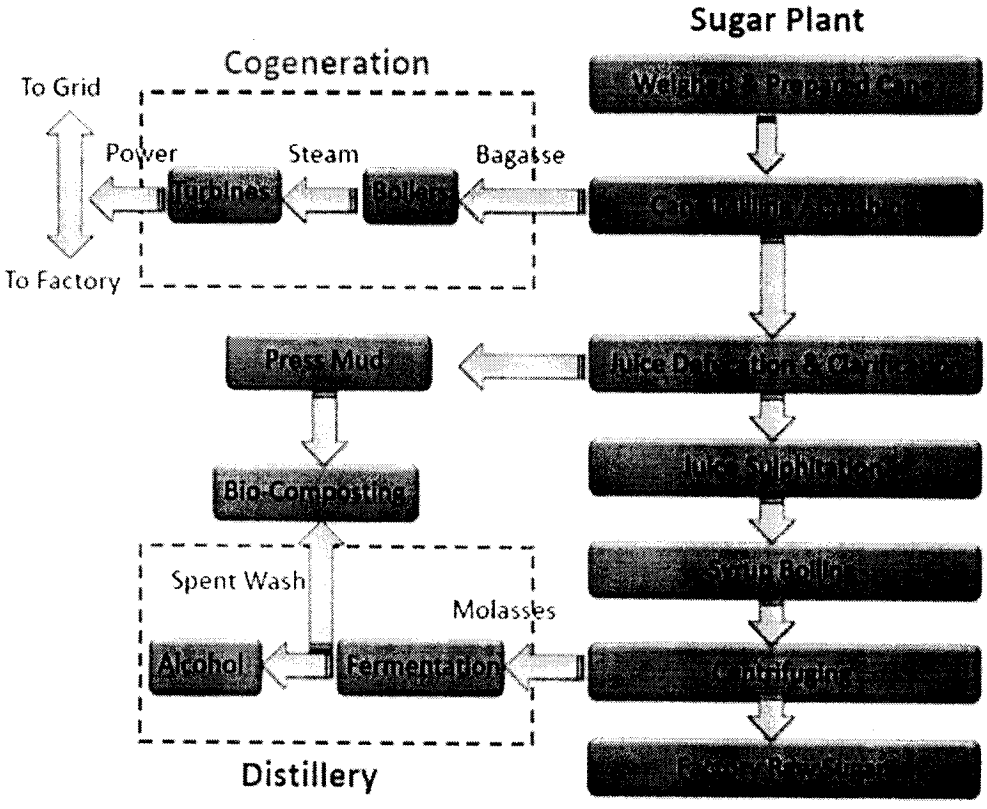
1. Molasses Storage Tanks
2. Pre-Fermentation Section
3. Fermentation Section
4. Distillation Section
5. Spent Wash Section
6. Cooling and Settling Pits
7. Bio Gas Section
8. Waste Water Treatment Section

Sugar is produced from the evaporation of the juice that is extracted from the crushed cane. This is widely used as a sweetener in food and beverages. **Molasses** is a byproduct generated from the manufacture of sugar which can used as the principal feedstock for the manufacture of alcohol and a host of downstream chemicals. **Alcohol** molasses is distilled to produce rectified spirit, extra neutral alcohol, denatured spirit, potable alcohol and ethanol

Ethanol Molecular Sieve Dehydration Unit (**MSDH**) is a modularized, standalone equipment package composed of a distillation system and a molecular sieve dehydration system, along with interconnecting piping and support equipment. The distillation system utilizes a single distillation column to **Vaporize** the 94.68% v/v ethanol liquid feed **Redistill** 70 to 75% v/v ethanol liquid stream produced during regeneration of the dehydration beds. The distillation column, depending upon operator adjustment, will output approximately 95% v/v ethanol overhead vapor, while maintaining 0.05% ethanol concentration in the bottoms. The 120 ° C column effluent will be discharged to the drainage system. For production of "anhydrous" ethanol, the 95% v/v ethanol column overhead vapor flows to the dehydration section where molecular sieve beds remove water by the process of "absorption". The MSDH perform the absorption in vessels filled with molecular sieve desiccant in combination with strictly controlled pressure and temperature cycles. Each desiccant bed contains millions of tiny, uniform diameter pores, which are established during the manufacture of the desiccant. Different purification applications require different size pores in the desiccant beads. In this case, where water is absorbed from ethanol, a desiccant with a pore size is selected that selectively retains water. Because water molecules are smaller than ethanol molecules, the water molecules are selectively absorbed into the pores as the mixture of ethanol / water vapors pass through the sieve beds. The ethanol molecules are too large to fit into the selectively sized pores, so

the purified ethanol passes out the end of the sieve bed, stripped of the water it originally contained.

If this process continued indefinitely, the desiccant would eventually become saturated with water molecules and would be unable to absorb any more water. Therefore, at regular intervals the sieve bed must be "regenerated". This simply means the absorbed water must be removed from the desiccant so that the desiccant can be reused. The ECOMOL – MSDH uses a two sieve bed system so the equipment can produce anhydrous ethanol on a continuous basis. In the ECOMOL continuous, two sieve bed system, one bed dehydrates the ethanol stream during one half of the cycle while the other bed is regenerating. During the other half cycle, valves redirect the flow of vapors so that the beds reverse roles. The total time for one cycle is approximately 11–12 minutes, depending upon the transition cycle time settings.



A Detail Process Flow Sheet Diagram of the Whole Project

3.4.1. Raw Materials

Molasses are the only raw material in the Ethanol Distillation Unit.

3.4.2. Raw Material Source

The molasses is the by-product of the Sugar manufacturing unit; in present case Madina Sugar Mills; which holds out interesting possibility for the manufacture of ethanol and a host of downstream chemicals.

3.4.3. Production Capacity: 125,000.0 litre per day.

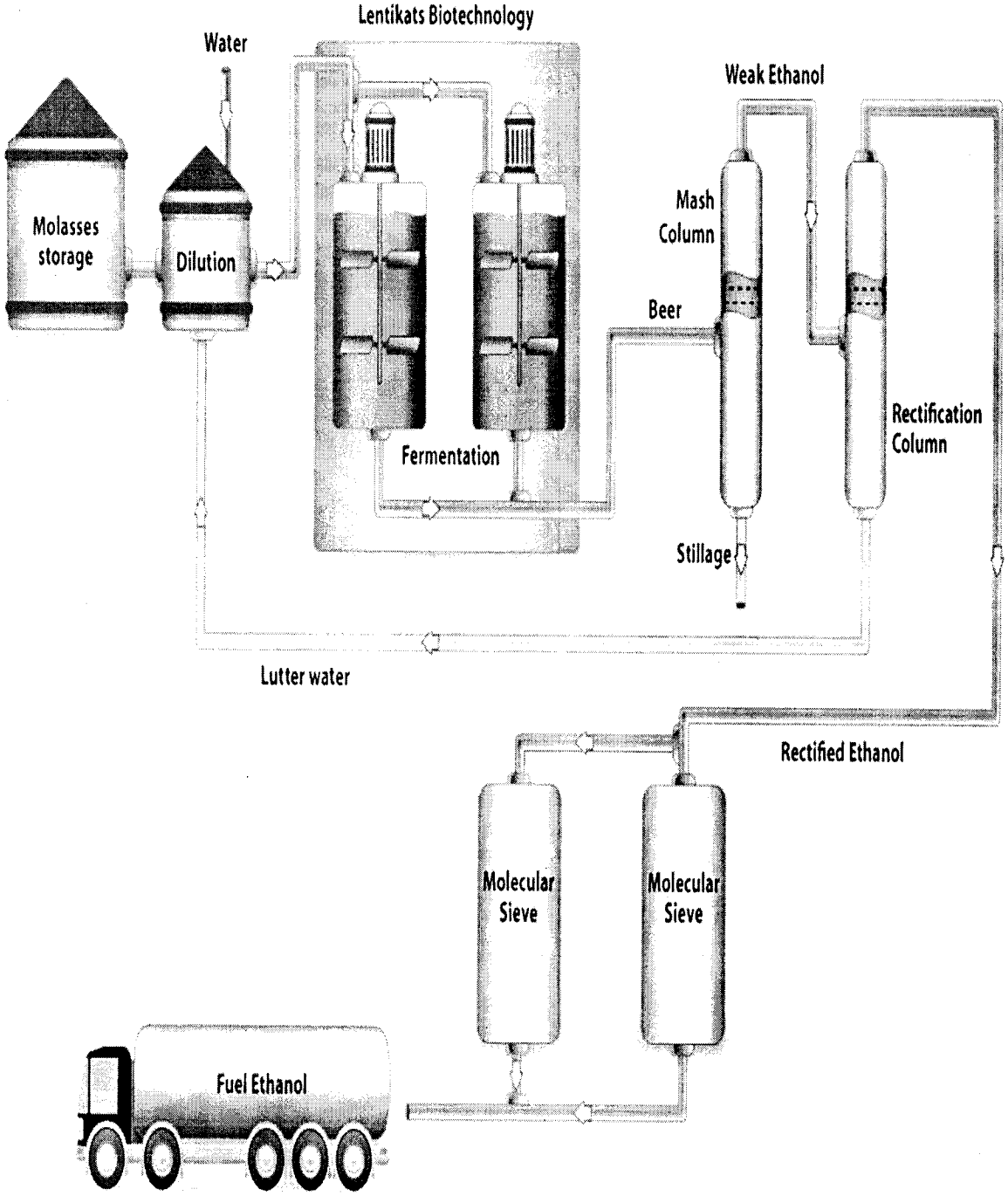


Figure 3.2: Ethanol Production from Molasses Fermentation Process Flow Scheme

3.5 Construction Period and Cost

The project cost has been estimated as 1.50 billion rupees. The quantities have been worked out from the design drawings. The rates for cost estimates are based on construction work, contractor cost, and cost of the raw materials with 10 % escalation for the year 2013. The proposed activities to be carried out within a period of twenty months from the starting date. Breakup of the total cost of the project is given below.

Table 3.1: Table Show the Breakup of Total Project Cost

Activities	(In Billion Rs.)
Land Cost	0.40
Surface Courses & Pavement	0.15
Structures & Contractors cost	0.85
Electrical Work	0.10
Total Cost	**1.50**

It is planned that the following schedule of project implementation will be adhered to. This is subject to the conditions that everything goes according to planning and no serious bottlenecks are encountered.

The implementation stages of the project activity include:

1st Stage

The stage–1 comprises the onsite contouring studies and soil investigations.

2nd Stage

The stage –2 comprises the following task:

i- Laying of foundations excavation and commencement of erection work.

ii- Start of civil, electrical and mechanical work.

iii- Development of basic infrastructure.

iv- Fitting of instrumentation electrical penal etc.

3rd Stage

The stage –3 comprises the following task:

v- Plant Equipment erection completion.

vi- Completion of the basic infrastructures water supply system, electricity supply etc.

4th Stage

The Last stage will be commencement of regular operation/start of production.

3.6 Equipments and Supplier

A blend of local and imported technology will be employed for installation of the distillery unit.

3.7 Energy

The power load of the sugar mill and distillery project is anticipated as 24 Megga Watt which will be self produced and will be sponge by the Sugar mill. However, Water and Power Development Authority (WAPDA) through its Faisalabad Electric Supply Corporation (FESCO) has also supplied the electricity in the area.

3.8 Availability of Water

Adequate quantity of underground water is available to meet even all the project requirements. The quality of water is also satisfactory. This factor also supports the decision regarding sitting of the project at the existing site. However, the water for all project activities will be withdrawn from the underground water pumps already present at the project site.

During construction phase of the project the water requirement will be 15000-20000 gallons per day while it is estimated that about 25,000 m^3/day of water will be required during the regular operation of the project.

3.9 Operational Arrangements

At operation stage, the project proponent will be involved for operation and maintenance of the proposed Facility.

3.10 Construction Aspects

3.10.1 Construction Materials

Comparatively normal quantities of building and other facility construction materials will be required for construction of the proposed facility. The materials mainly required are listed below:

- Coarse and fine aggregate for concrete works
- Sandy gravel for backfilling, embankment raising, etc.
- Cement
- Steel
- Bitumen
- Electric Instruments /Equipment
- Lights
- Other materials etc.

3.10.2 Construction Camps

The Constructors will hire the Project Contractors which will construct a camp within the project area. Location of the camp will be selected in a way that there will not be any disturbance to the surrounding community etc, and it will also close to the site of work. Camp will be properly fenced and guarded. This camp will be constructed mainly for construction staff and to accommodate Contractor's machinery. The area of the camp will kept sufficiently large to accommodate parking areas for machinery, construction materials and workshops. For the drinking water and other domestic uses of the camp, ground water is being used.

3.10.3 Work Force and Work Machinery

The details of the construction staff has been shown below in **Table 3.2**. The labour will work in three shifts of eight (8) hours during crushing season. The construction machinery which will be utilized for construction is shown in **Table 3.3** below.

Table 3.2: List of Construction Staff (Technical)

Sr. No.	Category of Staff	Tentative Number
1	Engineer	10
2	Construction Manager	3
3	Planning Engineer	5
4	Material Engineer	2
5	Site Engineer	2
6	Supervisor	2
7	Foreman	2
8	Skilled Worker	15
9	Semi Skilled Worker	320
10	Machinery Operator	65
11	Admin.	2

Table 3.3: List of Construction Machinery to be used for Construction

Sr. No.	Type of Machinery	Quantity
1	Excavator	1
2	Dumper & Loader	2
3	Tractor & Trolley	3
4	Water Bowser	1
5	Lift/Crane	1
6	Generator	1
7	Concrete Pump	3
8	Water Pump	3
9	Welding Plant	1
10	Concrete Mixing Plant	1

3.11 Land Use

The project site is situated in one among the agricultural and industrial area Chiniot. Government policies for land use do not restrict commercialization or industrialization of the area. Rather, the Government of Pakistan is encouraging investments in construction industry like industrialization. The project activity is quite in line with the Government policies of all out development of the country to alleviate poverty and standard offices atmosphere.

3.12 Alternatives Considered, and Reasons for their Rejection

The installation of distillery unit is a development speculation in industrial area. To fulfill the aspects of the project under reference of this EIA Report, it is to be sited at a place having the same activity is either already going on (like sugar crushing etc) or there are bright prospects. Concurrently, it must also meet the legal requirements of the Punjab Environmental Protection Act, 2012. Availability of land at the best convenient place is equally important among other considerations for the site selection. Availability of communication facilities, electricity, basic infrastructure, sewerage etc is yet the other necessary requirements. Obviously, environmentally sound, neat and clean environment are the other considerations for site selection. The project will also facilitate the people of the area with increasing the opportunity of employment and others related facilities.

Keeping these requirements and their feasibility and other basic infrastructural requirements are also available at the selected site. Accordingly, the selected site is preferable for installation of Sugar & Distillery unit.

3.13 Size or Magnitude of the Operation, Including Capital Cost, and Associated Activities

Total area of the project is 25.6 acre. The land is already owned by M/S Madina Group of Industries; therefore; there will be no issue of the displacement or resettlement.

3.14 Restoration/Rehabilitation at the End of Project Life

There will be no any matter of rehabilitation as the proposed site is already owned by the project proponent. There will not be any let regarding safety factors as applicable from time to time for such unit on all accounts. However, at the end of the life of the unit, it will be duly dismantled with special

precautions to avoid/minimize pollution and at the same time taking all safety precautions to protect human life and property around the project site. Debris or any other wastes resulting from demolishing will be disposed off in environmentally sustainable fashion. The materials capable of recycling/reuse will be either sold in the market or to be reused for other suitable purposes. While dismantling all Government rules and regulations as applicable to such activities will be strictly adhered to. During entire construction period, necessary precautions will be taken to ensure that no damage is done to the basic infrastructures like sewer system, power transmission lines roads, private or public property and daily human life as well. Safety measures as desired under the code of demolition will be adopted to avoid any harm to humans, property around, or the environment in the project area. Dust to be generated will be minimized by constant sprinkling of water. After completion; all construction matrix, debris and garbage will be removed off immediately from the site within the minimum possible time under safe conditions. Any minor spill over of these materials will be cleared adequately. The land, if and where pitted will be adequately leveled. On the whole, the project site and the area in its near vicinity will be made neat and clean.

3.15 Government Approvals and Leases Required by Project

Water and Power Development Authority has already sanctioned the electricity for project. The environmental approval according to the Section 12 of Punjab Environmental Protection Act-2012 is the mandatory requirement of the project.

SECTION - 4
DESCRIPTION OF ENVIRONMENT

4.1 Introduction

This chapter describes the baseline conditions, which cover the existing physical, ecological and socio-economic environment of the Study Area. Information on these aspects has been derived from the desk study of available data, field visits to the project area as well as information obtained through visits to the Government departments and other agencies namely Irrigation Department, Meteorological Department, Forest offices and prevailing environmental laws and environmental quality standards etc.

4.1.1 Desk Studies

Design data was collected from proponents. This data included the available documents, drawings, reports, etc related to the proposed project and related utilities. The experts conducted a detailed desk study of the above available data before the field visit. Salient features of the Project were thoroughly reviewed to assess their environmental implications. The documents which were consulted and departments visited are Project Head Office, Project Site, Irrigation Department, Meteorological Department, Forest offices and other related officials.

4.1.2 Site Visits

A team of experts visited to the proposed site for collection of baseline environmental data for ambient air, noise levels, drinking water and waste water sampling, public consultation, baseline ecological environment data etc. After the survey of the project area the environmental data regarding physical, ecological and socioeconomic aspects were collected for carrying out environmental assessment. Secondary data were also collected from various sources mainly studies carried out by project proponents and reports

of other line Departments. A social survey of the proposed area was carried in which people living around the proposed site were interviewed to ascertain their views about the utility facilities commissioning and operational activities to perceive the impacts on the natural and socioeconomic environment around the proposed project site. This included information on land, surface water, groundwater, air, vegetation, animals and human. Photographs of the various environmental aspects both inside and outside the proposed project area were also taken and are given as photologs in this EIA report.

4.2 Spatial and temporal boundaries adopted for the various aspects of the study

The existing status of the environmental settings around the project site along with future likely trends of development and any change to occur in the land use pattern, especially industrialization trends and associated environmental and socio-economic concerns were the major considerations/spatial and temporal boundaries while taking stock of the existing and expected conditions.

4.3 Existing (baseline) condition of the biophysical and socio-economic environment, trends and anticipated future environmental conditions should the project not go ahead

The project area is located in the industrial and agricultural zone of the city. The industrial area is markedly separated from the residential area. The land is plain. Water supply to the project area is from the underground water supply network of tube wells that is already bored in the existing facility. Lower Chenab canal is flowing about fifteen Kilo meter away from the project site. There is no worth mentioning fish life in the canal. Agriculture is one among the major sources of income for the people of the area around. However, a little segment of the society works mostly as laborer in various

industries of Chiniot, Faisalabad and Sheikhupura. Yet another part of the people runs their own shops in the villages around the project site.

Since the project is to operate under strict environmental control in compliance with the NEQS Pakistan and PEPA 1997, hence the environment will remain largely pollution free. Implementation of the proposed Environmental Management Plan (EMP) further guarantees protection of the environmental settings as they exist presently. Since all type of wastes are to be disposed off according to the requirements of the National Environment Quality Standards (NEQS) under the Punjab Environmental Protection Act-2012, therefore, this also provides safeguard against pollution from the project activity.

In case the project operates, it will provide job opportunities directly and indirectly, help poverty alleviation, and last but the least boost economy of the country on the overall basis.

Obviously, in case the project does not proceed further, there will not be any change in the existing status of the environment or a status quo will be maintained with regard to all environmental, social and economic factors, education and basic infrastructure.

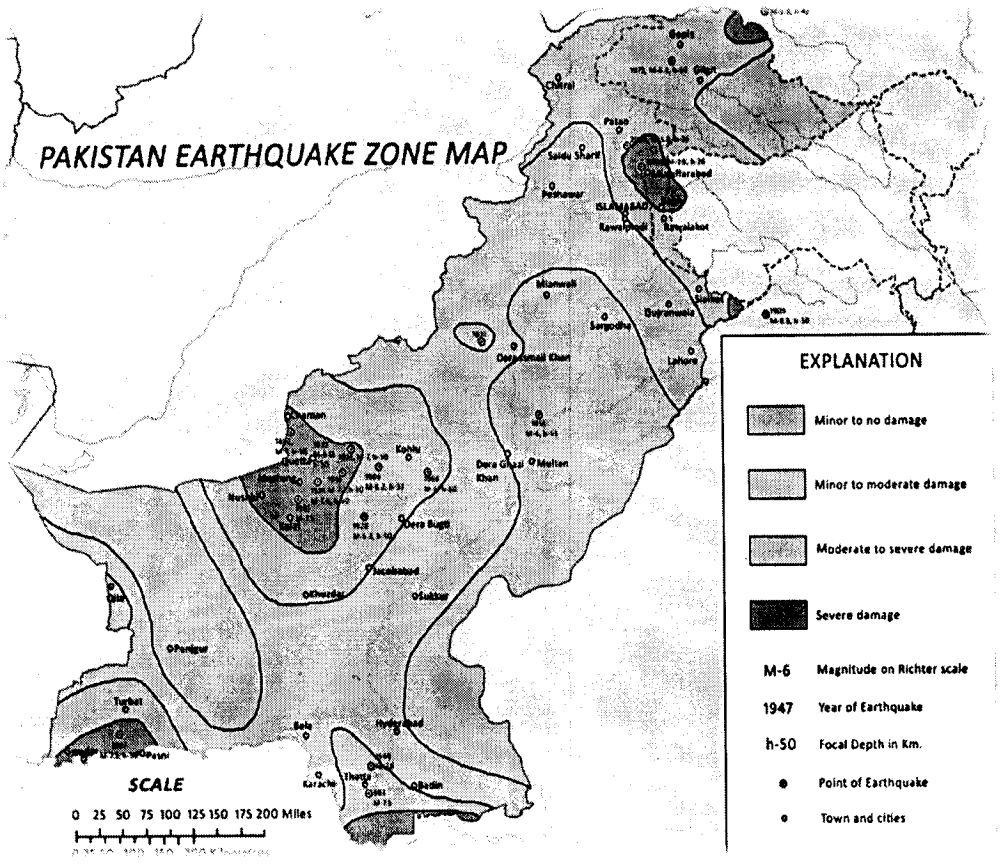
4.4 Environmentally Sensitive Areas of Special or Unique Value

The project site is located in the agricultural area around. The area is flat. Upper Indus plan is the land of major tributaries of Indus River-Jhelum, Chenab, Ravi and Satluj. The Upper Plains start from foothills of the Himalayas and Potohar plateau and terminates near Mithan Kot where the Sulaiman Ranges approach the Indus River. The general slop of the plain towards the sea is gentle; with an average gradient of 1 meter to 5 km. the featureless plain has elements of micro relief, which possess great importance because of their relationship to irrigation and flooding. The only breaks in the monotony of this level plain are the Kirana Hills in the central Punjab. They

constitute the low deeply weathered hills lying in four separate groups at Kirana, Chiniot, Sangala and Shorkot.

The site falls in Rechna Doab is located between Ravi and Chenab Rivers. The northern and central part of this doab has no high relief. Only southern central part named Sandal Bar is the actual bar area. It covers around 28 lac hectors of land in the districts of Sialkot, Naroval, Gujranwala, Hafizabad, Jhang, Faisalabad and Toba-Tek-Sing. Rice, Sugar cane, Wheat, Cotton and Maize are the major crops of the area. The oldest known Pre-Cambrian Rocks are about 3800 millions old. The Oxford dictionary old low relief hills near Chiniot, Sangala and Shah Kot are prominent orographic features of this Bar.

According to Anwaruddin Ahmad, Asmatullah and Russal Nazirullah, Geological Survey of Pakistan-Seismic Hazard Zones of Pakistan, 2006, the project site lies in the Minor to No damage zone, with intensity <6 and g-factor <0.03.



Seismic Map of Pakistan

4.5 Soils

There is an important relation between soils and environment. Environment is greatly influenced by soils. Soils also provide food, clothes or housing population and lumber products, medicinal plants etc.

Soil is not a lifeless residual layer rather it is a very dynamic element of environment in which complicated physical, chemical and biological activities are constantly proceeding. It is dynamically developing and changing body. Soil scientists restrict the word soil or solum merely to the surface material, which has come to have distinct layers or horizon over the extended period of time.

Soils mean differently for different people. While for a soil scientist it means the upper a few layers created through weather effect in which plants are grown the solid portion of soil is both organic and inorganic. The organic part consists of both living and decayed plant and animal materials.

Geographically, Pakistan is highly diversified in environment and landscape. Lofty snow-clad mountains, extensive rivers, piedmont plains and vast sandy deserts have resulted in variations of soil forming elements. Accordingly, in order to have a generalized account of various kinds of soils which are available in Pakistan, the country has been divided into nine broad ecological zones. The project area falls in the Western Mountainous Region.

The soil of the project area is made up of river Alluvia brought down from the Himalayas and deposited during the Pleistocene epoch. The sediments generally are loamy in the northern reaches and become silty southwards. Finer materials settled in the digressional parts and coarse materials on higher undulations, intermediate level area received the particles-sized fractions in between. The sediments are characteristically calcareous and of mixed minerals makeup. The soils are typically deep calcareous, weakly structured, bright colored and with a zone of secondary lime accumulation at or near one meter depth.

Chiniot is a city and administration headquarters of Chiniot District, in the state of Punjab, Pakistan. Located between the heart of river Chenab with the heads of small rocky hills, it is known for its wooden furniture architecture which has a great attraction in all over the world.

4.6 Geography

Chiniot city lies on left bank of the Chenab River inside the small rocky hills, giving a tourism sight and great attractions for tourists. It is located at the point where Faisalabad-Sargodha road and Lahore-Jhang road meetup each other. It is 158 kilometres in the north-west from Lahore and 38 kilometres in

North of Faisalabad. Chiniot city is spread over an area of 10 square kilometres with an average elevation of 179 meters (587 ft). Chiniot is located at Latitude: 31.7200 and Longitude: 72.9789.

Chiniot lies on the left bank of river Chenab, with the rocky hills at the northern side between the river and city. On the other side of river, Chenab Nagar (previously Rabwah) city is located covered with the rocks is a great sight. In the center of river a (Committed) worship center (or Chilla Gah) of a great Muslim's Sufi Bu Ali Shah Qalandar is located.

4.7 Neighborhoods

Chiniot comprises many small towns and villages. Villages are mostly named as "Chak No."for example Chak No. 127 jb Bhatti Wala,(jb refers to Jang Branch Canal) which is a village planned and established by English engineers during the colonial period of British empire. These villages were planned mostly along canal banks to distribute the population evenly. Generally, its neighbours include Faisalabad, Bhawana, Lalian, Chenab Nagar (or Rabwah), Pindi Bhattian, and Aminpur (or Aminpur Bangla). The Bhawana is the richest one in terms of educated and employed human resource, a lot of which is holding high offices in the national bureaucracy. Aminpur is famous rest house built by British empire before independence of Pakistan at bank ofJhang Branch Canal. Faisalabad is a name known for its economy wise and industrialist place which has great role in the increase of economy of Chiniot.

4.8 Climate

Climate of the Chiniot changes every day as shown in monthly chart. Annually climate of Chiniot maximum at 30.2 °C and minimum at 19.2 °C is being recorded. Climate of the Chiniot changes every day as shown in monthly chart. Annually climate of Chiniot maximum at 30.2 °C and minimum at 19.2 °C is being recorded.

Climate Data of Project Area													
Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
Average high °C (°F)	19 (66)	22 (72)	27 (81)	33 (91)	39 (102)	19 (66)	35 (95)	35 (95)	34 (93)	32 (90)	27 (81)	21 (70)	28.6 (83.5)
Average low °C (°F)	8 (46)	11 (52)	16 (61)	20 (68)	25 (77)	28 (82)	27 (81)	27 (81)	25 (77)	20 (68)	14 (57)	9 (48)	19.2 (66.5)
Precipitation mm (inches)	18 (0.71)	35 (1.38)	24 (0.94)	13 (0.51)	17 (0.67)	48 (1.89)	82 (3.23)	87 (3.43)	43 (1.69)	9 (0.35)	11 (0.43)	12 (0.47)	399 (15.7)
Source: My Weather													

According to 1998 census, the population of Chiniot was 9,65,124 (included urban 1,72,522). According to 2010 estimated census, urban population of Chiniot is 2,01,781.

4.9 Languages

Languages spoken in Chiniot are Punjabi and Urdu. Literacy of Chiniot is about 65%.

4.10 Demographics

According to 1998 census, the population of Chiniot was 9,65,124 (included urban 1,72,522). According to 2010 estimated census, urban population of Chiniot is 2,01, 781. Languages spoken in Chiniot are Punjabi and Urdu. Literacy of Chiniot is about 65%.

4.12 Tribes

Chiniot city has people with different ethnicity which are known for their professional works. Sheikh is also a famous tribe in Chiniot,they are the wealthiest family in Chiniot, some are working of furniture, some are landlords and some of them have other businesses.Syed is also a most common family in Chiniot, and have villages with their own names.

Other families and tribes of Chiniot include Sial, Araaeen, Mona, Dhera, Langah, Mufti, Walla Rai, Lali, Janjua,(koli chadhar), Marath, Aarbi, Aheer, Awan, Makhdoom, Baloch,Bata, Bhatti, Bhutta , Butt, Chadhar, Bhowana, Chishti, Chohan, Chughtai, Daher, Durrani,Galoter(malik), Goraya, Gujjar, Rehmani, Hanjra, Haral, Hashmi,Harya Jappa, Bala, Dha mraia, Jatt,Kharal, Kalru, Kullah, Khokhar, Laday, Lohar, Malik, Lakhesar, Marr al,Mona, Mughal, Mumbar, MalahMahr Lalera, Naul, Kullah, Nakokara, Nissow ana, Panwar, Pathan,Pirjha, Qazi, Rao,Rajput, Saharan,Saidhen, Salara, Samore , Sandhu, Sangha, Sangra, Syed, Shaikh, Sipra, Tamimi, Tarkhan, Thabal, Thahe em, Waseer, Wassi, Mahlara, and Mangal.Noonare, Qureshikamangar{sadhu}, Mahr Sial (Master Allah Ditta Kay), KALUS, Lona-Chadhar.

4.13 Economy

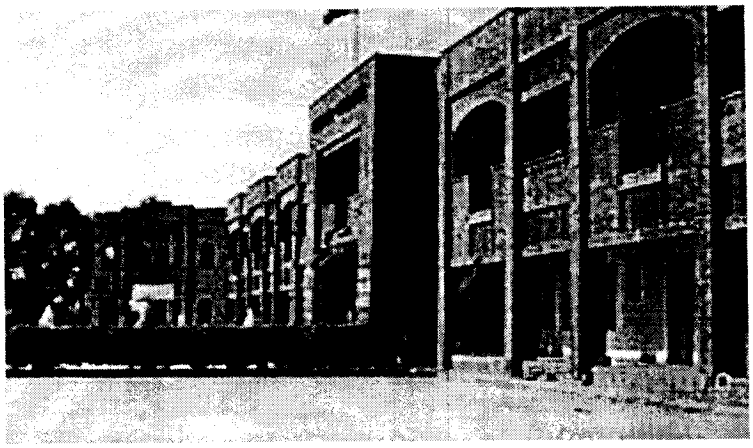
The important products of Chiniot includes silk, cotton, wheat, sugar, rice, milk, pottery, and wooden-furniture etc. Chiniot is the name of leading industrial areas of Pakistan after Lahore and Faisalabad. It contains many of rice and flour mills. It has a Pakistan leading sugar industry Ramzan Sugar Mills on Jhang road which is a great increasing economy of Chiniot. On the other side Madina Sugar Mills also situated in Chiniot, by which Chiniot's economy increase very well.

Banks with branches in Chiniot include Muslim Commercial Bank, United Bank Limited, Allied Bank Limited, Zarai Taraqiati Bank Limited, The Bank of Punjab, National Bank of Pakistan, Askari Bank Limited, Bank AL Habib, Bank Alfalah and Habib Bank Limited (HBL).

4.14 Education

The education and literacy of Chiniot is increasing. As education is must in today life for a person, government of Chiniot has a great care of it and

developing educational institutions and upgrading the old ones. A lot of intelligent students of chiniot getting education in world best institutes outside the country including those in the UK, Australia, Malaysia, and China.



A side view of the building of Chenab College Chiniot

4.15 Institutions

Educational institutions (colleges) in Chiniot includes ICON Group of Colleges, Punjab College, Chenab College, Din College, Masoomeen College, Govt. Degree College, Govt. Islamia College, Govt. Institute of Commerce, Pak Poly-technique College, University of Higher Education, Takbeer College and Future Star Science and Commerce Academy. High schools in Chiniot includes Govt. Islamia High School, Govt. High School,Govt High School Jhanb, Govt High School Ahmad Abad, Govt. Islah High School, Govt. Girls High School, and Govt. M.T.B High School. Govt. High School Chak 14 jb Muradwala and GHS Langar Makhdoom Chiniot has also some religious institutions include Maraqaba Hall, Idara-e-Markazia Dawat-wa-Arshad, Faizul-ul-Aloom, Jamiya Masjid Farooqia, Jamia Islamia Imdadia,Darbar bava syed jhulan shah bukhari, Masjid Noor, Jamia Noor-ul-Anwar-ul-Quran, and Madrasa Fateh Aloom.

4.16 Libraries

Chiniot government has given library facilities to its residents especially for students. As after the death of Sheikh Omar Hayat, his palace "Omar Hayat Mahal" was converted into the library by the government of Pakistan.

4.17 Health & Care

Welfare institutions in Chiniot includes Anjuman Imdad-e-Mareezan, Edhi Welfare Centre, and Human Rights and Welfare Council Reged chenab officer Club Road Chiniot (President Shaukat Ali Azad Advocate High Court) Pakistan Social Association (R) Islamabad (Punjab) President Shaukat Ali Azad Adv .District Anti T B Association Chiniot President DCO and Gen Sec Shaukat Ali Azad adv, Health care centres in Chiniot are Ali Hospital, District Headquarter Hospital (D.H.Q.H), Fatima Memorial Hospital, Fazal-e-Umar Hospital Rabwah, Islamia Hospital, Lillah Hospital,Noor ul Ain Rabwah, Subhan Hospital, T.B Clinic, Yousaf Zubaida Hospital & Tahir Heart Institute Chenab Nagar. Dr Muhammad Aslam Ranhawa is Executive District Officer Health, Dr Munir Ahmad Malik is District Officer Health Chiniot. One DHQ, two THQ, three RHCs, 36 BHUs, 2 MCH centres, 1 GRD, 15 RDs are in the district. There are 44 vaccinators who provide daily EPI outreach services to children up to the age of 11 months. Chartable Ialamiaand Lillah hospitals are also imparting free health care services.

4.18 Transportation and Communication

Chiniot is very well-connected with rest of Pakistan by a main highway and a rail line. The nearest international airport is Faisalabad International Airport, which is 48.5 kilometres from Chiniot. Chiniot has a railway track passing from it since 1927 for the easiest and cheapest way of transportation. Chiniot railway is a main source of transporting the furniture from Chiniot to the rest of Pakistan. And it is a main source of importing the woods for furniture from all over the Pakistan. Chiniot Railway Station was built in 1927 during British

empire was a great step for the help in economy of Chiniot. Khatm-e-Nabuwat Chowk is the main place of and main intersection between GT roads connecting large cities of Pakistan. Chiniot Bridge is crossing over Chenab river on the Chiniot-Sargodha road.

4.19 Culture- Islamic Occasions

In Chiniot people celebrate Islamic occasions with great arrangements. As on 12 Rabi' al-awwal, 1440th birthday celebration of the Islamic Prophet Muhammad, people of Chiniot arranged 63-maund cake, one of the largest cakes in the world. That function was arranged in the Darbar Aalia Wadi Aziz Sharif. Urs of Hazrat Mian Rehmat Sahib at khoi mian rehmat sahib (Icharwal).

4.20 Furniture

Chiniot is world famous for its exoticly carved and brightly lacquered furniture. Chinioti craftsmen and artisans have for centuries carved flowers and geometric pattrens onto cellulose fibres. Masons from Chiniot are thought to have been employed during the construction of Taj Mahal and Golden Temple, both now in India.

Despite the knowledge and century old traditions employed in Chinioti woodmaking, the Pakistani government has made little effort to promote and market its Punjabi furniture industry. A lack of vocational education and training centres in Chiniot means that modern working techniques are rarely used. The lack of computer aided design (CAD) also serves as a hindrance to modern manufacturing. Rather it needs at least one technical university in place to compete the global updating. Furniture making in Chiniot forms a vital part of Pakistan's secondary industry and is also essential to the Punjabi regional economy. Internationally, Chiniot competes with the most modem

furniture industry of Italy which is known all over the world. The carving style of Italy and Chiniot is the same but the furniture here is more durable.

4.21 Sport

Cricket is the most popular sport in Chiniot. There held many tournaments in Chiniot of cricket among different cricket clubs of Chiniot. In some tournaments outside cricket teams can also participate that tournaments. A cup and some cash prize is announced on the final of tournaments, which are given to the Winning team. Football is also played in Chiniot. Other popular sports in Chiniot includes Hockey, Volleyball, Basketball, Badminton, Tennis, Kabbadi, and Horse racing. And the most Populer cricket club is Prince cricket Club in Chiniot And the Captain is Ch.Rizwan Jhana Prince And the Player of this team is Abubaker Prince, Ibraheem Prince, Bilal billi Prince, Ismat Pathan, Shani Prince, Tajamal Prince, Majeed Goga Prince, Iyaz Jaja Prince, Zubair Prince, Rehman Banva (92) prince And Ghaznfer Gajjo Prince. There are other good players who show their abilities in the Hard Ball cricket are. Malik Azhar Danish (Cap. Shaheen C.C), Malik Asif Ali (vice Cap. Shaheen C.C), Malik Manzar Abbas and Hafiz Malik Muhammad Abubakar.

4.22 Cuisine

Chiniot is noted for its food dishes, especially Kunna (goat meat cooked in a pot).

SECTION - 5
Anticipated Environmental Impacts & Mitigation Measures

5.1 Methodology for Anticipating Environmental Impacts

Baseline data and conditions from the basis for evaluation of the environmental impacts of the proposed project. A tabulated evaluation procedure has been used for the purpose of the presentation. The severity of the impact is presented on point scale. The evaluation scale used for the EIA Study is given below:-

Scale: Extent of Impact

▲▲▲ = High

▲▲ = Medium

▲ = Low

0 = No impact

▼▼ = locally favorable

▼ = regionally favorable.

For evaluation rating, the National Environmental Quality Standards (NEQS), and Pakistan Environmental Protection Act -2012 are used as guidelines. Various parameters of extent of environmental impacts are described below:

Table 5.1: Evaluation of Impacts – Criteria

Extent of Environmental Impact	Description
High	National Standards are exceeded
Medium	Between National Standards
Low	National Standards are met

5.2 Environmental Impacts Assessment During Construction Phase

This section discusses the potential impacts from the sugar mill & distillery unit project and associated facilities on the natural resources and environment of the site and vicinity.

5.2.1 Land Acquisition

Land requirement for the proposed project will be met from land already owned by the Madina Group of Industries. Therefore, no resettlement activities and no expropriation measures are required for realization of the proposed project. The land required for the proposed project does not represent land of specific ecological importance. The area was assessed as being without any features that are out of the ordinary. No specific mitigation or compensation measures are required.

Extent of Impact of land acquisition = ▲ (Low)

5.2.2 Erosion/Sedimentation

The new proposed project requires land clearing and site preparation for distillery unit and utilities sitting. No wetlands are present within the project boundaries. The proposed construction area is not anticipated to significantly impact the land on site. General site preparation and construction activities associated with the overall development of the Project site include the following:

- Clearing/grubbing of all un-cleared portions of the construction area and lay down area;
- Stabilizing, grading, filling, and contouring the area for textile and other utilities facilities;
- Construction of permanent storm water management system;
- Performing groundwork as necessary for construction of facility footings, foundations and underground utilities including electrical, water, wastewater, and other piping systems;

- Earthmoving, grading, re-contouring and landscaping.

Site preparation will consist of clearing and grubbing, followed by grading and leveling. Vegetative debris from site clearing will be disposed and topsoil that is suitable for reuse will be stockpiled for landscaping and for establishing vegetation after construction has been completed. During early site preparation activities, temporary storm water management structures and soil erosion and sedimentation control devices (e.g., ditches, retention basins and siltation fencing) will be used to minimize runoff during the construction phase.

Site preparation and construction activities will not require any explosives. The site will be cleared of all vegetation and organic matter in conflict with the proposed construction. Rough grading, excavation, and backfill activities will be performed to prepare the site for underground utilities, concrete foundations, and surface drainage.

Structural backfill materials may be imported to the site for constructing concrete foundations and to raise grade site elevation to achieve proper drainage.

After construction of the proposed project to be essentially complete, any remaining areas that do not have an impervious surface will be re-vegetated with native plant materials. The site will be altered to construct new facilities. Structural and general fill will be added to elevate the site to design elevations. Soils excavated for the major equipment foundations may be used as general fill or structural fill, if appropriate. Fill may be required to raise portions of the site to grade. Since the site is in a flat area, the fill will not cause adverse impacts to site topographic conditions. Very little, if any, runoff flows onto the proposed site.

Therefore, the fill will not impede existing drainage patterns. Added fill, with compaction, will shift areas of percolation within the site. Runoff will be managed with the storm water management system to mimic pre-construction conditions. During construction, erosion at the site will be managed according to an erosion control plan.

After construction, pervious areas will be planted predominantly with native vegetation to control erosion.

Extent of Impact on Erosion/Sedimentation = ▲(Low)

5.2.3 Air Quality

Major sources of dust emissions during construction include:

- Land clearing
- Excavation
- Earthwork
- Ground leveling
- Vehicles movement
- Emissions from vehicles and machinery

Dust generation from construction activities is an important concern during construction phase. Dust particles generally larger than 10 μm will settle down close to the construction sites, resulting in visible deposition close to the construction activities.

Fugitive dust emissions will be greater during land clearing and site preparation phases. Fugitive dust emissions will also be greater during the more active construction periods as a result of increased vehicle traffic on the site.

The dust to be generated during construction activities is mostly inorganic and of a nontoxic nature. Quantum of dust generation will depend on weather conditions, wind velocity, precipitation rate, and type of construction

activities. Dust and grit are expected to be present during the construction phase in dry months.

This will end when the major civil works finish. Some dampening of the exposed areas, by employing dust control methods, may therefore be necessary during periods of dry weather in order to reduce the risk of dust entrainment in the ambient air. Peak dust generation, if construction activities coincide, will be during the drier months and this dust will tend to become dispersed within the ambient air as a result of vehicle movements. It will therefore be necessary to ensure that loads are covered to prevent fine dust blowing from open-top trucks. In dry periods, it may also be necessary employ dust control measures. There will be an overall increase in traffic and heavy machinery movement during peak construction phase for limited period leading to a rise in emission level. These emissions together with exhaust emissions from equipment/machinery deployed during the construction phase are likely to result in marginal increases in the levels of sulphur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), and un-burnt hydrocarbons. However, due to limited duration of the construction period and the use of the equipment at different intervals, the impact on air quality can be considered as low. Potential minor sources of volatile organic compounds include evaporative losses from onsite painting, refueling of construction equipment and the application of adhesives and waterproofing chemicals.

The background levels of these pollutants are considered to be virtually low based upon the low frequency of traffic use proximal to the site. However, even with the predicted increase in construction related traffic and associated site activities, any increase in these pollutants is considered to be almost insignificant.

Fugitive dust emissions from the construction site will be minimized using appropriate dust suppression control methods. These standard control methods will include paving or placement of gravel on roads, applying dust suppressing chemicals or water to roads and other exposed surfaces, or other methods, as needed. The existing public road on exiting site is already paved. Spilled and tracked dirt (or other materials) will be removed from the road in a timely manner. Of course, all construction related fugitive dust emissions, on the overall basis, will be temporary and will cease to exist once construction is completed. Emissions from open burning will be limited by removing materials whose burning would produce excessive smoke e.g., green vegetative materials.

During construction there will be some impacts on air quality. However, the proposed mitigation measures will reduce the impacts to an acceptable level, especially as they are limited to the construction phase. The overall construction period is expected to have duration of about 6-8 months. The quantity of any emissions to be released during the construction process will generally be very low, but will vary on an hourly and daily basis as construction progresses.

Extent of Impact on Air Quality = ▲ (Low) [with adoption of mitigation measures]

5.2.4 Surface Water

The nearest surface water is the seasonal nullah about 1.3 Km away. The existing surface water will not be affected by any construction activities. By avoiding uncontrolled discharges of liquids and waste, implementing adequate waste management and instigating appropriate organizational measures and mitigation actions, impacts on surface water can be reduced to a low level and will be limited to the construction period.

Extent of Impact on Surface Water = ▲ (Low) [with adoption of mitigation measures]

5.2.5 Groundwater

The proposed project site is located within the aquifer that serves the surrounding communities. Based upon the importance and sensitivity of this aquifer, as well as good construction practices, all precautions necessary will be required to reduce the potential for site impacts to a minimum.

While the proposed site preparation and facility construction activities for the capacity enhancement project are not anticipated to cause any short-term or long-term groundwater impacts to the site, Best Management Practices (**BMP**) will be employed during construction to ensure impacts (if any) are minimal and are properly mitigated.

Fluctuations in groundwater levels are expected to occur throughout the year due to rainfall, by surface percolation and infiltration through the system. As a result, minor dewatering systems may be required and maintained during certain phases of construction. After excavation, backfill, compaction, construction of the permanent drainage system and certain concrete construction activities are complete, the dewatering system, if required, will be removed. Any restoration needed for affected areas will follow after the dewatering equipment is removed. The implementation of appropriate erosion and sedimentation controls will also minimize adverse water quality impacts during site preparation.

Spills of fuel oil can have a potential adverse impact on soil, groundwater and particularly surface water during both the construction and operational phases of the project. During construction, all fueling will be conducted in a manner consistent with the spill prevention and response plan to be prepared by the construction contractor.

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During construction, fuel oil will be dispensed from tanks/drums to be located onsite to construction vehicles. Fuel for construction activities will be delivered to the site by fuel truck drivers, who will be required to receive spill plan training prior to beginning work. The trucks will be equipped with oil spill response materials. Each transfer will be documented. Implementing management controls should minimize the potential for adverse impacts due to spills during site construction.

During construction all contractors, technicians and laborers will be required to implement practices to minimize the potential for spills of fuels or chemicals.

Maintenance will be performed only in designated areas. In the unlikely event that spills do occur, they will be managed in accordance with the project's Environmental Management Plan (EMP).

To further minimize potential environmental impacts it is recommended that full-time environmental monitoring is conducted during construction, particularly during all refueling operations to minimize potential concern. The environmental monitoring could be under the environmental safety department or a member of the safety department with the authority of "stopping the job" in the event that noncompliance of environmental regulation is being observed. The proposed project includes the installation of supply tube-wells. The actual depths of the supply will be based upon the results of the geotechnical study and will take into account the occurrence of the local aquifer.

During construction phase of the project the water requirement will be 15000-20000 gallons per day while it is estimated that about 25,000 m^3/day of water will be required during the regular operation of the project.

The well/s will be designed to meet the necessary requirements for their intended industrial use and public safety. At a minimum, the well/s should be

properly grouted and cased to limit/reduce potential contaminants from impacting the upper freshwater lens.

Extent of Impact on Ground Water = ▲ (Low) [with adoption of mitigation measures.]

5.2.6 Solid Waste

The major solid wastes to be generated during construction activities are:

- Food wastes
- Cloths waste
- Bricks waste
- Waste from Quality Control
- Paper bags
- Used oil/lubricants
- Metal/wooden waste
- Medical waste
- Empty drums or containers
- Cotton rags
- Miscellaneous waste: Miscellaneous solid wastes include a host of items like batteries, tyres, tubes, filters, belts, nylon strips, scrap wood, steel scrap, house hold articles etc., which will be sold in the market through scrap dealers.

During the site clearance stage, it is anticipated that relatively large quantities of solid waste would be generated consisting of top-soil and sub-soil. The generation and disposal of site wastes is not considered to be a problem. Part of the excavated material would be used for leveling and grading and the balance would be stockpiled at designated locations on the site. Other solid wastes including, cooking waste and general solid waste are often associated with a relatively large workforces. Cooking wastes and general garbage will

be collected at regular intervals and land filled at an approved disposal site. Sewage waste (construction type portable toilets) will be used, and waste properly disposed.

During trenching any construction waste not utilized as fill material during trenching activities should be removed from the route and properly disposed. The trenching route should be restored to its original condition, prior to alteration by the project. In addition, all solid waste and surplus materials should be removed from the project site and properly disposed. It is anticipated that about 2-3 Kg/day of solid waste will be generated. However, while disposing any waste material, all environmental aspects/impacts of such wastes should be communicated clearly to the concerned contractor. Record of all such sales should be maintained for later use if and when required.

Extent of Impact Due Solid Waste = ▲ (Low) [with adoption of mitigation measures.]

5.2.7 Noise Impact

Construction of the proposed project is expected to take place for three years, with varying degrees of activity occurring during different phases of construction. Construction phases are expected to include excavation, concrete pouring, steel erection, mechanical/electrical installation and cleanup.

Noise is generated by operation of heavy equipment and increased frequency of vehicular traffic in the area during construction activities. Vibration levels will also increase due to these activities. However, these impacts are short term, intermittent and temporary in nature and are not likely to be felt outside the boundary of the proposed project.

The exact noise levels are a complex function of variables such as the actual noise levels emitted from each major noise-emitting equipment, their location and orientation within the construction area, and their operation and load.

The adjoining localities are likely outside the range of impact of noise emissions due to construction activities. It is assumed that the relevant national standards will be met.

Overall, the impact of noise generated during construction on the environment is temporary and mainly confined to daylight hours. It is anticipated that it will be possible to reduce noise impacts during construction to an acceptable minimum.

Extent of Impact on Noise = ▲ (Low) [with adoption of mitigation measures.]

5.2.8 Fire Risk

Fire and explosion hazard impacts are not expected during the construction phase due to the limited quantities of flammable and combustible materials to be imported to the site. The availability and use of portable extinguishing systems would limit the impacts of small fires, and personnel will receive training on the proper use and locations of this equipment. During construction, any waste disposal burning will be conducted in a cleared and dedicated area under controlled conditions, on those days when ambient air conditions will not permit embers to drift into the surroundings.

Extent of Impact on Noise = ▲ (Low) [with adoption of mitigation measures.]

5.3 Ecological Impacts

5.3.1 Terrestrial Systems

During construction activities, land clearing is a necessary component of the proposed development activity. Land clearing, as proposed, will be limited to the just required limits for the needs of the project, and

will be conducted in such a manner that is protective of the environment.

5.3.2 Fauna and Flora

Site preparation for the project does not require any clearing of vegetation but ground excavation will be necessary.

The construction area is not perceived as including sensitive habitats. Under normal dry weather conditions, a significant amount of dust will be thrown up by excavating activities. Hence, vegetation and animal habitats in the vicinity of the site and roads will be affected by wind-blown dust and its deposition. The contribution to the natural dust concentration in the air will only be of significance at the beginning of the construction phase, during the main excavation activities. During this period, dust can be expected to settle on plant leaves and aerial roots, which could hinder air exchange and assimilation by the plants. The temporarily increased vehicular traffic coupled with high noise levels due to various construction activities may also have some negative impacts on animals. Especially birds and other acoustically orientated animals living in the vicinity of the site and the roads used can be disturbed by noise. Disturbances during the period of construction could drive noise sensitive bird species from their habitats, but these are expected to return after construction has finished. No endangered species were found in the construction area. During the visual inspections of the site no nests or nesting was observed. No birds or wild animals were discerned in the site vicinity. Accordingly, during the construction phase of the project, birds would likely relocate to undisturbed areas. The influence of dust is unavoidable but mainly restricted to the first period of the construction phase. No major impacts by dust and noise on the flora

and fauna in the vicinity of the site and the used roads are to be expected. The construction related impacts on offshore fauna and flora may be considered to be low.

Extent of Impact on Fauna & Flora = ▲ (Low) [with adoption of mitigation measures.]

5.4 Impacts on Human Population

Construction related noise is not anticipated to be a significant concern to the nearest receptor outside the project site boundaries. The construction activity will normally occur during daylight hours and will run one shift per day. In addition, any excessive noise generated by construction related activities will be short term and short duration, and will generally not exceed the noise standards.

However, there might be a notable increase in road traffic as freight is moving to the site. No direct impacts to the communities or neighborhoods are anticipated. Based upon visual inspection of the site and site vicinity, the proposed site and roadway are absent of any residences. As a result, no relocation impacts are anticipated.

5.5 Traffic Impact

It is anticipated that an overall increase in traffic would occur directly as a consequence of the proposed construction. An increase in traffic will occur to and from the project site subsequent to freight arrival. The temporary traffic impacts are not expected to affect significantly the local residents since residential development is sparse in the immediate site vicinity. No significant traffic problems are expected during the construction period, other than minimal delays for start and stop time for the workers commuting to their residences and due to occasional heavy equipment and materials moving to and from the site.

Construction traffic generation should be viewed at the most as a temporary inconvenience.

5.6 Socio-economic Impacts

Most of construction workers are anticipated to be hired from within the project area where the project site is located. In addition, general contractors/vendors, consultants and engineers from within the country will provide technical and specialized services. The construction impacts on the local employment opportunities are beneficial, although relatively short term. Indirect employment in the local area will also occur primarily in retail, eating and drinking establishments.

During construction of the employment opportunities will be created both for skilled and unskilled local workers.

Extent of Socio-Economic Impact = ▼▼ (locally favorable)

5.7 Public Services and Facilities

Construction related impacts to public services and facilities, such as police, fire, and medical services and water, wastewater and solid waste disposal are not expected to be significant. With minimal relocations to the project area expected, existing facilities and services will be adequate to meet the demands on these services. The selected general contractor will be responsible for removing and disposing of construction related debris.

5.8 Cultural Resource Impacts

Fugitive dust emissions will be properly controlled so that minimal impact on visibility will occur. Also as discussed earlier, due to attenuation with distance, construction noise will not affect the quality of life at the nearest habitats. Some minor inconvenience may occur through increased traffic and equipment creating conflicts on main

road. However, during construction of the project, no conflicts are anticipated with cultural resources in the area.

5.9 Environmental Impacts Assessment during Operation Phase

This section discusses the potential impacts from regular operation of the proposed extension and associated facilities on the natural resources and environment of the site and vicinity. The project invariably has potential for environmental impacts during the operational phase of the project. During the operational phase the following impacts are normally of significance:

- Air quality impacts
- Ecological impacts
- Impacts associated with the abstraction and discharge of water
- Impacts arising from solid waste management
- Noise and vibration impacts
- Soil, groundwater and surface water contamination
- Accidents/Explosions
- Socio economic impacts

For the purpose of evaluating the impacts from the proposed project, National Environmental Quality Standards (**NEQS**) Pakistan is used.

5.9.1 Air Quality Impacts

The combustion of fuel for stand by generator and from the sugar crushing process and distillery unit is inevitably results in emission of gaseous pollutants to the atmosphere. The pollutants of potential concern are sulfur dioxide (SO_2), nitrogen oxides (NOx), carbon monoxide (CO), carbon dioxide (CO_2) and particulate matter (PM). In general, the most significant emissions from the combustion in generator of the proposed project are sulfur dioxide (SO_2), oxides of

nitrogen (NOx), carbon dioxide (CO_2) and particulate matter. Smoke and carbon monoxide (CO) are much less problematic as developments aimed at improving combustion efficiency in the generator have also addressed these pollutants. A double conversion double absorption system will be installed to avoid any air emissions.

5.9.2 Ecological Impacts

5.9.2.1 Impacts on Fauna and Flora

Air Emissions

The effect of air emissions from the stacks upon breeding birds (if any) proximal to the site will not be clear without careful monitoring. During the preparation of the EIA, no nest or nesting birds were observed on or proximal to the project site. Recommendations for a monitoring program include review of areas immediately adjacent and proximal to the site. Since birds are generally mobile, it is anticipated that they will relocate beyond the sphere of influence of the plant. The affect of gaseous and PM emissions on the adjacent areas, after adoption of necessary mitigation measures, is not anticipated to be a concern, because the air quality levels are predicted to remain within those approved by National Environmental Quality Standards for Ambient Air **(NEQSAA)** for human health. Consequently, air emissions are not likely to affect local fauna and flora.

Extent of Impact on Fauna & Flora = ▲ (Low)

Noise

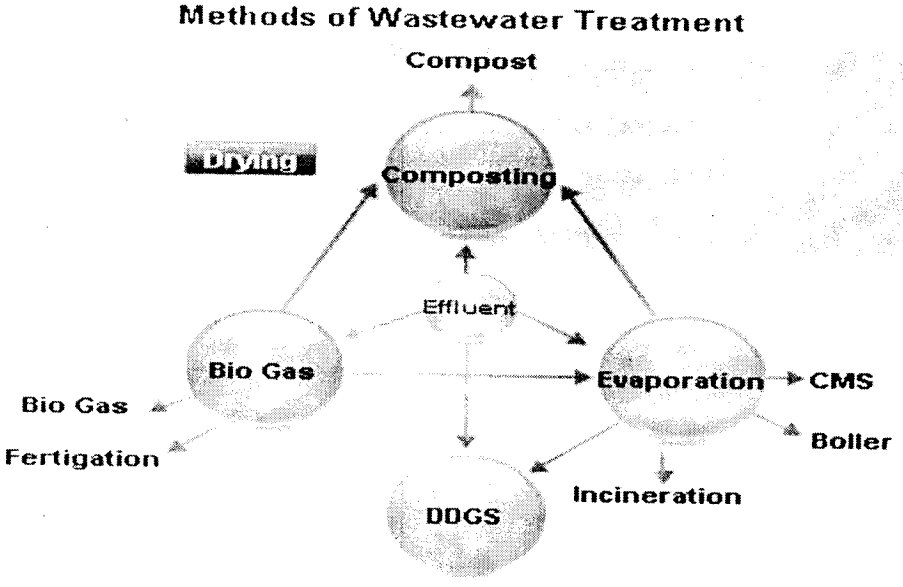
Noise from the operation of the proposed project, after adoption of necessary measures, will result in its level not exceeding the limits set by the NEQS. Thus, noise from the project activity will

not give rise to any serious adverse impacts on the surrounding fauna and flora.

Extent of Impact on Fauna & Flora = ▲ (Low)

Waste Water

Liquid effluents from all sources including also sewage to be generated in the project site will be treated according to required levels of the National Environmental Quality Standards, before discharging. A tentative summary flow sheet (sketch) of the effluent treatment process:



Accordingly, there is no question of any adverse impacts from waste water to fauna and flora.

Extent of Impact on Fauna & Flora = ▲(Low)

Landscaping

At the completion of construction activities, landscaping should include the abundant use of native plant species. After completion of construction phase, the site will be mostly dominated by

buildings, plant & machinery, stacks and storage tanks. Within this area of low visual impact, the additional visual intrusion due to realization of the project may be assessed as low.

Extent of Impact of Landscape = ▲ (Low)

Supply of Water

The project has to install tube-well within the boundary wall of the project. The production rate, concomitant drawdown and the resultant radius of influence from the new well should be evaluated to confirm no detrimental impacts are caused by the production capacity of the new well/s. It is recommended that monitoring of the influence of the withdrawals from the newly installed wells should also be conducted. Measurements should include:

Extent of Water Supply Impact = ▲ (Low) [with adoption of mitigation and monitoring measures proposed]

Solid Waste Management

The types, sources, and management of solid wastes anticipated to be generated during the operation of the proposed project facilities are as follows:

- **Unit wastes** such as office wastes, packaging materials, garbage, refuse, redundant electric gadgets, various types of wastes of a large variety and rubbish/trash will be generated during the operational phase of the proposed project in addition to general solid waste. It is anticipated that 2-4kg/day of waste will be generated from the proposed project. According to nature of solid waste, some of these will be recycled, on the site while others will be sold in the market through an approved contractor while keeping all the records. The contractor will be

fully informed/educated about the nature of the wastes. Other wastes, such as lead acid batteries will be segregated from other waste streams, collected and stored in suitable containers, and if not incinerated will be transported off-site and disposed at an approved land fill site by an approved waste transporter and contractor.

- Special wastes such as hazardous waste, chemical wastes (if any), and used oil, will be generated during the operational phases of the proposed project. Special wastes could also include items such as waste oils, waste lubricants, paints, maintenance-related wastes, used air and liquid filtration media, and empty or nearly empty chemical containers. Most, if not all, of these materials will be disposed off by incineration. While others will be sold in the market through a contractor, keeping record of them and informing the contractor of their hazards and rational use.
- Sludge from sewage and wastewater treatment plant, after due treatment to form the compost, will be used as manure for vegetation, trees etc.

Extent of Impact of Solid Waste = ▲(Low) [with adoption of mitigation measures proposed.]

Noise & Vibration Impacts

Once operational, additional ambient noises may be of concern, however, package systems are noted for the quietness of their operation, and according to the project feasibility, ambient noise measurements of the equipment/machinery will be designed to operate with a total noise level not exceeding the prescribed standards of NEQS in the very near vicinity of the machinery.

While at the property boundary, the noise level is expected to be less than 55 dB(A) as against the limiting value of 65 dB (A) by the NEQS for commercial industrial areas. Therefore, in case the built in design achieves these noise levels then no excessive ambient noise impacts are anticipated at the nearest receptors.

Extent of Impact on Noise Level = ▲(Low) [with adoption of mitigation and control measures.]

Economic Impact

The project will provide new jobs in the project area. Most people of the area make their living directly or indirectly from job in private, commercial or industrial sector. Short-term economic benefit will be realized by providing janitorial services, horticultural services, loading/unloading workers, canteen, and semi-skilled & some skilled activities, as well as by increased use of available rental property. Long-term benefits will include indirect employment, as a result of improved and reliable economic benefits provided by increased employment. As a result, continued operation of the proposed project will generate revenue into the Country's economy. There are no negative or detrimental potential impacts on the socio-economic setting of the area arising as a result of the proposed project. As such no mitigation measures are required.

Extent of Socio-Economic Impact = ▼▼ (locally favorable)

SECTION - 6
ENVIRONMENTAL MANAGEMENT PLAN (EMP)

6.0 General

The Environmental Management Plan **(EMP)** aims to provide:

- An integrated plan for the comprehensive monitoring and control of impacts.
- Auditable commitments displaying practical achievable strategies for management to ensure that environmental requirements are specified and complied with.

For this purpose, an outline of EMP has been developed which includes;

- what has to be managed and monitored, how and why
- when and where
- by whom
- whom to report and who to follow up if there is any problem.

6.1 Environmental Management Plan (EMP)

The EMP will facilitate proponents to address the adverse environmental impacts of the project, enhance project benefits and introduce standards of good environmental practices. Apart from this project management of **M/S Madina Sugar Mill Ltd & Distillery Unit Project** is already working on environmental management and has developed an Environment Management Policy for their factory.

6.2 Objectives of EMP

The EMP aims to ensure that:

- Site activities are well managed
- All environmental safeguards are carried out correctly
- Coordination is made with other trades
- Adverse impacts on environment are minimized

- The biodiversity of the site is conserved or enhanced
- All relevant legislation is complied with prescribed procedures/standards
- The project is monitored for environmental impacts

6.3 Structure of EMP

The structure of the EMP will:

- Describe that how it fits into the overall planning process for the project
- Detail the activities that are to be carried out
- Identify the impacts of activities may have on environment
- Propose environmental control methods to be used to prevent or minimize those environmental impacts
- Assign responsibility for each control measure to specific staff members
- Identify key monitoring parameters and schedule of monitoring of these parameters
- Identify training requirements at various stages of the development of the project
- Identify the resources required to implement the EMP and outline relevant expenses arrangements

6.4 Institutional Requirements

The following organizations would be involved in the implementation of the proposed EMP;

- **M/S Madina Sugar Mill Ltd & Distillery Unit** as the proponents of the project and owners of the EMP during construction and operation of the project.

- Project Contractor, as the executor of the EMP during construction stage of the project.
- Supervisory Consultant, as monitor of the execution of the EMP during construction stage.
- Environmental Protection Agency (EPA), Punjab, as Government Department to review and monitor the implementation of remedial and mitigation measures as given in EIA.

6.5 Regulatory Requirements

The EIA report has been prepared in the light of guidelines provided by the following documents and the Project Proponents are required to implement the EMP strictly in line with this regulatory framework to get the environmental benefits of the project:

- The Pakistan National Conservation Strategy, Environment and Urban Affairs' Division
- Punjab Environmental Protection (amendment) Act (PEPAA)-2012.
- Policy and Procedures for Filling, Review and approval of Environmental Assessments
- Guidelines for the preparation and Review of Environmental Reports (October 1997)
- Guidelines for Public consultations
- Guidelines for Sensitive and Critical Areas
- National Environmental Quality Standards for Drinking Water, Waste Water, Ambient Air, Stacks Emissions, Noise Levels.

6.6 Specific Implementation Responsibilities

The implementation of the EMP will be the prime responsibility of the project proponents who designate responsibilities and obligations to their selected contractors and staff. Monitoring, documentation and reporting the compliance components of the EMP will be the responsibility of

proponent. Specific responsibilities of key role players are illustrated hereunder:

A) Proponents

M/S Madina Sugar Mill Ltd & Distillery Unit will be responsible for ensuring overall implementation of the EMP during construction as well as operational stages of the project. The responsibilities of the proponent and the site team supervising the project activities include;

i) Project Manager (Proponent)

- Make sure that all activities are completed according to specifications
- Certify that work being done by the contractor/s is in accordance to the EMP
- Make sure that the specific system for environmental management is planned, documented, implemented and maintained through all stages of the project
- Coordinate with regulatory agencies like TMA and EPA, etc
- Communicate with local community in order to get time to time feedback of these stakeholders on various social and environmental concerns
- Make sure liaison between the contractor/s and environmental consultant men to check environmental compliance with EPA requirements
- Conduct environmental monitoring during operational stage of the project

ii) Site Supervisor

- Make sure all work crew are inducted in environmental and emergency procedures and instruct on control measures

- Direct site activities according to the EMP
- Monitor operations of the EMP and recommend any necessary changes to the Project Manager (Proponent)
- Make sure all contractors, subcontractors and suppliers have necessary and current certificates of competency
- Collect delivery certificates for quality assurance

iii) Work Crew

- Attend site induction and other training sessions
- Make sure that procedures are followed
- Advise site supervisor of any potential or actual breaches of plans

B) Contractor

The Contractor will be responsible for the implementation of all measures necessary to ensure that Proponent's environmental and HSE policies are met. In order to fulfill these requirements, Contractor will carry out the following;

- Implement environmental good practice measures outlined in the mitigation measures
- Provide, to extent practicable, environmental training to the work force and promote environmental awareness
- Coordinate with local authorities as appropriate
- Advise site supervisor of any violations of EMP
- Facilitate consultants during environmental monitoring

C) Consultant

The principal responsibilities of the Consultant include:

- To monitor on regular basis whether construction activities are carried out in an environmentally sound and sustainable manner
- Coordination with provincial and local officials, community groups, government departments etc. on environmental issues and obtaining the necessary clearances from the regulatory authority/ies (if any)
- Monitoring of the environmental aspects of project during construction to ensure that the environmental requirements of the contract and the mitigation measures proposed in the EMP are implemented
- Supervising Contractor preparing environmental input to the progress report
- Developing and conducting environmental training activities for Contractor and the Supervision Consultant staff
- Undertake critically important routine monitoring of construction, waste disposal and overall environmental management practices by the Contractor
- Devise solutions to environmental issues as they arise particularly related to dust, noise levels and other impacts that are in some instances unavoidable. Good construction supervision requires that every effort be made to minimize these impacts

D) EPA

The role of EPA is on the apex and includes checking:

- Whether requirements of the conditional NOC awarded by the EPA against EIA report are met

- The Implementation of mitigation recommendations as given in EIA
- Approval for starting actual project operations is obtained from EPA
- Review of audit/monitoring reports prepared internally or by a third party monitoring
- Suggest or order any appropriate solutions if something goes against the given EMP

6.7 Auditing

The Audit will be carried out internally by the Project Manager (Proponent)/Site Supervisor assisted by one coordinator. The primary aim of the auditing process is to assess compliance and effectiveness of the EMP as well as the alternative environmental and social objectives and also to assess the effectiveness of corrective actions. Audit will also suggest remedial measures to overcome environmental and social problems.

The external auditing will be carried out by the EPA, Punjab or by its appropriate environmental consultant in order to check compliance and implementation of EMP. The EPA will check various parameters with reference to various sections of PEPAA-2012, guidelines provided by the SMART and standards specified by NEQS there under.

6.8 Environmental Management Plan

(For Construction & Operation phase)

The given Environmental Management Plan (EMP) will be implemented for the better management of environmental issues which can be arises by the project activity.

Environmental Management Plan of Madina Sugar Mill Ltd & Distillery Unit Project				
Sr. No	***Project Component or Impact***	***Target***	***Mitigation***	***Responsibility***
CONSTRUCTIONAL STAGE				
1.	Topography	To minimize negative impact to topography of the Project Area.	▪ As the site for the project activity is already available therefore there will be no change on the topography of the project area. ▪ Tree plantation will be carried out on large scale to enhance to topographic beauty of the area.	Proponent and Contractor
2.	Soil	To minimize soil erosion and contamination.	▪ Low embankments will be protected by planting Vetiver grass that can flourish in relatively dry conditions;	Proponent and Contractor

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			▪ Soil contamination by asphalt/oil will be minimized by placing all containers in caissons; ▪ All spoils will be disposed off as desired and the site will be restored back to its original conditions before handing over; ▪ Soil erosion checking measures such as the formation of sediment basins, slope drains, etc, will be carried out.	
3.	Health and safety of workers and associated communities	To minimize health risks	▪ Provide training on basic First Aid to specified work staff in order to help the injured workers onsite. ▪ Work safety measures and good workmanship practices are to be followed by the contractor to ensure no health risks for laborers; ▪ Personal Protective Equipment (PPEs) will be provided to the workers operating in the	Proponent and Contractor

			vicinity of high risk area; ▪ Provision of adequate sanitation, washing, cooking and dormitory facilities including light up to satisfaction; ▪ Ensure strict use of wearing these protective clothing during work activities; ▪ Elaboration of a contingency planning in case of major accidents; ▪ Adequate signage, lightning devices, barriers and persons with flags during construction to manage traffic at construction sites, haulage and access roads.	
4.	Air Quality	To minimize air pollution	▪ All vehicles, machinery, equipment and generators used during construction activities will be kept in good working condition and be properly tuned and maintained in order to minimize the	Contractor

			exhaust emissions; ▪ Open burning of solid waste from the Contractor's workforce will be strictly banned; ▪ Preventive measures against dust will be adopted for on-site mixing and unloading operations. Regular sprinkling of the Site by water will be carried out to suppress excessive dust emission(s); ▪ NEQS applicable to gaseous emissions generated by construction vehicles, equipment and machinery will be enforced during construction works; and ▪ Ensure precautions to reduce the level of dust emissions from hot mix plants, crushers and batching plants will be taken up; e.g. provide protection canvasses and dust extraction units. Mixing equipment should be well sealed and equipped as per	

			existing standards. ▪ All excavation work will be sprinkled with water; ▪ Vehicles used for construction will be tuned properly and regularly to control emission of exhaust gases.	
5.	Noise	To minimize noise pollution	▪ 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 nighttime; ▪ Heavy machinery like percussion hammers	Proponent and Contractor

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			and pneumatic drills will not be used during the night without prior approval of the Client; ▪ Contractors will comply with submitted work schedule, keeping noisy operations away from sensitive points; implement regular maintenance and repairs; and employ strict implementation of operation procedures.	
6.	Surface and Groundwater	To avoid contamination of surface and groundwater	▪ Protection of surface and groundwater reserves from any source of contamination such as the construction and oily waste that will degrade its potable quality; ▪ The solid waste will be disposed off in designated disposal site to sustain the water quality for domestic requirements; ▪ water required for construction in such a way that the water availability and supply to nearby communities remain unaffected;	Proponent and Contractor

			▪ Regular water quality monitoring according to determined sampling schedule; ▪ The contractor shall ensure that construction debris do not find their way into the drainage system which can block them; ▪ Prohibit washing of machinery and vehicles in surface waters, provide sealed washing basins and collect wastewater in sedimentation/retention pond.	
7.	Flora	To minimize the impact on floral resources	▪ As discussed in the EIA report there will be no tree cutting involved during the construction phase of this project activity. However new aggressive campaign will be launched for tree plantation ▪ Local species of plants will be used during plantation to avoid any foreign unwanted species of plants.	Proponent and Contractor

8.	Fauna	To minimize the impact on birds and their dislocation	▪ Plantation of large number of trees along the proposed project site and around the industry will be carried out to provide shelter for birds. ▪ Noisy work will not be carried out in night time so that there should be no disturbance to local birds and animals;	Proponent and Contractor
9.	Disposal of Mucking Material	To minimize the scars on the land in the Project Area	▪ Proper landscaping, which should be given due consideration along with re-establishment of the local/indigenous vegetation; ▪ The excavated materials that are unsuitable for use will need to be stored, transported and disposed of appropriately at designated sites.	Contractor
10.	Public Utilities and Infrastructure	To minimize the disturbance to public utilities and infrastructure	▪ Rehabilitation of existing utilities before construction to avoid any inconvenience to the residents of the Project Area or provide	Contractor

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			them with alternative arrangement during the construction period.	
11.	Traffic Management	To minimize traffic problems in the Project Area	▪ As discussed in the EIA report the project site is located on the main road it is wide enough to cater any traffic jams so there will be no problem of small number of additional vehicles on this road. However, following mitigation measure will be taken care for the smooth running of traffic; ▪ Movement of vehicles carrying construction materials will be restricted during daytime to reduce traffic load and inconvenience to the local people.	Contractor

OPERATIONAL STAGE

Sr. No	***Project Component or Impact***	***Target***	***Mitigation***	***Responsibility***

1	Flora	Proper maintenance of sapling planted	▪ The saplings planted in and around the plant would be properly maintained throughout their initial growth period in terms of water requirement and necessary nutrients. Therefore, proper care of newly planted trees will need special care; ▪ An awareness campaign targeted on the neighbourhood farmers/factory owners will be run to popularize the planting of trees; and ▪ Organic farming will be encouraged to minimize the use of chemical fertilizers and pesticides.	Management of Sugar Mill & Distillery Unit
3.	Air Quality	To minimize air quality	▪ Setting up of a system to monitor air quality along Project area in accordance with the applicable standards/limits; ▪ Helping the owners and occupants of the affected premises to identify and implement special measures;	Management of Sugar Mill & Distillery Unit and EPA Punjab

			▪ Regular road maintenance to ensure good surface condition; ▪ Monitoring air quality at defined schedule; and ▪ Regular vehicle check to control/ensure compliance with NEQS. ▪ Regular check of emission stacks; if any; to control/ensure compliance with NEQS.	
4.	Noise	To minimize noise pollution	▪ Noise measurements will be carried out at locations according to specified schedule to ensure the effectiveness of mitigation measures; ▪ Provision of ear muffs/plugs for the workers working in high noise zones; and ▪ Provision of sign boards for sensitive zones ▪ Tree plantation will be further enhanced on the boundary walls of the factory which will act as additional buffer/barriers for community exposure.	Management of Sugar Mill & Distillery Unit

5.	Security	To minimize the risk	▪ Mitigation measure will include strict enforcement of regulations.	Management of Sugar Mill & Distillery Unit
6.	Landscape	To improve the aesthetics of the Project Area	▪ Plantations in and around the plant will be further enhanced. ▪ Fountains are already installed in the existing unit and such measure will also be taken to increase the beauty of area. ▪ Outside the plant more plantations will be carried out to further beautify the area around the factory.	Management of Sugar Mill & Distillery Unit
7.	Community Development	To improve the living standards of the Area	▪ A well-managed and well planned community development plan has been prepared and is exercised by the management of Distillery unit. ▪ This plan will be further extended for the welfare of nearby community. This development plan includes: ▪ Provision of dispensary for the nearby	Management of Sugar Mill & Distillery Unit

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			communities; ▪ Employment opportunities for the workers of the nearby communities, ▪ Provision of education facilities via Education Trust	
8.	Health, Safety and Environment Plan	To improve the working conditions and environment for the insurance of safe work	▪ Provision of all the resources to ensure the safety for workers ▪ Long term changes in the infrastructure and machinery to ensure the health of the workers ▪ Frequent environmental monitoring of generators and other sources of emissions in the industry. ▪ Indoor air quality monitoring specially in the working areas for workforce.	Management of Sugar Mill & Distillery Unit
9.	Solid Waste Management	To save the environment from degradation	▪ Solid waste shall be disposed of by contractor ▪ All the legal and obligatory requirements should be fulfilled	Management of Sugar Mill & Distillery Unit

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			▪ No damage to nearby habitat	
10	Ground Water	To save the natural resources	▪ Water conservation campaign will be launched for the new project in order to minimise the wastage of ground water. ▪ New washing techniques will be introduced for water conservation	Management of Sugar Mill & Distillery Unit
11	Surface Water	To save Aquatic life and protect natural resources	▪ Water recycling and reuse will be promoted to minimise water use. ▪ Regular final discharge point monitoring for waste water from treatment plant will be carried out. ▪ No discharge of waste water without treatment will be allowed.	Management of Sugar Mill & Distillery Unit

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6.9. Environmental Monitoring Program

The monitoring program is designed to ensure that the requirements of the environmental approval awarded by the EPA are met. Monitoring Program **(MP)** provides important information that allows for more effective planning and an adaptive response based on the assessment of the effectiveness of mitigation measures. The monitoring of various parameters will help to determine the extent to which project construction/operation activities will cause environmental disturbance. Following is a tentative plan for environmental monitoring;

Environmental Monitoring Plan

Sr. No	Monitoring Parameter	Monitoring Location	Remarks
A. Construction Stage			
1.	Noise	Construction Vehicle/ Machinery/ generators/Welding work	Construction vehicles / machinery / generators will be checked regularly for noise level by the contractor during construction phase.
2.	Smoke Emissions	Construction Vehicle/ Machinery/ generators	Construction vehicles / machinery / generators will be checked regularly for smoke emissions by the contractor during construction phase.
B. Operation Stage			

1.	Security	At the Unit	Security arrangement will be made.
2.	HSE Plan	---	Health, safety and Environment will be monitored on daily basis.
3.	Gaseous Emissions monitoring	Generators and Boiler	Will be carried out on quarterly basis from the stacks of generator and boilers
4.	Noise	All plant	On daily basis by the plant management and on quarterly basis by a third party
5.	Waste Water Monitoring	From final discharge point of Waste Water Treatment Plant (WWTP)	As described by SMART

6.10. Monitoring Protocol

A) Proposed Monitoring Program for Construction Stage

A comprehensive monitoring plan for construction stage has been presented in the above table.

B) Proposed Monitoring Program for Operation Stage

A monitoring plan has been designed for operational stage of the project as presented in the above table.

6.11 Reporting Structure and Outcomes

Monitoring reports will contain the results of different physical, chemical and ecological parameters along with photographic record made in the period preceding the report as well as recommendations for action, if required, for improving the construction process from an environmental perspective. Data will be presented both in tabular and spatial form.

6.12 Environmental Management and Monitoring Cost

The cost for environmental management and monitoring will be the part of contract of Contractor and Consultants respectively. However, a lump sum amount of Rs. 1.75 million will be allocated by the project proponent as cost for environmental training and monitoring for a period of two years during construction and operation of the project.

6.13 Tree Plantation Plan

The plan for development of buffer zone for attenuation of the noise and odor and air pollutant levels include design of plantation around the boundary, road side, office buildings and stretches of open land.

6.13.1 Green Belt Design

Extensive tree plantation will be carried out to act barrier to control escape of odor, if any, in the surrounding areas. As a part of tree plantation plan, plants which are moderately tolerant to the pollutants but are endowed with fast growing, dense foliage canopy will be planted. The number of plants to be grown along the boundary line of the area will be estimated after physical survey of the during construction and will be approximately 1000 in single row with a tree to tree distance of 5ft/l.5m. The trees planted here will have dense spreading canopy. The trees will also be grown along the roads and the open stretches.

This area will not only act as to reduce the pollution but also will increase the aesthetics of the area. So the trees grown in this area must be flowering as well ornamental plants. All along the boundary of the treatment plant, a strip of plantation with trees which are tall in nature and evergreen in habit. This area will act as a barrier and as far as possible check the pollutants from their escape and potential contamination of other components of local environment.

6.13.2 Ornamental Plants Preparation

The HSE manager or designated person shall be responsible for the preparation of the lawn area and planting lawn. Sweet soil shall be placed in the lawn areas and raked. All stones in excess of 1" in diameter and all rubbish soil shall be removed. Cover the sweet soil with 4" of well decomposed organic manure and mix into top 4" of the topsoil. Additional sweet soil shall be deposited as may be required to correct all settlement and erosion up to the date of acceptance at the substantial completion Inspection. The prepared surface shall be free from all rivulets, crusting and caking. The sub grade soil shall be sacrificed to a 12" minimum depth and brought to a true and uniform grade before dumping and spreading of sweet soil. The lawn bed shall be fine graded to remove all ridges and depressions. Surface irregularities resulting from this or other operations shall be leveled to prevent the depressions. Grades shall be adjusted to assure that the

grades, after nature settlement and light rolling, will be 1" below adjoining grade of any paved areas.

Rolling shall be done in two directions at right angles to each others. The roller shall be a water blast and roller weighing not more than 200 pounds, not less 150 pounds. Rolling shall be in such a manner so as to eliminate the necessity for walking on the finishing grades.

6.13.3 Lawn Planting

No lawn shad be planted when temperatures are above 90°F or if the ground is in a muddy condition/or other conditions that are unsuitable in Muzafargarh. The sweet soil surface shall be moistened with a fine spray immediately before planting.

The lawn shall be planted according to acceptable standards practice in order to ensure a completely healthy grass cover. The planting procedures shall be approved by designated person at site.

6.13.4 General Landscape Protection

Planting areas and plants shall be protected all times against trespassing and damage of all kinds for the duration of maintenance period. If any plant/s become damage or injured, they shall be treated or replaced. Protection shall also include all temporary protections fences and barriers, all signs and all other work incidental to proper maintenance.

6.14 Training and Capacity Building

Under the Environmental Management and training, it is proposed to provide a 'Three Level Hierarchical Structure' for

environmental and safety management. The responsible personnel should be given proper training for their capacity building.

The first level shall comprise professionals from the managers and supervisors and they will be responsible for monitoring and recording of air emissions parameters, water quality parameters, noise level and occupational health and safety to ensure and confirm that the operational works are in compliance with National Environmental Quality Standards (**NEQS**). Unit administrative personnel will submit records to enforcement, as required ensuring compliance with environmental and occupational health and safety regulations and No objection certificate (NOC) conditions. A well trained person will provide training and equipment to monitor effluent and emission quality compliance with NEQS.

The second level shall be the over sighted function to be performed by Senior Management Officer, the Director, Administrative Officer and with the feedback of the Environmental and Safety Staff, shall be responsible for providing direction and training, to keep personnel up to date on equipment operation, environmental control, monthly safety meetings for administrative personnel, training on fire fighting and emergency response and emission and effluent quality monitoring. Administrative personnel and Environmental Health and safety staff should have to well inform of new environmental regulations and safety precautions.

On the third level, the Executive Director should hold meeting and communications regularly with responsible personnel to keep

them informed about the status of Quality, Environment, Health and Safety issues in the building. The responsible staff should maintained proper record for all these issues.

The responsibilities of the Environment manager, Health and Safety Officials and relevant staff are as follow:

- To ensure the implementation of all the planned mitigation measures during construction and operational stages of the proposed project and ensure that the proposed project is implemented in an environmentally friendly manner, causing least harm to the existing environment.
- To organized regular monitoring program of emission, effluent, noise, occupational health, implementation of safety measures, etc.
- To develop operational guidelines and implementation schedules.
- Receiving complaints from residents and institutions and assisting the local environmental authorities including Environmental Protection Department (EPD), Punjab.

SECTION - 7
Stakeholder Consultation

Stakeholder consultation is a means of involving all primary and secondary stakeholders in the project's decision-making process in order to address their concerns, improve project design and give the project legitimacy. Stakeholder consultation, if conducted in a participatory and objective manner, is a means of enhancing project sustainability. Community input (both of knowledge and values) on socioeconomic and environmental issues can greatly enhance the quality of decision-making. Stakeholder consultation was therefore conducted in the project area not only to satisfy the legal requirements of the EIA process in Pakistan but also to improve and enhance the social and environmental design of the project.

7.1 Objectives of Stakeholders Consultation

The process of public participation and consultation was endorsed in the United Nations Conference on the Environment and Development (UNCED) in 1992 through one of the key documents of the conference named as Agenda 21. Agenda 21 is a comprehensive strategy for global action on sustainable development and deals with issues regarding human interaction with the environment. It emphasizes the role of public participation in environmental decision-making for the achievement of sustainable development. A study was carried out with the broad objective to evaluate the impact of the project on the local population through public consultation process. The specific impact assessment aims were:-

- Promote better understanding of the project, its objective, and its likely impact

- Identify and address concerns of all interested and affected parties of project area.
- Provide a means to identify and resolve issues before plans are finalized and potentially costly delays development commences, thus avoiding public anger and resentment.
- Encourage transparency and inculcate trust among various stakeholders to promote cooperation and partnership with the communities and local leadership.

7.2 Pakistan Environmental Protection Act 1997 (amended 2012)

Public consultation is mandated under Pakistan's environmental law. The Provincial Agency, under Regulation 6 of the IEE-EIA Regulations 2000, has issued a set of guidelines of general applicability and sectoral guidelines indicating specific assessment requirements. This includes Guidelines for Public Consultation, 1997 (the 'Guidelines'), that are summarized below:

- **Objectives of Public Involvement:** To inform stakeholders about the proposed project, to provide an opportunity for those otherwise unrepresented to present their views and values, providing better transparency and accountability in decision making, creating a sense of ownership with the stakeholders;
- **Stakeholders:** People who may be directly or indirectly affected by a proposal will clearly be the focus of public involvement. Those who are directly affected may be project beneficiaries, those likely to be adversely affected, or other stakeholders. The identification of those indirectly affected is more difficult, and to some extent it will be a subjective judgment. For this reason it is good practice to have a very wide definition of who should be involved and to include any person or group who thinks that they have an interest. Sometimes it may be

necessary to consult with a representative from a particular interest group. In such cases the choice of representative should be left to the group itself. Consultation should include not only those likely to be affected, positively or negatively, by the outcome of a proposal, but should also include those who can affect the outcome of a proposal;

- **Mechanism:** Provide sufficient relevant information in a form that is easily understood by non-experts (without being simplistic or insulting), allow sufficient time for stakeholders to read, discuss, consider the information and its implications and to present their views, responses should be provided to issues and problems raised or comments made by stakeholders, selection of venues and timings of events should encourage maximum attendance.
- **Timing and Frequency:** Planning for the public consultation program needs to begin at a very early stage; ideally it should commence at the screening stage of the proposal and continue throughout the EIA process;
- **Consultation Tools:** Some specific consultation tools that can be used for conducting consultations include; focus group meetings, needs assessment, semi-structured interviews; community meetings and workshops;
- **Important Considerations:** The development of a public involvement program would typically involve consideration of the following issues;
    - objectives of the proposal and the study
    - identification of stakeholders
    - identification of appropriate techniques to consult with the stakeholders,

- identification of approaches to ensure feedback to involved stakeholders and
- mechanisms to ensure stakeholders consideration are taken into account.

Some Important Sections of the Pakistan Environmental Protection Act for the Socio-Environmental Sustainability are as follow;

Section 11: Prohibition of certain discharges or emissions.

(1) Subject to the provisions of this Act and the rules and regulations no person shall discharge or emit or allow the discharge or emission of any effluent or waste or air pollutant or noise in an amount, concentration or level which is in excess of the National Environmental Quality Standards or, where applicable, the standards established under sub-clause (I) of clause (g) of sub-section (1) of section 6.

(2) The provincial Government may levy a pollution charge on any person who contravenes or fails to comply with the provisions of sub-section (1); to be calculated at such rate, and collected in accordance with such procedure as may be prescribed.

(3) Any person who pays the pollution charge levied under sub-section (2) shall not be charged with an offence with respect to that contravention or failure.

(4) The provisions of sub-section (3) shall not apply to projects which commenced industrial activity on or after the thirtieth day of June, 1994.

Section 12: Initial environmental examination and environmental impact assessment.

No proponent of a project shall commence construction or operation unless he has filed with the Government Agency designated by

Provincial Environmental Protection Agencies, as the case may be, or, where the project is likely to cause adverse environmental effects an environmental impact assessment, and has obtained from the Government Agency approval in respect thereof.

Section 16: Environmental protection order

(1) Where the Provincial Agency is satisfied that the discharge or emission of any effluent, waste, air pollutant or noise, or the disposal of waste, or the handling of hazardous substances, or any other act or omission is likely to occur, or is occurring, or has occurred, in violation of the provisions of this Act, rules or regulations or of the conditions of a license, and is likely to cause, or is causing or has caused an adverse environmental effect, the Provincial Agency may, after giving the person responsible for such discharge, emission, disposal, handling, act or omission an opportunity of being heard, by order direct such person to take such measures that the Provincial Agency may consider necessary within such period as may be specified in the order.

(2) In particular and without prejudice to the generality of the foregoing power, such measures may include

(a) Immediate stoppage, preventing, lessening or controlling the discharge, emission, disposal, handling, act or omission, or to minimize or remedy the adverse environmental effect;

(b) Installation, replacement or alteration of any equipment or thing to eliminate, control or abate on a permanent or temporary basis, such discharge, emission, disposal, handling, act or omission;

(c) Action to remove or otherwise dispose of the effluent, waste, air pollutant, noise, or hazardous substances; and

(d) Action to restore the environment to the condition existing prior to such discharge, disposal, handling, act or omission, or as close to such condition as may be reasonable in the circumstances, to the satisfaction of the Provincial Agency.

Section 17: Penalties

(1) Whoever contravenes or fails to comply with the provisions of sections 11, 12, 13 or section 16 or any order issued there-under shall be punishable with fine which may extend to one million rupees, and in the case of a continuing contravention or failure, with an additional fine which may extend to one hundred thousand rupees for every day during which such contravention or failure continues: Provided that if contravention of the provisions of section 11 also constitutes contravention of the provisions of section 15, such contravention shall be punishable under sub-section (2) only.

(2) Whoever contravenes or fails to comply with the provisions of section 14 or 15 or any rule or regulation or conditions of any license, any order or direction, issued by the Council or the Provincial Agency, shall be punishable with fine which may extend to one hundred thousand rupees, and in case of continuing contravention or failure with an additional fine which extend to one thousand rupees for every day during which such contravention continues.

Section 19: Offences by Government Agencies, local authorities or local councils

Where any contravention of this Act has been committed by any Government Agency, local authority or local council, and it is proved that such contravention has been committed with the consent or connivance of, or is attributable to any negligence on the part of, the Head or any other officer of the Government Agency, local authority

or local council, such Head or other officer shall also be deemed guilty of such contravention along with the Government Agency, local authority or local council and shall be liable to be proceeded against and punished accordingly.

Government may also constitute an Environmental Tribunal to hear cases when the cases relating to the Act. The tribunal may only hear cases when the compliant is made in writing by EPA or Local Council or any aggrieved person who has given at least thirty days notice to EPA of the offence and of his intention to make a complaint to the tribunal. The tribunal may also hear appeals from Agencies. Appeals from the tribunal shall go to the high court. In order to resolve the problem and issue related to environment, Environmental Tribunal 1999 has promulgated. In trying the offence, the Tribunal has to follow the Code of Criminal procedures 1898.

7.3 Consultation Process

Primary stakeholders were consulted during informal and formal meetings held in the project area and site as well. The consultation process was carried out in the Punjabi and Urdu languages. During these meetings a simple, non-technical, description of the project was given, with an overview of the project's likely human and environmental impact. This was followed by an open discussion allowing participants to voice their concerns and opinions. In addition to providing communities with information on the proposed project, their feedback was documented during the primary stakeholder consultation. The issues and suggestions raised were recorded in field notes for analysis, and interpretation.

Stake Holder Consultations in Process

By reaching out to a wider segment of the population and using various communication tools such as participatory needs assessment, community consultation meetings, focus group discussions, in-depth interviews, and participatory rural appraisal-IEE/EIA involved the community in active decision-making. This process will continue even after this EIA has been submitted, as well as during future EIAs in which similar tools will be used to create consensus among stakeholders on specific environmental and social issues in the Secondary stakeholder consultations were more formal as they involved government

representatives and local welfare organizations, NGO's consulted during face-to-face meetings and through telephonic conversations. They were briefed on the EIA process, the project design, and the potential negative and positive impact of the project on the area's environment and communities. It was important not to raise community expectations unnecessarily or unrealistically during the stakeholder consultation meetings in order to avoid undue conflict with community's leaders or local administrators. The issues recorded in the consultation process were examined, validated, and addressed in the EIA report.

7.3.1 Points Discussed

Following points were discussed during the public consultations:

- Project components, its activities and impacts.
- Needs, priorities and reactions of the affected population regarding the proposed Project.
- Grievances redress procedures.
- Entitlement checklist development for the affectees of the Project.
- Basis for determining the rates of the land, houses, and other infrastructures.
- Compensation framework for the Project affectees.

- Compensation criteria to be followed for the payment to the affectees.
- Role of the affectees in implementation of the project.

7.4 Stakeholder Consultation Technique

In recognition of the diversity of views within any community, it is very important to obtain a clear understanding of the different stakeholders and to analyze their capacity and willingness to be involved in some or all of the project and its planning process. It is important to be aware of how different power relations can distort participation. It is also important to examine how community skills, resources, and 'local knowledge' can be applied to improve project design and implementation. All of this can be achieved by careful use of the various tools of Stakeholder Consultation. Therefore, the following participatory techniques were employed during stakeholder consultations:

- Informal meetings with communities.
- Focus Groups with women participants in communities.

In the consultation process for EIA, following key stakeholders were consulted:

- Local communities,
- Men
- Women and
- Community's elders attended meetings.

Meetings with stakeholders consisted of community consultation meetings, focus group discussions, and in-depth interviews with men and limited focus-group discussions with women. The location of the meetings, the process followed, and the outcomes are discussed in this section.

Stakeholder Concerns and Recommendations

The findings of the Community consultations are given as followed. All these have been addressed in various sections of the EIA, and the mitigation plans have been incorporated into the EMP.

The summary of the various stakeholder consultations is given below.

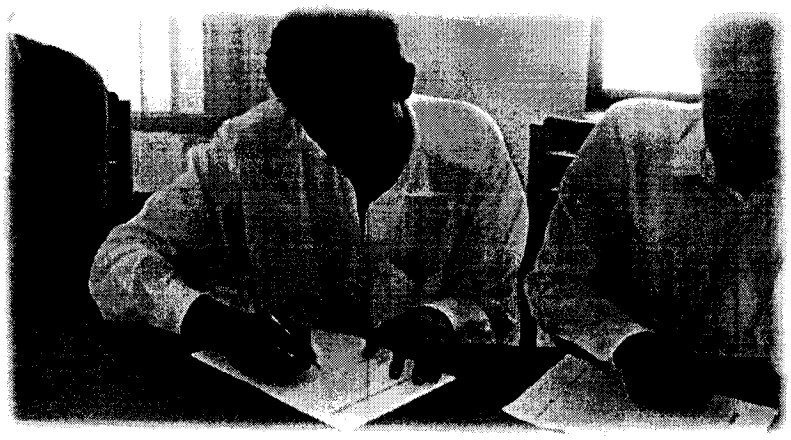
- The people foresee positive impacts like employment opportunities, business, development of the area etc.
- Study findings depict that the people of the study area perceive overall positive impacts as a result of textile unit sitting. Therefore, their attitude towards the project establishment is quite positive.
- As far as the EIA is concerned, positive social impacts are dominant over hardly conceived any negative social impacts observed during the study.
- The people have high expectations and hope from the project activity and its management.
- They correlate their positive attitude towards the project with many socio-economic opportunities and benefits.
- The people believe that the project in the area will open up vast employment opportunities which in turn follow a chain of indirect socio-economic benefits.
- They also perceive accelerated economic activity due to the business opportunities likely to emerge in the area. Directly or indirectly, hundreds of the local people will get employment and business from the project e.g., shopkeepers, traders, suppliers, contractors, transporters, technicians, etc.
- People foresee many socio-cultural and psychological positive

impacts on their lives and the community.

- They feel that the textile unit and its related activities will provide a strong base for social change.
- They reckon that invasion of the people and technology in the area will improve the quality of life of the people. It will also improve the level of general awareness of the people about different aspects of life.

Stakeholder Discussion

From the above facts one can conclude that many positive economic and social impacts will appear in the quality of the lives of the people of the Study Area due to distillery project. These positive impacts include improvement in female status, employment and business opportunities, infrastructure development, reducing rural urban migration, generating income resources and improving quality of life.



Stake Holders Views

7.5 Procedure for Redress of Grievances

Suggested procedures to be adopted for the redressal of the grievances are given below:

- Project affectee will submit his/her application to the Field Implementation Unit for consideration. Within 15 days of the receipt of the complaint, action will be taken up for redressal of the grievance. Wherever policy matters are involved, the case will be referred to the appropriate authority or committee appointed by the Project to decide the matter.
- In case some response on the complaint is not received within 15 days of the receipt of the complaint, the complainant may also send a reminder to within 15 days notice to take legal remedial measures.
- In case the matter has been decided but the complainant is not satisfied, he/she may go to the court of law.
- In case of such eventualities, all affected persons should be exempted from legal and administrative fees made/paid/incurred pursuant to the grievance redressal procedures.

- All complaints received in writing or written when received verbally will be properly recorded and documented.

7.6 Proposed Mechanism for Grievance Redress

Under the Project the following will be established or appointed to ensure timely and effective handling of grievances:

- A Public Complaints Unit (PCU), which will be responsible to receive, log, and resolve complaints; and,
- A Grievance Redress Committee (GRC), responsible to oversee the functioning of the PCU as well as the final non-judicial authority on resolving grievances that cannot be resolved by PCU;
- Grievance Focal Points (GFPs) having educated people from each community that can be approached by the community members for their grievances against the Project. The GFPs will be provided training by the Project in facilitating grievance redress.

Details of the proposed mechanism are given below.

7.6.1 PCU – Function and Structure

PCU will be set up as part of the environment, health and safety department of the Project. A senior official with experience in community and public liaison will lead the unit. Two assistants, one male and one female will be responsible for coordinating correspondence and preparing documentation work and will assist the senior official. The senior official will be responsible to review all documentation. The PCU will be responsible to receive, log, and resolve grievances. Given that the female community members have restricted mobility outside of their homes, the female PCU staff will be required to undertake visits to the local communities. The frequency of visits will depend on the nature and magnitude of activity in an area and the frequency of grievances.

7.6.2 GRC – Function and Structure

The GRC will function as an independent body that will regulate PCU and the grievance redress process. It will comprise of:

- Officials of environment, health and safety of the proposed Project.
- Senior engineer that is responsible to oversee the contractors, the Project at site.
- Two literate representatives from the communities residing near the project site;
- A representative of the local government. In case the local government elections take place, this could be the Naib-Nazim or Nazim (the district governor). If not, this would be the District Coordinating Officer (DCO) or an appointed representative;
- Senior member from the local civil society with experience in community relations;
- A female member from the local civil society.
- The GRC will meet once every three months to review the performance of the PCU; the frequency can be changed depending on the nature and frequency of grievances received. The performance will be gauged in terms of the effectiveness and the timeliness with which grievances were managed. In case there are any unresolved or pending issues, the GRC will deliberate on mechanisms to resolve those and come up with solutions acceptable to everyone.

7.6.3 Grievance Focal Points

The GFPs will be literate people from each community that will facilitate their community members in reporting grievances from the Project. The GFPs will be provided training by the Project in facilitating grievance

redress. Each community will have a male and female GFP appointed for this purpose.

7.6.4 Procedure of Filing and Resolving Grievances

Grievances will be logged and resolved in the following steps:

Step 1: Receive and Acknowledge Complaint

Once the PCU receives a complaint, which could be the complainant giving it in person, via letter or email, through phone call, or through a GFP, an acknowledgement of receipt of the complaint has to be sent within two working days to the complainant. The complainant will be issued a unique complaint tracking number for their and PCU's record.

Step 2: Investigation

PCU will work to understand the cause of the grievance for which the PCU may need to contact the complainant again and obtain details. The PCU will be required to complete preliminary investigations within five working days of receiving the complaint and send a response to the complainant documenting the results of their investigations and what the PCU plans to do ahead.

Step 3: Resolution through PCU

Once the PCU have investigated a grievance, it will share with the complainant the proposed course of action to resolve the complaint, should PCU believe any to be necessary. If the complainant considers the grievance to be satisfactorily resolved, the PCU will log the complaint as resolved in their records. In case the grievance remains unresolved it will be reassessed and GRC will have further dialogue with the complainant to discuss if there are any further steps, which may be taken to reach a mutually agreed resolution to the problem.

For minor grievances, Steps 1, 2 and 3 or Steps 2 and 3 can be merged.

Step 4: Resolution through GRC

In case the PCU is unable to resolve the issue, the matter will be referred to GRC. All complaints that could not be resolved within four weeks will by default be referred to GRC. However, the complainant or the PCU can convene the GRC at any point in time, depending on the nature and urgency of the issue.

7.6.5 Operating Principles for PCU

The PCU will operate on the principles of transparency, approachability and accountability. To achieve these, the PCU will be required to:

- Be equipped to handle grievances in the local languages;
- Be equipped to work through all possible modes of communication, such as, emails, surface mail and face-to-face meetings at project site or requiring visits;
- Employ female staff, preferably from the nearby communities, to oversee complaints and issues of the female community members.
- Maintain a log of all grievances, with record of the date and time of the complaint logged and stakeholder information, such as, name, designation and contact details;
- Provide opportunity to the stakeholder to revert with their comments on the proposed plan of action;
- Keep the stakeholder informed of the progress in grievance resolution;
- Obtain stakeholder consent on the mechanism proposed to redress the grievance and document consent; and,
- Maintain confidentiality of the stakeholder, if requested so.

7.6.6 Stages of Grievances

Once a grievance is logged with the PCU, it could acquire the following stages:

Stage 1: it is resolved by the PCU or if not PCU, by the GRC;

Stage 2: If the stakeholders are still not satisfied, they can go through local judicial proceedings.

7.6.7 Awareness

The stakeholders will be informed of the establishment of the PCU, GRC and GFPs through a short and intensive awareness campaign. Under the awareness campaign, the proponent will share:

- Objective, function and the responsibilities of the PCU, GRC and GFPs;
- Means of accessing the PCU and the mechanics of registering a grievance at the PCU,
- GRC and GFPs;
- Operating principles of the PCU, GRC and GFPs; and,
- Contact details.
- Additional awareness campaigns may be organized, if necessary

7.7 Community Concerns

Project Approval

The community consultations demonstrated that goodwill towards the project proponents indeed exists; approval for project activities by the communities was evident. The consultations were considered a good gesture and appreciated, especially by the men and women. This project will provide employments to the local as well as non local poor community in its construction as well as in operational stages.

Resettlement/ Relocation

The land is owned by M/S Madina Group of Industries. Therefore, no mater of resettlement/relocation is there.

Local Employment

Communities in the project area emphasized that local poor community will be given priority when employing people for various project-related works and activities according to their skills.

Interaction with Local Community

Non-Local work force coming in the project area that will not be aware of the local customs and norms, may result in conflicts with the local community, keeping in mind the sensitive law and order situation and culture of the area.

Impact on Livelihood

The communities also expressed some fear that project construction would disturb their living because of noise and vibration of constructional woks and due to vehicular movement. Another concern of local community is the road blockage and traffic problem in the surrounding areas of proposed project sites during construction.

7.8 Local Government Representatives

The consultations were considered a good gesture and appreciated. They also expressed the jobs and business opportunities for the local community will be increased due to project activities. They also expressed the concern that most of the unskilled and skill jobs should be reserved for the local communities.

SECTION - 8
EMERGENCY RESPONSE PLAN & EVACUATION/EXIT PLAN

8. Emergency Response Plan

8.1 Objective of Emergency Response Plan

Emergency preparedness helps to minimize the human suffering and economic losses that can result from emergencies. It should be understood that the size and density of projects, as well as their access and location, have a bearing on the degree of planning necessary for emergencies. It is therefore strongly recommended that the constructor ensure that a member of staff on site assist in developing the emergency response plan.

8.2 Scope of Emergency Response Plan

This plan assesses risk, assign role and responsibilities and give the major steps to be followed in any emergency situation. Its increases understandings of workers and officials in handling different emergency situations which may occur at project area.

8.3 Emergency Situations

Following emergencies may occur at workplaces:

- fire
- fuel spillage
- gas leaks
- explosions
- injury from machinery and equipment
- fall, climbing accident
- emergency as a result of environmental conditions (e.g., heat, cold, wet, snow, wind, lightning, bushfires, floods) emergencies requiring evacuation
- hazardous substances and chemical spills

- internal emergencies such as loss of power or water supply and structural collapse
- serious injury events or medical emergencies
- bomb threats
- civil disorder or criminal acts such as robberies and shootings

8.4 General Evacuation Procedure

It is not always necessary to evacuate a unit/plant during an emergency. A power outage, for instance, does not necessarily call for evacuation of a unit. The overall safety of the unit must first be evaluated: lighting, hazardous materials, ventilation systems, and other hazardous operations. If the unit can be safely occupied, evacuation is not necessary. In the case of evacuation the workers in the effected zone receive instructions from their supervisor or designated person. As per instruction the workers will immediately leave their places of duty and assemble at the assembly point.

- Area supervisor should roll call the employees to ensure all are out of danger zone.
- On receiving first information of emergency situation the administrative head should contact the Security Officer to ensure that alarm system is activated or not.
- After assessing the emergency situation Security Officer or designated person instruct through telephone to initiated the emergency response procedure and call the responsible personnel at site.
- Administrative Head may also call the external help like fire brigade, police, bomb disposal squad, ambulance etc. and communicate with them.

- Security Officer after consulting the Administrative Head may order the evacuation of workers from affected area.

If evacuation is ordered, follow these procedures:

- Stay calm, do not rush, and do not panic.
- Safely stop your work.
- Gather your personal belongings if it is safe to do so.
- If safe, close your door and window, but do not lock them.
- Use the nearest safe stairs and proceed to the nearest exit. Do not use the elevator.
- Wait for any instructions from emergency responders.
- Do not re-enter the building or work area until you have been instructed to do so by the emergency responders.

8.5 Fire Emergency Response Plan

In the case of fire emergency, following emergency response steps will be followed:

- When any employee notice fire or smoke he must immediately decide if the nature of fire is such that he could take action on his own or verbal call for help.
- If it is considered to be beyond the scope of individual control the alarm should be raised.
- The Security supervisor should immediately reach that area and simultaneously called for the emergency response procedures.
- After the alarm called for fire emergency all the members of fire squad should reach the affected area and take instruction of Fire Master.
- If fire reaches the raised alarm state the members are allowed to leave the area except one guard for the main gate to guide the external Fire Brigade helpers.

- Off-duty key personnel and security staff will also report immediately for duty.
- Equipments will be removed from the affected area.
- The nearest hospital should be informed for possible causalities.
- In addition of fire fighting, supervisor should ensure all the flammable articles are removed.

8.6 Special Fire Emergency Response and Fire-protection precautions

- **"Joint Code of Practice"** includes fire protection measurements and compliance with the regulations and requirements is to tackle with fire emergency in distillery.
- **Fire-Resistant Materials-** To ensure the stability of a distillery in the event of a fire, the supporting structure and ceilings must be resistant to fire. The characteristic "fire resistant" must be defined in the applicable standards. However, this means that the requirements to be met by fire resistant parts can easily differ from one country to the next, depending on the standards applied. The same holds true for the inspection procedures specified for verification.
- **Fire Compartments** Fire can also spread via the outer facade if windows have been shattered by the heat so it is perfectly appropriate to use fire resistant glazing, Partition walls, ceilings must be fire resistant and made of noncombustible materials.
- **Doorways** should at least be sealed with tightly closing, fire-retardant doors; any other openings required in the walls must be sealed in an equivalent manner.
- **Partition walls** in corridors should reach right up to the structural ceiling.

- **Smoke vents** must be installed at the top of all stairwells; internal stairwells must be equipped with a mechanical, automatically activated ventilation system connected to an emergency power supply. If a fire breaks out, excess pressure must be generated in the stairwells to prevent the ingress of smoke.
- **Ventilation and Air-Conditioning Systems**- Ventilation and air-conditioning systems must be installed in such a way that fire or smoke cannot be transmitted to stairwells and other floors or fire compartments.
- **Fire Fighting**- Fire extinguishers, fire-fighting water to every point on floor and an automatic sprinkler system is the most effective protective measure for fighting and controlling a fire.
- **Supportive Services**

  One electrician, one mechanic and four general workers (for salvage operations) will be arranged to ensure the necessary services to unaffected areas continue and removal of any equipment etc. which may be affected by the incident.

Table Fire Extinguishing Methods

Fire Class	Status of fire	Extinguishing Method	Type of Extinguisher to be used	Color Coding
A	Solid combustible material	Cooling	▪Dry chemical powder (DCP) ▪Water type ▪Halotron	▪Blue ▪Red ▪Green
B	Flammable Liquid	Cut off supply	▪ Foam ▪ Carbon dioxide CO_2 ▪ Dry chemical powder (DCP) ▪ Halotron	▪Yellow ▪Black ▪Blue ▪Green
C	Flammable/ Explosive gases	Cut off supply	▪Carbon Dioxide CO_2 ▪Dry Chemical ▪Dry Chemical powder (DCP)	▪Black ▪Blue ▪Green
D	Fire in Combustible Metal	Smothering & Starvation	Dry Chemical Powder (DCP)	Blue
E	Fire due to Electricity	Smothering & cut off supply	▪ Carbon dioxide (CO_2) ▪ Dry chemical powder (DCP) ▪ Halotron	▪Black ▪Blue ▪Green

Note: The place and number of the appropriate fire extinguisher will selected after a detailed site survey.

Fire Extinguisher Chart

Extinguisher		Type of Fire				
Colour	Type	Solids (wood, paper, cloth, etc)	Flammable Liquids	Flammable Gasses	Electrical Equipment	Cooking Oils & Fats
	Water	✓ Yes	✗ No	✗ No	✗ No	✗ No
	Foam	✓ Yes	✓ Yes	✗ No	✗ No	✓ Yes
	Dry Powder	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✗ No
	Carbon Dioxide (CO2)	✗ No	✓ Yes	✗ No	✓ Yes	✓ Yes

8.7 Chemical/ Fuels Spill Response

Risk Assessment

Conduct an initial risk assessment to determine whether site evacuation is required so to inform concerned personnel or if any external help is needed.

Clean-Up

- Contain the flow of spillage of the chemical by placing sand in the path.
- Ensure the spill area has adequate ventilation to clear gases or vapors generated during the neutralization process. If there is potential for gases to concentration in the area, leave a mark and inform the supervisor.
- Wear appropriate personal protection equipments such as gloves and glasses.

- Immediately try to help contain the spill at its source by simple measures only. This means quickly up righting a container, or putting a lid on a container, if possible. Do not use absorbents unless they are immediately available. Once you have made a quick attempt to contain the spill, or once you have quickly determined you cannot take any brief containment measures, leave the area and alert Emergency Responders. Closing doors behind you while leaving helps contain fumes from spills.
- Evaluate the area outside the spill. Engines and electrical equipment near the spill area must be turned off. This eliminates various sources of ignition in the area.
- Ensure the fellow workers are notified of the spillage.
- Inform Office and/or Security Officer/Supervisor should arrange the First aid and evacuation of the surrounding areas.

8.8 SOLID WASTE MANAGEMENT

Purpose of Plan

The purpose of Solid Waste Management Plan is to ensure that the solid waste should manage in such a way that it protect both public health and the environment. In present case, it will also help to increase the efficiency of work, increased production by sustainable waste management and resource management.

Objectives

The objectives of the plan are as follow:

- To improve the aesthetic status of the project area both during construction and its regular operation.
- To reuse and resource recovery in project activity.

Construction Phase Waste Management

Waste generated from construction activity includes construction debris, biomass from land clearing activities (if any), waste from the labor camp, and other waste.

The following part discusses management of each type of waste. Besides management of topsoil is an important area for which management measures are required. Construction debris is bulky and heavy and re-utilization and recycling is an important strategy for management of such waste.

- As concrete and masonry constitute the majority of waste generated, recycling of this waste by conversion to aggregate can offer benefits of reduced landfill space and reduced extraction of raw material for new construction activity.
- Recycled aggregate will be used for filler application, and as a sub-base for internal road construction. Mixed debris with high gypsum, plaster, shall not be used as fill, as they are highly susceptible to contamination, and will be given to recyclers.
- Construction contractors shall remove metal scrap from structural steel, piping, concrete reinforcement and sheet metal work from the site.
- A significant portion of wood scrap can be reused on site.
- Recyclable wastes such as plastics, glass fiber insulation, roofing etc shall be sold to recyclers.
- Construction sites are sources of many toxic substances, such as paints, solvents, wood preservatives, pesticides, adhesives and sealants. Such wastes generated during construction phase shall be stored in sealed containers, labeled, and disposed of as required under the legal requirements of the Hazardous Wastes Management regulations.

Operational Phase Waste Management

The philosophy of solid waste management at the M/S Madina Sugar Mill-Distillery Unit site will be to encourage the **4- R's** of waste i.e. waste reduction, reuse, recycling, and recovery (materials & energy). This will reduce in lesser reliance on land filling. Regular public awareness meetings will be conducted to involve the occupants and the employees to ensure proper segregation, storage and collection of waste as per the Municipal Solid Waste Rules. The Environmental Management Plan for the solid waste focuses on the Segregation, Storage at source and Collection of the waste management system.

- **Segregation and storage at source**

  Segregation of waste at source should be made mandatory for such unit as the present project. Segregation or sorting waste at its source will be practiced in order to encourage reuse/recycling. With segregation at source recyclables do not lose their commercial value due to cross contamination. Waste generated at the complex should be segregated as: bio degradable, inert cum mixed waste, recyclables and waste from changing oil. The entire waste stream from the unit should be stored and collected separately.

- **Collection**

  The Recyclables from the plant site would be given to the waste itinerant buyers or rag pickers, whereas segregated bio-degradable waste and inert cum mixed waste shall be sent to the nearest landfill site for processing and final disposal. Wastes, such as spent oils, paint residues etc. from the site would be collected separately and would be properly disposed off.

Solid Waste Disposal Options for the Project

Two Options are there for the Disposal of the solid waste for the present project:

Option - 1: Composting or Bio composting

The generated solid waste i.e. spent wash etc will be collected at the designated site within the distillery plant, sundry it and make the compost which is use full for the agricultural land. This may be used as fertilizer for agricultural land.

Option-2: Through a Contractor

A contractor will be hired, that will be responsible for collection, segregation, disposal etc. of the solid waste generated at the site. The contractor will provide a Certificate to the proponents of the clearance the site in terms of the solid waste collection and safe disposal.

SECTION - 9
CONCLUSION AND RECOMMENDATIONS

9. Conclusion and Recommendations

Based on the study conducted for Environmental Impact Assessment (EIA) of the project, the following recommendations are made:

- Plantation as far as permissible and within the scope of the project be carried out.
- Sustainable development approach through conservation of natural environment be followed.
- Environmental aspects of the project should be well taken care through implementation of the Environmental Management & Monitoring Plan as recommended in this report.
- The project management may adopt "cleaner and greener environment" as its motto and this will make the project more environment friendly.

On the basis of the findings of the EIA, it is concluded that the project will not pose any adverse impact on the local population and the environment. Therefore, it is recommended that the competent authority may please be issues Environmental Approval for the construction and operation of this project.