

ANNEXURES

Annexure 1: REA (Rapid Environmental Assessment (REA) checklist for urban development and water supply)

**Country/Project
Title:**

Balochistan Water Resources Development Sector Project

Environmental Checklist for Karkh irrigation subproject

| SCREENING QUESTIONS | Yes | No | REMARKS |
|---|-------------------------------------|-------------------------------------|---|
| A. Project Sitting | | | |
| Is the Project area adjacent to or within any of the following environmentally sensitive areas? | | | |
| Protected Area | | <input checked="" type="checkbox"/> | |
| Wetland ⁴³ | <input checked="" type="checkbox"/> | | Project design will provide measures to ensure the minimum flow required. |
| Mangrove | | <input checked="" type="checkbox"/> | |
| Estuarine | | <input checked="" type="checkbox"/> | |
| Buffer zone of protected area | | <input checked="" type="checkbox"/> | |
| Special area for protecting biodiversity | | <input checked="" type="checkbox"/> | |
| B. Potential Environmental Impacts | | | |
| Will the Project cause | | | |
| Loss of precious ecological values (e.g. Result of encroachment into forests/swamplands or historical/cultural buildings/areas, disruption of hydrology of natural waterways, regional flooding, and drainage hazards)? | <input checked="" type="checkbox"/> | | |
| Conflicts in water supply rights and related social conflicts? | <input checked="" type="checkbox"/> | | EMP will provide measures to avoid conflicts by adopting local and traditional water rights mechanism already exists in the area. |
| Impediments to movements of people and animals? | <input checked="" type="checkbox"/> | | Project design shall include facilities for easy access of people and animals. |
| Potential ecological problems due to increased soil erosion and siltation, leading to decreased stream capacity? | | <input checked="" type="checkbox"/> | |
| Insufficient drainage leading to salinity intrusion? | | <input checked="" type="checkbox"/> | |
| Over pumping of groundwater, leading to salinization and ground subsidence? | | <input checked="" type="checkbox"/> | |
| Impairment of downstream water quality | | <input checked="" type="checkbox"/> | |

⁴³ Mula River ends up in Hamal Lake is some 58 kms from Larkana in District Qambar Shahdadkot of Sindh Province. Which is a Wetland and any activity at upstream of the River can affect the health and performance of the wetland.

| SCREENING QUESTIONS | Yes | No | REMARKS |
|---|-------------------------------------|-------------------------------------|---|
| and therefore, impairment of downstream beneficial uses of water? | | | |
| Dislocation or involuntary resettlement of people? | | <input checked="" type="checkbox"/> | |
| Potential social conflicts arising from land tenure and land use issues? | <input checked="" type="checkbox"/> | | |
| Soil erosion before compaction and lining of canals? | <input checked="" type="checkbox"/> | | |
| Noise from construction equipment? | <input checked="" type="checkbox"/> | | Noise control measures to be specified in the emp. Impacts are transient. |
| Dust? | <input checked="" type="checkbox"/> | | Dust control measures to be specified in the emp. Impacts are transient. |
| Labor-related social problems especially if workers from different areas are hired? | <input checked="" type="checkbox"/> | | Control measures to be specified in the emp. Impacts are transient. |
| Waterlogging and soil salinization due to inadequate drainage and farm management? | <input checked="" type="checkbox"/> | | Project design shall ensure proper drainage design. |
| Leaching of soil nutrients and changes in soil characteristics due to excessive application of irrigation water? | | <input checked="" type="checkbox"/> | |
| Reduction of downstream water supply during peak seasons? | <input checked="" type="checkbox"/> | | |
| Soil pollution, polluted farm runoff and groundwater, and public health risks due to excessive application of fertilizers and pesticides? | <input checked="" type="checkbox"/> | | |
| Soil erosion (furrow, surface)? | <input checked="" type="checkbox"/> | | |
| Scouring of canals? | <input checked="" type="checkbox"/> | | |
| Logging of canals by sediments? | <input checked="" type="checkbox"/> | | |
| Clogging of canals by weeds? | <input checked="" type="checkbox"/> | | |
| Seawater intrusion into downstream freshwater systems? | | <input checked="" type="checkbox"/> | |
| Introduction of increase in incidence of waterborne or water related diseases? | <input checked="" type="checkbox"/> | | |

Annexure 2: Pakistan Environmental Protection Act (PEPA), 1997 and National Environmental Quality Standards (NEQS)

Pakistan Environmental Protection Act (PEPA), 1997

The Pakistan Environmental Protection Act 1997 was passed by the National Assembly of Pakistan on September 3, 1997, and by the Senate of Pakistan on November 7, 1997. The Act received the assent of the President of Pakistan on December 3, 1997.

The text of the Environmental Protection Act 1997 is as follows:

Act No. XXXIV of 1997

An Act to provide for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and promotion of sustainable development.

Whereas it is expedient to provide for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution, promotion of sustainable development and for matters connected therewith and incidental thereto; It is hereby enacted as follows:

1) Short Title, Extent and Commencement

- (1) This Act may be called the Environmental Protection Act 1997.
- (2) It extends to the whole of Pakistan.
- (3) It shall come into force at once.

2) Definitions

In this Act, unless there is anything repugnant in the subject or context:

(i) "adverse environmental effect" means impairment of, or damage to, the environment and includes:

- (a) impairment of, or damage to, human health and safety or to biodiversity or property;
- (b) pollution; and

(c) any adverse environmental effect as may be specified in the regulation.

(ii) "agricultural waste" means waste from farm and agricultural activities including poultry, cattle farming, animal husbandry, residues from the use of fertilizers, pesticides and other farm chemicals;

(iii) "air pollutant" means any substance that causes pollution of air and includes soot, smoke, dust particles, odor, light, electro-magnetic, radiation, heat, fumes, combustion exhaust, exhaust gases, noxious gases, hazardous substances and radioactive substances;

(iv) "biodiversity" or "biological diversity" means the variability among living organizations from all sources, including inter alia terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems;

(v) "**council**" means the Pakistan Environmental Protection Council established under section 3;

(vi) "**discharge**" means spilling, leaking, pumping, depositing, seeping, releasing, flowing out, pouring, emitting, emptying or dumping;

(vii) "**ecosystem**" means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit;

(viii) "**effluent**" means any material in solid, liquid or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapour;

(ix) "**emission standards**" means the permissible standards established by the Federal Agency or a Provincial Agency for emission of air pollutants and noise and for discharge of effluent and waste;

(x) "**environment**" means-

- (a) air, water and land;
- (b) all layers of the atmosphere;
- (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships;
- (e) buildings, structures, roads, facilities and works;
- (f) all social and economic conditions affecting community life; and
- (g) the inter-relationships between any of the factors in sub-clauses (a) to (f)

(xi) "**environmental impact assessment**" means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory and compensatory measures, formulation of environmental management and training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed;

(xii) "**Environmental Magistrate**" means the Magistrate of the First Class appointed under section 24;

(xiii) "**Environmental Tribunal**" means the Environmental Tribunal constituted under section 20;

(xiv) "**Exclusive Economic Zone**" shall have the same meaning as defined in the

Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976);

(xv) "**factory**" means any premises in which industrial activity is being undertaken;

(xvi) "**Federal Agency**" means the Pakistan Environmental Protection Agency established under section 5, or any Government Agency, local council or local authority exercising the powers and functions of the Federal Agency;

(xvii) "**Government Agency**" includes-

- (a) a division, department, attached department, bureau, section, commission, board, office or unit of the Federal Government or a Provincial Government;
- (b) a development or a local authority, company or corporation established or controlled by the Federal Government or Provincial Government;
- (c) a Provincial Environmental Protection Agency; and

(d) any other body defined and listed in the Rules of Business of the Federal Government or a Provincial Government;

(xviii) "hazardous substance" means-

- (a) a substance or mixture of substance, other than a pesticide as defined in the Agricultural Pesticide Ordinance, 1971 (II of 1971), which, by reason of its chemical activity is toxic, explosive, flammable, corrosive, radioactive or other characteristics causes, or is likely to cause, directly or in combination with other matters, an adverse environmental effect; and
- (b) any substance which may be prescribed as a hazardous substance;

(xix) "hazardous waste" means waste which is or which contains a hazardous substance or which may be prescribed as hazardous waste, and includes hospital waste and nuclear waste;

(xx) "historic waters" means such limits of the waters adjacent to the land territory of Pakistan as may be specified by notification under section 7 of the Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976);

(xxi) "hospital waste" includes waste medical supplies and materials of all kinds, and waste blood, tissue, organs and other parts of the human and animal bodies, from hospitals, clinics and laboratories;

(xxii) "industrial activity" means any operation or process for manufacturing, making, formulating, synthesizing, altering, repairing, ornamenting, finishing, packing or otherwise treating any article or substance with a view to its use, sale, transport, delivery or disposal, or for mining, for oil and gas exploration and development, or for pumping water or sewage, or for generating, transforming or transmitting power or for any other industrial or commercial purpose;

(xxiii) "industrial waste" means waste resulting from an industrial activity;

(xxiv) "initial environmental examination" means a preliminary environmental review of the reasonably foreseeable qualitative and quantitative impacts on the environment of a proposed project to determine whether it is likely to cause an environmental effect for requiring preparation of an environmental impact assessment;

(xxv) "local authority" means any agency set-up or designated by the Federal Government or a Provincial Government by notification in the official Gazette to be a local authority for the purposes of this Act;

(xxvi) "local council" means a local council constituted or established under a law relating to local government;

(xxvii) "motor vehicle" means any mechanically propelled vehicle adapted for use upon land whether its power of propulsion is transmitted thereto from an external or internal source, and includes a chassis to which a body has not been attached, and a trailer, but does not include a vehicle running upon fixed rails;

(xxviii) "municipal waste" includes sewage, refuse, garbage, waste from abattoirs, sludge and human excreta and the like;

(xxix) "National Environmental Quality Standards" means standards established by the Federal Agency under clause (e) of sub-section (1) of section 6 and approved by the Council under clause (c) of sub-section (1) of section 4;

(xxx) "**noise**" means the intensity, duration and character from all sources, and includes vibrations;

(xxxi) "**nuclear waste**" means waste from any nuclear reactor or nuclear or other nuclear energy system, whether or not such waste is radioactive;

(xxxii) "**person**" means any natural person or legal entity and includes an individual, firm, association, partnership, society, group, company, corporation, co-operative society, Government Agency, non-governmental organization, community-based organization, village organization, local council or local authority and, in the case of a vessel, the master or other person having for the time being the charge or control of the vessel;

(xxxiii) "**pollution**" means the contamination of air, land or water by the discharge or emission or effluents or wastes or air pollutants or noise or other matter which either directly or indirectly or in combination with other discharges or substances alters unfavourably the chemical, physical, biological, radiational, thermal or radiological or aesthetic properties of the air, land or water or which may, or is likely to make the air, land or water unclean, noxious or impure or injurious, disagreeable or detrimental to the health, safety, welfare or property of persons or harmful to biodiversity;

(xxxiv) "**prescribed**" means prescribed by rules made under this Act;

(xxxv) "**project**" means any activity, plan, scheme, proposal or undertaking involving any change in the environment and includes;

- (a) construction or use of buildings or other works;
- (b) construction or use of roads or other transport systems;
- (c) construction or operation of factories or other installations;
- (d) mineral prospecting, mining, quarrying, stone-crushing, drilling and the like; (e) any change of land use or water use; and
- (f) alteration, expansion, repair, decommissioning or abandonment of existing buildings or other works, roads or other transport systems; factories or other installations;

(xxxvi) "**proponent**" means the person who proposes or intends to undertake a project;

(xxxvii) "**Provincial Agency**" means a Provincial Environmental Protection Agency established under section 8;

(xxxviii) "**regulations**" means regulations made under this Act;

(xxxix) "**rules**" means rules made under this Act;

(xl) "**sewage**" means liquid or semi-solid wastes and sludge from sanitary conveniences, kitchens, laundries, washing and similar activities and from any sewerage system or sewage disposal works;

(xli) "**standards**" means qualitative and quantitative standards for discharge of effluents and wastes and for emission of air pollutants and noise either for general applicability or for a particular area, or from a particular production process, or for a particular product, and includes the National Environmental Quality Standards, emission standards and other standards established under this Act and the rules and regulations made thereunder;

(xlii) "**sustainable development**" means development that meets the needs of the present generation without compromising the ability of future generations to meet their needs;

(xliii) **"territorial waters"** shall have the same meaning as defined in the Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976);

(xliv) **"vessel"** includes anything made for the conveyance by water of human beings or of goods; and

(xlv) **"waste"** means any substance or object which has been, is being or is intended to be, discarded or disposed of, and includes liquid waste, solid waste, waste gases, suspended waste, industrial waste, agricultural waste, nuclear waste, municipal waste, hospital waste, used polyethylene bags and residues from the incineration of all types of waste.

3) Establishment of the Pakistan Environmental Protection Council-

(1) The Federal Government shall, by notification in the official Gazette, establish a Council to be known as the Pakistan Environmental Protection Council consisting of;

(i) Prime Minister or such other person as the Prime **Chairperson**

Minister may nominate in this behalf.

(ii) Minister Incharge of the Ministry or Division **Vice Chairperson**
dealing with the subject of environment.

(iii) Chief Ministers of the Provinces. **Members**

(iv) Ministers Incharge of the subject of environment in the provinces. **Members**

(v) Such other persons not exceeding thirty-five as the Federal **Members**
Government may appoint, of which at least twenty shall be non-official including five representatives of the Chambers of Commerce and Industry and Industrial Associations and one or more representatives of the Chambers of Agriculture, the medical and legal professions, trade unions, and non-governmental organizations concerned with the environment and development, and scientists, technical experts and educationists.

(vi) Secretary to the Government of Pakistan, in-charge of **Member/Secretary**
the Ministry or Division dealing with the subject of environment

(2) The Members of the Council, other than ex-officio members, shall be appointed in accordance with the prescribed procedure and shall hold office for a term of three years.

(3) The Council shall frame its own rules of procedure.

(4) The Council shall hold meetings as and when necessary, but not less than two meetings shall be held in a year.

(5) The Council may constitute committees of its members and entrust them with such functions as it may deem fit, and the recommendations of the committees shall be submitted to the Council for approval.

(6) The Council or any of its committees may invite any technical expert or representative of any Government Agency or non-governmental organization or other person possessing specialized knowledge of any subject for assistance in performance of its functions.

4) Function and Powers of the Council

(1) The Council shall-

(a) co-ordinate and supervise enforcement of the provisions of this Act;

(b) approve comprehensive national environmental policies and ensure their implementation within the framework of a national conservation strategy as may be approved by the Federal Government from time to time;

(c) approve the National Environmental Quality Standards;

(d) provide guidelines for the protection and conservation of species, habitats, and biodiversity in general, and for the conservation of renewable and non-renewable resources;

(e) coordinate integration of the principles and concerns of sustainable development into national development plans and policies; and

(f) consider the National Environment Report and give appropriate directions thereon.

(2) The Council may, either itself or on the request of any person or organization, direct the Federal Agency or any Government Agency to prepare, submit, promote or implement projects for the protection, conservation, rehabilitation and improvement of the environment, the prevention and control of pollution, and the sustainable development of resources, or to undertake research in any specified aspect of environment.

5) Establishment of the Pakistan Environmental Protection Agency

(1) The Federal Government shall, by notification in the official Gazette, establish the Pakistan Environmental Protection Agency, to exercise the powers and perform the functions assigned to it under the provisions of this Act and the rules and regulations made thereunder.

(2) The Federal Agency shall be headed by a Director General, who shall be appointed by the

Federal Government on such terms and conditions as it may determine.

(3) The Federal Agency shall have such administrative, technical and legal staff as the Federal Government may specify, to be appointed in accordance with such procedure as may be prescribed.

(4) The powers and function of the Federal Agency shall be exercised and performed by the Director General.

(5) The Director General may, by general or special order, delegate any of these powers and functions to staff appointed under sub-section (3)

(6) For assisting the Federal Agency in the discharge of its functions, the Federal Government shall establish Advisory Committees for various sectors, and appoint as members thereof eminent representatives of the relevant sector, educational institutions, research institutes and non-governmental organizations.

6) Functions of the Federal Agency

(1) The Federal Agency shall-

- (a) administer and implement the provisions of this Act and the rules and regulations made thereunder;
- (b) prepare, in coordination with the appropriate Government Agency and in consultation with the concerned sectoral Advisory Committees, national environmental policies for approval by the Council;
- (c) take all necessary measures for the implementation of the national environmental policies approved by the Council;
- (d) prepare and publish an annual National Environment Report on the state of the environment;
- (e) prepare or revise, and establish the National Environment Quality Standards with approval of the Council; Provided that before seeking approval of the Council, the Federal Agency shall publish the proposed National Environmental Quality Standards for public opinion in accordance with the prescribed procedure;
- (f) ensure enforcement of the National Environmental Quality Standards;
- (g) establish standards for the quality of the ambient air, water and land, by notification in the official Gazette, in consultation with the Provincial Agency concerned; Provided that
 - (i) different standards for discharge or emission from different sources and for different areas and conditions may be specified;
 - (ii) where standards are less stringent than the National Environmental Quality Standards, prior approval of the Council shall be obtained;
 - (iii) certain areas, with the approval of the Council, may exclude from carrying out specific activities, projects from the application of such standards;
- (h) co-ordinate environmental policies and programmes nationally and internationally;
- (i) establish systems and procedures for surveys, surveillance, monitoring, measurement, examination, investigation, research, inspection and audit to prevent and control pollution, and to estimate the costs of cleaning up pollution and rehabilitating the environment in various sectors;
- (j) take measures to promote research and the development of science and technology which may contribute to the prevention of pollution, protection of the environment, and sustainable development;
- (k) certify one or more laboratories as approved laboratories for conducting tests and analysis and one or more research institutes as environmental research institutes for conducting research and investigation, for the purposes of this Act;
- (l) identify the needs for, and initiate legislation in various sectors of the environment;
- (m) render advice and assistance in environmental matters, including such information and data available with it as may be required for carrying out the purposes of this Act; Provided that the disclosure of such information shall be subject to the restrictions contained in the proviso to sub-section (3) of section 12;
- (n) assist the local councils, local authorities, Government Agencies and other persons to implement schemes for the proper disposal of wastes so as to ensure compliance with the standards established by it;
- (o) provide information and guidance to the public on environmental matters;
- (p) recommend environmental courses, topics, literature and books for incorporation in the curricula and syllabi of educational institutions;
- (q) promote public education and awareness of environmental issues through mass media and other means, including seminars and workshops;

- (r) specify safeguards for the prevention of accidents and disasters which may cause pollution, collaborate with the concerned person in the preparation of contingency plans for control of such accidents and disasters, and co-ordinate implementation of such plans;
- (s) encourage the formation and working of non-governmental organizations, community organizations and village organizations to prevent and control pollution and promote sustainable development;
- (t) take or cause to be taken all necessary measures for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution and promotion of sustainable development; and
- (u) perform any function which the Council may assign to it.

(2) The Federal Agency may-

- (a) undertake inquiries or investigation into environmental issues, either of its own accord or upon complaint from any person or organization;
- (b) request any person to furnish any information or data relevant to its functions;
- (c) initiate with the approval of the Federal Government, requests for foreign assistance in support of the purposes of this Act and enter into arrangements with foreign agencies or organizations for the exchange of material or information and participate in international seminars or meetings;
- (d) recommend to the Federal Government the adoption of financial and fiscal programmes, schemes or measures for achieving environmental objectives and goals and the purposes of this Act, including:
 - (i) incentives, prizes, awards, subsidies, tax exemptions, rebates and depreciation allowances; and
 - (ii) taxes, duties, cesses and other levies;
- (e) establish and maintain laboratories to help in the performance of its functions under this Act and to conduct research in various aspects of the environment and provide or arrange necessary assistance for establishment of similar laboratories in the private sector; and
- (f) provide or arrange, in accordance with such procedures as may be prescribed, financial assistance for projects designed to facilitate the discharge of its functions.

7) Powers of the Federal Agency

Subject to the provisions of this Act, the Federal Agency may-

- (a) lease, purchase, acquire, own, hold, improve, use or otherwise deal in and with any property both movable and immovable;
- (b) sell, convey, mortgage, pledge, exchange or otherwise dispose of its property and assets;
- (c) fix and realize fees, rates and charges for rendering any service or providing any facility, information or data under this Act or the rules and regulations made thereunder;
- (d) enter into contracts, execute instruments, incur liabilities and do all acts or things necessary for proper management and conduct of its business;
- (e) appoint with the approval of the Federal Government and in accordance with such procedures as may be prescribed, such advisers, experts and consultants as it considers necessary for the efficient performance of its functions on such terms and conditions as it may deem fit;

- (f) summon and enforce the attendance of any person and require him to supply any information or document needed for the conduct of any enquiry or investigation into any environmental issue;
- (g) enter and inspect and under the authority of a search warrant issued by the Environmental Tribunal or Environmental Magistrate, search at any reasonable time, any land, building, premises, vehicle or vessel or other place where or in which, there are reasonable grounds to believe that an offence under this Act has been or is being committed;
- (h) take samples of any materials, products, articles or substances or of the effluents, wastes or air pollutants being discharged or emitted or of air, water or land in the vicinity of the discharge or emission;
- (i) arrange for test and analysis of the samples at a certified laboratory;
- (j) confiscate any article used in the commission of the offence where the offender is not known or cannot be found within a reasonable time:
Provided that the power under clauses (f), (h), (i) and (j) shall be exercised in accordance with the provisions of the Code of Criminal Procedure, 1898 (Act V of 1898), or the rules made under this Act and under the direction of the Environmental Tribunal or Environmental Magistrate; and
- (k) establish a National Environmental Coordination Committee comprising the Director-General as its chairman and the Director-Generals of the Provincial Environmental Protection Agencies and such other persons as the Federal Government may appoint as its members to exercise such powers and perform such functions as may be delegated or assigned to it by the Federal Government for carrying out the purposes of this Act and for ensuring inter-provincial co-ordination in environmental policies;

8) Establishment, Powers and Functions of the Provincial Environmental Protection Agencies

(1) Every Provincial Government shall, by notification in the official Gazette, establish an Environmental Protection Agency, to exercise such powers and perform such functions as may be delegated to it by the Provincial Government under sub-section (2) of section 26.

(2) The Provincial Agency shall be headed by a Director-General who shall be appointed by the

Provincial Government on such terms and conditions as it may determine.

(3) The Provincial Agency shall have such administrative, technical and legal staff as the Provincial Government may specify, to be appointed in accordance with such procedure as may be prescribed.

(4) The powers and functions of the Provincial Agency shall be exercised and performed by the

Director-General.

(5) The Director-General may, by general or special order, delegate any of these powers and functions to staff appointed under sub-section (3).

(6) For assistance of the Provincial Agency in the discharge of its functions, the Provincial Government shall establish sectoral Advisory Committees for various sectors and appoint members from amongst eminent representatives of the relevant sector, educational institutions, research institutes and non-governmental organizations.

9) Establishment of the Provincial Sustainable Development Funds

- (1) There shall be established in each Province a Sustainable Development Fund.
- (2) The Provincial Sustainable Development Fund shall be derived from the following sources, namely;
- (a) grants made or loans advanced by the Federal Government or the Provincial Governments;
 - (b) aid and assistance, grants, advances, donations and other non-obligatory funds received from foreign governments, national or international agencies, and non-governmental organizations; and
 - (c) contributions from private organizations, and other persons.
- (3) The Provincial Sustainable Development Fund shall be utilized in accordance with such procedure as may be prescribed for:
- (a) providing financial assistance to the projects designed for the protection, conservation, rehabilitation and improvement of the environment, the prevention and control of pollution, the sustainable development of resources and for research in any specified aspect of environment; and
 - (b) any other purpose which in the opinion of the Board will help achieve environmental objectives and the purpose of this Act.

10) Management of the Provincial Sustainable Development Fund

- (1) The Provincial Sustainable Development Fund shall be managed by a Board known as the Provincial Sustainable Development Fund Board consisting of:

- i) Chairman, Planning and Development Board/Additional** **Chairperson**
Chief Secretary Planning and Development Department.
- (ii) such officers of the Provincial Governments not exceeding** **Members**
six as the Provincial Government may appoint, including Secretaries in charge of the Finance, Industries and Environment Departments.
- (iii) such non-official persons not exceeding ten as the Provincial** **Members**
Government may appoint including representatives of the Provincial Chamber of Commerce and Industry, non-governmental organizations, and major donors.
- (iv) Director-General of the Provincial Agency.** **Member/Secretary**

- (2) In accordance with such procedure and such criteria as may be prescribed, the Board shall have the power to:
- (a) sanction financial assistance for eligible projects;
 - (b) invest moneys held in the Provincial Sustainable Development Fund in such profit-bearing Government bonds, savings schemes and securities as it may deem suitable; and
 - (c) take such measures and exercise such powers as may be necessary for utilization of the Provincial Sustainable Development Fund for the purposes specified in sub-section (3) of section 9.
- (3) The Board shall constitute committees of its members to undertake regular monitoring of project financed from the Provincial Sustainable Development Fund and to submit progress

reports to the Board which shall publish an Annual Report incorporating its annual audited accounts, and performance evaluation based on the progress reports.

11) Prohibition of Certain Discharges or Emissions

(1) Subject to the provisions of this Act and the rules and regulations made thereunder 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 Federal Government 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.

12) Initial Environmental Examination and Environmental Impact Assessment

(1) No proponent of a project shall commence construction or operation unless he has filed with the Federal Agency an initial environmental examination or, where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained from the Federal Agency approval in respect thereof.

(2) The Federal Agency shall;

(a) review the initial environmental examination and accord its approval, or require submission of an environmental impact assessment by the proponent; or

(b) review the environmental impact assessment and accord its approval subject to such conditions as it may deem fit to impose or require that the environmental impact assessment be re-submitted after such modifications as may be stipulated, or reject the project as being contrary to environmental objectives.

(3) Every review of an environmental impact assessment shall be carried out with public participation and no information will be disclosed during the course of such public participation which relates to:

(i) trade, manufacturing or business activities, processes or techniques of a proprietary nature, or financial, commercial, scientific or technical matters which the proponent has requested should remain confidential, unless for reasons to be recorded in writing, the Director-General of the Federal Agency is of the opinion that the request for confidentiality is not well-founded or the public interest in the disclosure outweighs the possible prejudice to the competitive position of the project or its proponent; or

(ii) international relations, national security or maintenance of law and order, except with the consent of the Federal Government; or

(iii) matters covered by legal professional privilege.

(4) The Federal Agency shall communicate its approval or otherwise within a period of four months from the date the initial environmental examination or environmental impact assessment is filed complete in all respects in accordance with the prescribed procedure, failing which the initial environmental examination or, as the case may be, the environmental impact assessment shall be deemed to have been approved, to the extent to which it does not contravene the provisions of this Act and the rules and regulations made thereunder.

(5) Subject to sub-section (4) the Federal Government may in a particular case extend the aforementioned period of four months if the nature of the project so warrants.

(6) The provisions of sub-section (1), (2), (3), (4) and (5) shall apply to such categories of projects and in such manner as may be prescribed.

(7) The Federal Agency shall maintain separate Registers for initial environmental examination and environmental impact assessment projects, which shall contain brief particulars of each project and a summary of decisions taken thereon, and which shall be open to inspection by the public at all reasonable hours and the disclosure of information in such Registers shall be subject to the restrictions specified in sub-section (3).

13) Prohibition of Import of Hazardous Waste

No person shall import hazardous waste into Pakistan and its territorial waters, Exclusive Economic Zone and historic waters.

14) Handling of Hazardous Substances

Subject to the provisions of this Act, no person shall generate, collect, consign, transport, treat, dispose of, store, handle or import any hazardous substance except;

(a) under a licence issued by the Federal Agency and in such manner as may be prescribed;

or

(b) in accordance with the provisions of any other law for the time being in force, or of any international treaty, convention, protocol, code, standard, agreement or other instrument to which Pakistan is a party.

15) Regulation of Motor Vehicles

(1) Subject to the provisions of this Act and the rules and regulations made thereunder, no person shall operate a motor vehicle from which air pollutants or noise are being emitted in an amount, concentration or level which is in excess of the National Environmental Quality Standards, or where applicable the standards established under clause (g) of sub-section (1) of section 6.

(2) For ensuring compliance with the standards mentioned in sub-section (1), the Federal Agency may direct that any motor vehicle or class of vehicles shall install such pollution control devices or other equipment or use such fuels or undergo such maintenance or testing as may be prescribed.

(3) Where a direction has been issued by the Federal Agency under sub-section (2) in respect of any motor vehicles or class of motor vehicles, no person shall operate any such vehicle till such direction has been complied with.

16) Environmental Protection Order

(1) Where the Federal Agency or a 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 licence, and is likely to cause, or is causing or has caused an adverse environmental effect, the Federal Agency or, as the case may be, 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 Federal Agency or 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 or 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 Federal Agency or Provincial Agency.

(3) Where the person, to whom directions under sub-section (1) are given, does not comply therewith, the Federal Agency or Provincial Agency may, in addition to the proceeding initiated against him under this Act or the rules and regulations, itself take or cause to be taken such measures specified in the order as it may deem necessary, and may recover the costs of taking such measures from such person as arrears of land revenue.

17) Penalties

(1) Whoever contravenes or fails to comply with the provisions of section 11, 12, 13, or section

16 or any order issued thereunder 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 and where 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 licence, any order or direction issued by the Council or by the Federal Agency or 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.

(3) Where an accused has been convicted of an offence under sub-section (1) and (2), the Environmental Tribunal and Environmental Magistrate shall, in passing sentence, take into account the extent and duration of the contravention or failure constituting the offence, and the attendant circumstances.

(4) Where an accused has been convicted of an offence under sub-section (1) and the Environmental Tribunal is satisfied that as a result of the commission of the offence monetary

benefits have accrued to the offender, the Environmental Tribunal may order the offender to pay, in addition to the fines under sub-section (1), further additional fine commensurate with the amount of the monetary benefits.

(5) Where a person convicted under sub-section (1) or sub-section (2), and had been previously convicted for any contravention under this act, the Environmental Tribunal or, as the case may be, Environmental Magistrate may, in addition to the punishment awarded thereunder:

(a) endorse a copy of the order of conviction to the concerned trade or industrial association, if any, or the concerned Provincial Chamber of Commerce and Industry or the Federation of Pakistan Chambers of Commerce and Industry;

(b) sentence him to imprisonment for a term which may extend upto two years; (c) order the closure of the factory;

(d) order confiscation of the factory, machinery, and equipment, vehicle, material or substance, record or document or other object used or involved in contravention of the provisions of the Act; Provided that for a period of three years from the date of commencement of this Act the sentence of imprisonment shall be passed only in respect of persons who have been previously convicted for more than once for any contravention of sections 11, 13, 14 or 16 involving hazardous waste.

(e) order, such person to restore the environment at his own cost, to the conditions existing prior to such contravention or as close to such conditions as may be reasonable in the circumstances to the satisfaction of the Federal Agency or, as the case may be, Provincial Agency; and

(f) order that such sum be paid to any person as compensation for any loss, bodily injury, damage to his health or property suffered by such contravention.

(6) The Director-General of the Federal Agency or of a Provincial Agency or an officer generally or specially authorized by him in this behalf may, on the application of the accused compound an offence under this Act with the permission of the Environmental Tribunal or Environmental Magistrate in accordance with such procedure as may be prescribed.

(7) Where the Director-General of the Federal Agency or of a Provincial Agency is of the opinion that a person has contravened any provision of this Act, he may, subject to the rules, by notice in writing to that person require him to pay to the Federal Agency or, as the case may be, Provincial Agency an administrative penalty in the amount set out in the notice for each day the contravention continues; and a person who pays an administrative penalty for a contravention shall not be charged under this Act with an offence in respect of such contravention.

(8) The provisions of sub-sections (6) and (7) shall not apply to a person who has been previously convicted of offence or who has compounded an offence under this Act or who has paid an administrative penalty for a contravention of any provision of the is Act.

18) Offences by Bodies Corporate

Where any contravention of this Act has been committed by a body corporate, and it is proved that such offence has been committed with the consent or connivance or, is attributed to any negligence on the part of, any director, partner, manager, secretary or other officer of the body corporate, such director, partner, manager, secretary or other officer of the body corporate, shall be deemed guilty of such contravention along with the body corporate and shall be punished accordingly:

Provided that in the case of a company as defined under the Companies Ordinance, 1984 (XLVII of 1984), only the Chief Executive as defined in the said Ordinance shall be liable under this section.

Explanation:

For the purpose of this section, "body corporate" includes a firm, association of persons and a society registered under the Societies Registration Act, 1860 (XXI of 1860), or under the Co-operative Societies Act, 1925 (VII of 1925).

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 alongwith the Government Agency, local authority or local council and shall be liable to be proceeded against and punished accordingly.

20) Environmental Tribunals

(1) The Federal Government may, by notification in the official Gazette, establish as many Environmental Tribunals as it considers necessary and, where it establishes more than one Environmental Tribunal, it shall specify territorial limits within which, or the class of cases in respect of which, each one of them shall exercise jurisdiction under this Act.

(2) An Environmental Tribunal shall consist of a Chairperson who is, or has been, or is qualified for appointment as, a Judge of the High Court to be appointed after consultation with the Chief Justice of the High Court and two members to be appointed by the Federal Government of which at least one shall be a technical member with suitable professional qualifications and experience in the environmental field as may be prescribed.

(3) For every sitting of the Environmental Tribunal, the presence of the Chairperson and not less than one Member shall be necessary.

(4) A decision of an Environmental Tribunal shall be expressed in terms of the opinion of the majority of its members, including the Chairperson, or if the case has been decided by the Chairperson and only one of the members and there is a difference of opinion between them, the decision of the Environmental Tribunal shall be expressed in terms of the opinion of the chairperson.

(5) An Environmental Tribunal shall not, merely by reason of a change in its composition, or the absence of any member from any sitting, be bound to recall and rehear any witness who has given evidence, and may act on the evidence already recorded by, or produced, before it.

(6) An Environmental Tribunal may hold its sittings at such places within its territorial jurisdiction as the Chairperson may decide.

(7) No act or proceeding of an Environmental Tribunal shall be invalid by reason only of the existence of a vacancy in, or defect in the constitution of, the Environmental Tribunal.

(8) The terms and conditions of service of the Chairperson and members of the Environmental

Tribunal shall be such as may be prescribed.

21) Jurisdiction and Powers of Environmental Tribunals

(1) An Environmental Tribunal shall exercise such powers and perform such functions as are, or may be, conferred upon or assigned to it by or under this Act, or the rules and regulations made thereunder.

(2) All contravention punishable under sub-section (1) of section 17 shall exclusively be triable by an Environmental Tribunal.

(3) An Environmental Tribunal shall not take cognizance of any offence triable under sub-section (2) except on a complaint in writing by:

(a) the Federal Agency or any Government Agency or local council; and

(b) any aggrieved person, who has given notice of not less than thirty days to the Federal Agency or the Provincial Agency concerned of the alleged contravention and of his intention to make a complaint to the Environmental Tribunal.

(4) In exercise of its criminal jurisdiction, the Environmental Tribunal shall have the same powers as are vested in the Court of Session under the Code of Criminal Procedure, 1898 (Act V of 1898).

(5) In exercise of the appellate jurisdiction under section 22 the Environmental Tribunal shall have the same powers and shall follow the same procedure as an appellate court in the Code of Civil Procedure, 1908 (Act V of 1908).

(6) In all matters with respect to which no procedure has been provided for in this Act, the

Environmental Tribunal shall follow the procedure laid down in the Code of Civil Procedure, 1908 (Act V of 1908).

(7) An Environmental Tribunal may, on application filed by any officer duly authorized in this behalf by the Director-General of the Federal Agency or Provincial Agency, issue bailable warrant for the arrest of any person against whom reasonable suspicion exists of his having been involved in contravention punishable under sub-section (1) of section 17:

Provided that such warrant shall be applied for, issued, and executed in accordance with the provisions of the Code of Criminal Procedure, 1898 (Act V of 1898):

Provided further that if the person arrested executes a bond with sufficient sureties in accordance with the endorsement on the warrant, he shall be released from custody, failing which he shall be taken or sent without delay to the officer-in-charge of the nearest police station.

(8) All proceedings before the Environmental Tribunal shall be deemed to be judicial proceedings within the meaning of sections 193 and 228 of the Pakistan Penal Code (Act XLV of 1860), and the Environmental Tribunal shall be deemed to be a court for the purposes of sections 480 and 482 of the Code of Criminal Procedure, 1898 (Act V of 1898).

(9) No court other than an Environmental Tribunal shall have or exercise any jurisdiction with respect to any matter to which the jurisdiction of an Environmental Tribunal extends under this Act or the rules and regulations made thereunder.

(10) Where the Environmental Tribunal is satisfied that a complaint made to it under sub-section (3) is false and vexatious to the knowledge of the complainant, it may, by an order, direct the complainant to pay to the person complained against such compensatory costs which may extend to one hundred thousand rupees.

22) Appeals to the Environmental Tribunal

(1) Any person aggrieved by any order or direction of the Federal Agency or any Provincial Agency under any provision of this Act and rules or regulations made thereunder may prefer an appeal with the Environmental Tribunal within thirty days of the date of communication of the impugned order or direction to such person.

(2) An appeal to the Environmental Tribunal shall be in such form, contain such particulars and be accompanied by such fees as may be prescribed.

23) Appeals from Orders of the Environmental Tribunal

(1) Any person aggrieved by any final order or by any sentence of the Environmental Tribunal passed under this Act may, within thirty days of communication of such order or sentence, prefer an appeal to the High Court.

(2) An appeal under sub-section (1) shall be heard by a Bench of not less than two Judges.

24) Jurisdiction of Environmental Magistrates

(1) Notwithstanding anything contained in the Code of Criminal Procedure, 1898 (Act V of

1898), or any other law for the time being in force, but subject to the provisions of this Act, all contraventions punishable under sub-section (2) of section 17 shall exclusively be triable by a judicial Magistrate of the first class as Environmental Magistrate especially empowered in this behalf by the High Court.

(2) An environmental Magistrate shall be competent to impose any punishment specified in sub-section (2) and (4) of section 17.

(3) An Environmental Magistrate shall not take cognizance of an offence triable under sub-section (1) except on a complaint in writing by:

(a) the Federal Agency, Provincial Agency, or Government Agency or local council; and

(b) any aggrieved person.

25) Appeals from Orders of Environmental Magistrates

Any person convicted of any contravention of this Act or the rules or regulations by an Environmental Magistrate may, within thirty days from the date of his conviction, appeal to the Court of Sessions, whose decision thereon shall be final.

26) Power to Delegate

(1) The Federal Government may, by notification in the official Gazette, delegate any of its or of the Federal Agency's powers and functions under this Act and the rules and regulations made thereunder to any Provincial Government, any Government Agency, local council or local authority.

(2) The Provincial Government may, by notification in the official Gazette, delegate any of its or of the Provincial Agency's powers or functions under this Act and the rules and regulations made thereunder to any Government Agency of such Provincial Government or any local council or local authority in the Province.

27) Power to give Directions

In the performance of their function under this Act:

(a) the Federal Agency and Provincial Agencies shall be bound by the directions give to them in writing by the Federal Government; and

(b) a Provincial Agency shall be bound by the directions give to it in writing by the Provincial Government.

28) Indemnity

No suit, prosecution or other legal proceedings shall lie against the Federal or Provincial Governments, the Councils, the Federal Agency or Provincial Agencies, the Director-Generals

of the Federal Agency and the Provincial Agency, members, officers, employees, experts, advisors, committees or consultants of the Federal or Provincial Agencies or the Environmental Tribunal or Environmental Magistrates or any other person for anything which is in good faith done or intended to be done under this Act or the rules or regulations made thereunder.

29) Dues Recoverable as Arrears of Land Revenues

Any dues recoverable by the Federal Agency or Provincial Agency under this Act, or the rules or regulations made thereunder shall be recoverable as arrears of land revenue.

30) Act to Override Other Laws

The provisions of the Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force.

31) Power to Make Rules

The Federal Government may, by notification in the official Gazette, make rules for carrying out the purposes of this Act including rules for implementing the provisions of the international environmental agreements, specified in the Schedule to this Act.

32) Power to Amend the Schedule

The Federal Government may, by notification in the official Gazette, amend the Schedule so as to add any entry thereto or modify or omit any entry therein.

33) Power to Make Regulations

(1) For carrying out the purposes of this Act, the Federal Agency may, by notification in the official Gazette and with the approval of the Federal Government, make regulations not inconsistent with the provisions of this Act or the rules made thereunder.

(2) In particular and without prejudice to the generality of the foregoing power, such regulations may provide for:

- (a) submission of periodical reports, data or information by any Government agency, local authority or local council in respect of environmental matters;
- (b) preparation of emergency contingency plans for coping with environmental hazards and pollution caused by accidents, natural disasters and calamities;
- (c) appointment of officers, advisors, experts, consultants and employees;

(d) levy of fees, rates and charged in respect of services rendered, actions taken and schemes implemented;

(e) monitoring and measurement of discharges and emissions;

(f) categorization of projects to which, and the manner in which, section 12 applies;

(g) laying down of guidelines for preparation of initial environmental examination and environmental impact assessment and Development of procedures for their filing, review and approval;

(h) providing procedures for handling hazardous substances; and

(i) installation of devices in, use of fuels by, and maintenance and testing of motor vehicles for control of air and noise pollution.

34) Repeal, Savings and Succession

(1) The Pakistan Environmental Protection Ordinance, 1983 (XXXVII of 1983) is hereby repealed.

(2) Notwithstanding the repeal of the Pakistan Environmental Protection Ordinance, 1983 (XXVII of 1983), any rules or regulations or appointments made, order passed, notifications issued, powers delegated, contracts entered into, proceedings commenced, rights acquired, liabilities incurred, penalties, rates, fees or charges levied, things done or action taken under any provisions of that Ordinance shall, so far as they are not inconsistent with the provisions of this Act, be deemed to have been made, passed, issued, delegated, entered into, commenced, acquired, incurred, levied, done or taken under this Act.

(2) On the establishment of the Federal Agency and Provincial Agencies under this Act, all properties, assets and liabilities pertaining to the Federal Agency and Provincial Agencies established under that Ordinance shall vest in and be the properties, assets and liabilities, as the case may be, of the Federal Agency and Provincial Agency established under this Act.

SCHEDULE (See Section 31)

1. International Plant Protection Convention, Rome, 1951.
2. Plant Protection Agreement for the South-East Asia and Pacific Region (as amended), Rome 1956.
3. Agreement for the Establishment of a Commission for Controlling the Desert Locust in the Eastern Region of its Distribution Area in South-West Asia (as amended), Rome, 1963.
4. Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971 and its amending Protocol, Paris, 1982.
5. Convention Concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention), Paris, 1972.
6. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Washington, 1973.
7. Convention on the Conservation of Migratory Species of Wild Animals, Bonn, 1979.
8. Convention on the Law of the Sea, Montego Bay, 1982.
9. Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985.
10. Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987 and amendments thereto.
11. Agreement on the Network of Aquaculture Centres in Asia and the Pacific, Bangkok, 1988.
12. Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, Basel, 1989.
13. Convention on Biological Diversity, Rio De Janiero, 1992.
14. United Nations Framework Convention on Climate Change, Rio De Janiero, 1992

National Environmental Quality Standards (NEQS)**National Ambient Air Quality Standards**

| Pollutants | Time-weighted average | Concentration in Ambient Air | | Method of Measurement |
|---|-----------------------|---|---|---|
| | | Effective from 1 st January 2009 | Effective from 1 st January 2012 | |
| Sulphur Dioxide (SO ₂) | Annual Average* | 80µg/m ³ | 80µg/m ³ | -Ultraviolet Fluorescence method |
| | 24 hours** | 120µg/m ³ | 120µg/m ³ | |
| Oxides of Nitrogen as (NO) | Annual Average* | 40µg/m ³ | 40µg/m ³ | -Gas Phase Chemiluminescence |
| | 24 hours** | 40µg/m ³ | 40µg/m ³ | |
| Oxides of Nitrogen as (NO ₂) | Annual Average* | 40µg/m ³ | 40µg/m ³ | -Gas Phase Chemiluminescence |
| | 24 hours** | 80µg/m ³ | 80µg/m ³ | |
| O ₃ | 1 hour | 180µg/m ³ | 130µg/m ³ | -Non dispersive UV Absorption method |
| Suspended Particulate Matter (SPM) | Annual Average* | 400µg/m ³ | 360µg/m ³ | -High Volume Sampling, (Average flow rate not less than 1.1m ³ /minute). |
| | 24 hours** | 550µg/m ³ | 500µg/m ³ | |
| Respirable Particulate Matter.PM ₁₀ | Annual Average* | 200µg/m ³ | 120µg/m ³ | -β Ray absorption method |
| | 24 hours** | 250µg/m ³ | 150µg/m ³ | |
| Respirable Particulate Matter.PM _{2.5} | Annual Average* | 25µg/m ³ | 15µg/m ³ | β Ray absorption method |
| | 24 hours** | 40µg/m ³ | 35µg/m ³ | |
| | 1 hour | 25µg/m ³ | 15µg/m ³ | |
| Lead(Pb) | Annual Average* | 1.5µg/m ³ | 1 µg/m ³ | -ASS Method after sampling using EPM 2000 or equivalent Filter paper |
| | 24 hours** | 2 µg/m ³ | 1.5µg/m ³ | |
| Carbon Monoxide(CO) | 8 hours** | 5 mg/m ³ | 5mg/m ³ | -Non Dispersive Infra Red (NDIR) method |
| | 1 hour | 10mg/m ³ | 10mg/m ³ | |
| Annual arithmetic means of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval. | | | | |
| 24 hourly/ 8 hourly values should be met 98% of the in a year. 2% of the time, it may exceed but Not on two consecutive days. | | | | |

NATIONAL ENVIRONMENTAL QUALITY STANDARDS FOR INDUSTRIAL GASEOUS EMISSION (mg/Nm³, UNLESS OTHERWISE DEFINED)

| S. No. | Parameter | Source of Emission | Existing Standards | Revised Standards |
|--------|--|--|--------------------------|---|
| 1 | Smoke | Smoke opacity not to exceed | 40%or2 Ring-lemann Scale | 40%or2 Ring-lemann Scale or equivalent smoke number |
| 2 | Particulate matter ⁽¹⁾ | (a) Boilers and furnaces: | | |
| | | (i) Oil fired | 300 | 300 |
| | | (ii)Coal fired | 500 | 500 |
| | | (iii)Cement Kilns | 200 | 300 |
| | | (b)Grinding, crushing, clinker coolers and related processes, metallurgical processes, Converters, blast furnaces and cupolas. | 500 | 500 |
| 3 | Hydrogen Chloride | Any | 400 | 400 |
| 4 | Chlorine | Any | 150 | 150 |
| 5 | Hydrogen Fluoride | Any | 150 | 150 |
| 6 | Hydrogen Sulphide | Any | 10 | 10 |
| 7 | Sulphur Oxides ⁽²⁾ ⁽³⁾ | Sulfuric acid/Sulphonic acid plants | 400 | 5000 |
| | | Other plants except Power plants operating on oil and coal | 400 | 1700 |
| 8 | Carbon Monoxide | Any | 800 | 800 |
| 9 | Lead | Any | 50 | 50 |
| 10 | Mercury | Any | 10 | 10 |
| 11 | Cadmium | Any | 20 | 20 |
| 12 | Arsenic | Any | 20 | 20 |
| 13 | Copper | Any | 50 | 50 |
| 14 | Antimony | Any | 20 | 20 |
| 15 | Zinc | Any | 200 | 200 |

| S. No. | Parameter | Source of Emission | Existing Standards | Revised Standards | |
|--------|-----------------------------------|--|--------------------|-------------------|--|
| 16 | Oxides of Nitrogen ⁽³⁾ | Nitric acid manufacturing unit | 400 | 3000 | |
| | | Other plants except power plants operating on oil or coal: | | | |
| | | Gas fired | 400 | 400 | |
| | | Oil fired | ----- | 600 | |
| | | Coal fired | ----- | 1200 | |

Explanations:

1. Based on the assumption that the size of the particulate is 10 microns or more.
2. Based on 1 percent sulphur content in fuel oil. Higher content of sulphur will cause standards to be pro-rated.
3. In respect of emissions of sulphur dioxide and nitrogen oxides, the power plants operating on oil and coal as fuel shall in addition to National Environmental Quality Standards (NEQS) specified above, comply with the following standards: -

A. Sulphur Dioxide

Sulphur Dioxide Background levels Micro-gram per cubic meter ug/m³ Standards

| Background Air Quality (SO ₂ Basis) | Annual Average | Max.24 hours Interval | Criterion I Max. SO ₂ Emission (Tons per Day per plant) | Criterion II Max. Allowable ground level increment to ambient (ug/m ³) |
|--|----------------|-----------------------|--|--|
| (One Year Average) | | | | |
| Unpolluted | <50 | <200 | 500 | 50 |
| Moderately Polluted* | | | | |
| Low | 50 | 200 | 500 | 50 |
| High | 100 | 400 | 100 | 10 |
| Very Polluted** | >100 | >400 | 100 | 10 |

* For intermediate values between 50 and 100ug/m³ linear interpolations should be used.

** No projects with sulphur dioxide emissions will be recommended.

B. Nitrogen Oxide

Ambient air concentrations of nitrogen oxides, expressed as NO₂ should not be exceed the following:-

Annual Arithmetic Mean 100ug/m³ (0.05ppm)

Emission levels for stationary source discharges, before mixing with the atmosphere, should be maintained as follows:-

For fuel fired steam generators, as Nanogram (10-gram) per joule of heat input:

| | |
|---------------------|-----|
| Liquid fossil fuel | 130 |
| Solid fossil fuel | 300 |
| Lignite fossil fuel | 260 |

Note:-Dilution of gaseous emissions to bring them to the NEQS limiting value is not permissible through excess air mixing blowing before emitting in to the environment.

[FileNo.14(3)/98-TO-PEPC]

NATIONAL ENVIRONMENTAL QUALITY STANDARDS FOR MUNICIPAL AND LIQUID INDUSTRIAL EFFLUENTS (mg/L, UNLESS OTHERWISE DEFINED)

| S. No. | Parameter Standards | Value |
|--------|---|-----------|
| 1. | Temperature | 40°C |
| 2. | pH value (acidity/basicity) | 6-10pH |
| 3. | 5-days Biochemical Oxygen Demand (BOD) at 20°C | 80mg/L |
| 4. | Chemical Oxygen Demand (COD) | 150 mg/L |
| 5. | Total Suspended Solids | 150 mg/L |
| 6. | Total Dissolved Solids | 3500 mg/L |
| 7. | Oil and Grease | 10 mg/L |
| 8. | Phenolic compounds (as phenol) | 0.1 mg/L |
| 9. | Chloride(asCl ⁻) | 1000mg/L |
| 10. | Fluoride (as F ⁻) | 20mg/L |
| 11. | Cyanide (asCN ⁻) | 2mg/L |
| 12. | An-ionic detergents ⁽²⁾ (as MBAS) ⁽⁵⁾ | 20mg/L |
| 13. | Sulphate(SO ₄ ²⁻) | 600mg/L |
| 14. | Sulphide (S ²⁻) | 1.0mg/L |
| 15. | Ammonia (NH ₃) | 40mg/L |
| 16. | Pesticides, herbicides, fungicides and | 0.15mg/L |
| 17. | insecticides Cadmium ⁽⁴⁾ | 0.1mg/L |
| 18. | Chromium (4) (trivalent and hexavalent) | 1.0 mg/L |
| 19. | Copper ⁽⁴⁾ | 1.0mg/L |
| 20. | Lead ⁽⁴⁾ | 0.5mg/L |
| 21. | Mercury ⁽⁴⁾ | 0.01mg/L |
| 22. | Selenium ⁽⁴⁾ | 0.5mg/L |
| 23. | Nickel ⁽⁴⁾ | 1.0mg/L |
| 24. | Silver ⁽⁴⁾ | 1.0mg/L |
| 25. | Total toxic metals | 2.0 mg/L |
| 26. | Zinc | 5.0mg/L |
| 27. | Arsenic | 1.0mg/L |
| 28. | Barium | 1.5mg/L |
| 29. | Iron | 2.0mg/L |
| 30. | Manganese | 1.5mg/L |
| 31. | Boron | 6.0mg/L |
| 32. | Chlorine | 1.0mg/L |

Explanations:

1. Assuming minimum dilution 1: 10 on discharge. Lower ratios would attract progressively stringent standards to be determined by the Federal Environmental Protection Agency.
2. Assuming surfactant as biodegradable.
3. MBAS means Methylene Blue Active Substances.
4. Subject to total toxic metals discharge as at S. No. 25.

**NATIONAL ENVIRONMENTAL QUALITY STANDARDS FOR MOTOR VEHICLE
EXHAUST AND NOISE**

| # | Parameter | Standards (maximum permissible limit) | Measuring method |
|---|-----------------|--|--|
| 1 | Smoke | 40% or 2 on the Ringelmann Scale during engine acceleration mode. | To be compared with Ringlemann Chart at a distance of 6 meters or more. |
| 2 | Carbon Monoxide | <u>Emission Standards:</u> <u>New Used Vehicles</u> 4.5% 6% | Under idling conditions: Non-depressive infrared detection through gas analyzer |
| 3 | Noise | 85 db (A) | Sound-meter at 7.5 meters from the source |

[F. No. 2(21)/93-E-II

Drinking Water Standards

| Parameters | WHO Standards | GOP Standards |
|-------------------|------------------------------|------------------------------|
| pH @ 25 °C | 6.8-8.5 | 6.8-8.5 |
| Color | Non objectionable/Acceptable | Non objectionable/Acceptable |
| Odor | Non objectionable/Acceptable | Non objectionable/Acceptable |
| Aluminium (Al) | ≤0.2mg/L | 0.2mg/L |
| Antimony (Sb) | ≤0.005mg/L | 0.02mg/L |
| Barium (Ba) | 0.7mg/L | 0.7mg/L |
| Cadmium (Cd) | 0.01 | 0.003 |
| Chloride (Cl) | <250 | 250 |
| TDS | <500mg/L | <500mg/L |
| Turbidity | <5NTU | <5NTU |
| Chromium (Cr) | <0.05mg/L | ≤0.05mg/L |
| Copper (Cu) | <2mg/L | 2mg/L |
| Arsenic (As) | <0.01mg/L | ≤0.05mg/L |
| Total Coliform | 0.0cfu/100 ml | 0.0cfu/100 ml |
| E-Coli | 0.0cfu/100 ml | 0.0cfu/100 ml |

Annexure 3: Pakistan EPA Review of IEE and EIA Regulations, 2000

S.R.O. 339 (1)/2001. - In exercise of the powers referred by section 33 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), Pakistan Environmental Protection Agency, with the approval of the Federal Government is pleased to make the following Rules, namely : -

1. Short title and commencement

(1) These regulations may be called the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000.

(2) They shall come into force at once.

2. Definitions

(1) In these regulations, unless there is anything repugnant in the subject or context –

- (a) “Act” means the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997);
- (b) “Director-General” means the Director-General of the Federal Agency;
- (c) “EIA” means an environmental impact assessment as defined in section 2(xi);
- (d) “IEE” means an initial environmental examination as defined in section 2(xxiv); and
- (e) “section” means a section of the Act.

(2) All other words and expressions used in these regulations but not defined shall have the same meanings as are assigned to them in the Act.

3. Projects requiring an IEE

A proponent of a project falling in any category listed in Schedule I shall file an IEE with the Federal Agency, and the provisions of section 12 shall apply to such project.

4. Projects requiring an EIA

A proponent of a project falling in any category listed in Schedule II shall file an EIA with the Federal Agency, and the provisions of section 12 shall apply to such project.

5. Projects not requiring an IEE or EIA

(1) A proponent of a project not falling in any category listed in Schedules I and II shall not be required to file an IEE or EIA:

Provided that the proponent shall file.

- (a) an EIA, if the project is likely to cause an adverse environmental effect;

- (b) for projects not listed in Schedules I and II in respect of which the Federal Agency has issued guidelines for construction and operation, an application for approval accompanied by an undertaking and an affidavit that the aforesaid guidelines shall be fully complied with.
- (2) Notwithstanding anything contained in sub-regulation (1), the Federal Agency may direct the proponent of a project, whether or not listed in Schedule I or II, to file an IEE or EIA, for reasons to be recorded in such direction:

Provided that no such direction shall be issued without the recommendation in writing of the Environmental Assessment Advisory Committee constituted under Regulation 23.
- (3) The provisions of section 12 shall apply to a project in respect of which an IEE or EIA is filed under sub-regulation (1) or (2).

6. Preparation of IEE and EIA

- (1) The Federal Agency may issue guidelines for preparation of an IEE or an EIA, including guidelines of general applicability, and sectoral guidelines indicating specific assessment requirements for planning, construction and operation of projects relating to particular sector.
- (2) Where guidelines have been issued under sub-regulation (1), an IEE or EIA shall be prepared, to the extent practicable, in accordance therewith and the proponent shall justify in the IEE or EIA any departure therefrom.

7. Review Fees

The proponent shall pay, at the time of submission of an IEE or EIA, a non-refundable Review Fee to the Federal Agency, as per rates shown in Schedule III.

8. Filing of IEE and EIA

- (1) Ten paper copies and two electronic copies of an IEE or EIA shall be filed with the Federal Agency.
- (2) Every IEE and EIA shall be accompanied by –
 - (a) an application, in the form prescribed in Schedule IV; and
 - (b) copy of receipt showing payment of the Review Fee.

9. Preliminary scrutiny

- (1) Within 10 working days of filing of the IEE or EIA, the Federal Agency shall –
 - (a) confirm that the IEE or EIA is complete for purposes of initiation of the review process; or
 - (b) require the proponent to submit such additional information as may be specified; or

- (c) return the IEE or EIA to the proponent for revision, clearly listing the points requiring further study and discussion.
- (2) Nothing in sub-regulation (1) shall prohibit the Federal Agency from requiring the proponent to submit additional information at any stage during the review process.

10. Public participation

- (1) In the case of an EIA, the Federal Agency shall, simultaneously with issue of confirmation of completeness under clause (a) of sub-regulation (1) of Regulation 9, cause to be published in any English or Urdu national newspaper and in a local newspaper of general circulation in the area affected by the project, a public notice mentioning the type of project, its exact location, the name and address of the proponent and the places at which the EIA of the project can, subject to the restrictions in sub-section (3) of section 12, be accessed.
- (2) The notice issued under sub-regulation (1) shall fix a date, time and place for public hearing of any comments on the project or its EIA.
- (3) The date fixed under sub-regulation (2) shall not be earlier than 30 days from the date of publication of the notice.
- (4) The Federal Agency shall also ensure the circulation of the EIA to the concerned Government Agencies and solicit their comments thereon.
- (5) All comments received by the Federal Agency from the public or any Government Agency shall be collated, tabulated and duly considered by it before decision on the EIA.
- (6) The Federal Agency may issue guidelines indicating the basic techniques and measures to be adopted to ensure effective public consultation, involvement and participation in EIA assessment.

11. Review

- (1) The Federal Agency shall make every effort to carry out its review of the IEE within 45 days, and of the EIA within 90 days, of issue of confirmation of completeness under Regulation 9.
- (2) In reviewing the IEE or EIA, the Federal Agency shall consult such Committee of Experts as may be constituted for the purpose by the Director-General and may also solicit views of the sectoral Advisory Committee, if any, constituted by the Federal Government under sub-section (6) of section 5.
- (3) The Director-General may, where he considers it necessary, constitute a committee to inspect the site of the project and submit its report on such matters as may be specified.
- (4) The review of the IEE or EIA by the Federal Agency shall be based on quantitative and qualitative assessment of the documents and data furnished by the proponent, comments from the public and Government Agencies received under Regulation 10, and views of the committees mentioned in sub-regulations (2) and (3) above.

12. Decision

On completion of the review, the decision of the Federal Agency shall be communicated to the proponent in the form prescribed in Schedule V in the case of an IEE, and in the form prescribed in Schedule VI in the case of an EIA.

13. Conditions of approval

- (1) Every approval of an IEE or EIA shall, in addition to such conditions as may be imposed by the Federal Agency, be subject to the condition that the project shall be designed and constructed, and mitigatory and other measures adopted, strictly in accordance with the IEE/EIA, unless any variation thereto have been specified in the approval by the Federal Agency.
- (2) Where the Federal Agency accords its approval subject to certain conditions, the proponent shall –
 - (a) before commencing construction of the project, acknowledge acceptance of the stipulated conditions by executing an undertaking in the form prescribed in Schedule VII;
 - (b) before commencing operation of the project, obtain from the Federal Agency written confirmation that the conditions of approval, and the requirements in the IEE/EIA relating to design and construction, adoption of mitigatory and other measures and other relevant matters, have been duly complied with.

14. Confirmation of compliance

(1) The request for confirmation of compliance under clause (b) of sub-regulation (2) of Regulation 13 shall be accompanied by an Environmental Management Plan indicating the measures and procedures proposed to be taken to manage or mitigate the environmental impacts for the life of the project, including provisions for monitoring, reporting and auditing.

(2) Where a request for confirmation of compliance is received from a proponent, the Federal Agency may carry out such inspection of the site and plant and machinery and seek such additional information from the proponent as it may deem fit:

Provided that every effort shall be made by the Federal Agency to provide the requisite confirmation or otherwise within 15 days of receipt of the request, with complete information, from the proponent.

(3) The Federal Agency may, while issuing the requisite confirmation of compliance, impose such other conditions as the Environmental Management Plan, and the operation, maintenance and monitoring of the project as it may deem fit, and such conditions shall be deemed to be included in the conditions to which approval of the project is subject.

15. Deemed approval

The four-month period for communication of decision stipulated in sub-section (4) of section 12 shall commence from the date of filing of an IEE or EIA in respect of which confirmation of completeness is issued by the Federal Agency under clause (a) of sub-regulation (1) of Regulation 9.

16. Extension in review period

Where the Federal Government in a particular case extends the four-month period for communication of approval prescribed in sub-section (5) of section 12, it shall, in consultation with the Federal Agency, indicate the various steps of the review process to be taken during the extended period, and the estimated time required for each step.

17. Validity period of approval

(1) The approval accorded by a Federal Agency under section 12 read with Regulation 12 shall be valid, for commencement of construction, for a period of three years from the date of issue.

(2) If construction is commenced during the initial three-year validity period, the validity of the approval shall stand extended for a further period of three years from the date of issue.

(3) After issue of confirmation of compliance, the approval shall be valid for a period of three years from the date thereof.

(4) The proponent may apply to the Federal Agency for extension in the validity periods mentioned in sub-regulations (1), (2) and (3), which may be granted by the Federal Agency in its discretion for such period not exceeding three years at a time, if the conditions of the approval do not require significant change:

Provided that the Federal Agency may require the proponent to submit a fresh IEE or EIA, if in its opinion changes in location, design, construction and operation of the project so warrant.

18. Entry and inspection

(1) For purposes of verification of any matter relating to the review or to the conditions of approval of an IEE or EIA prior to, during or after commencement of construction or operation of a project, duly authorized staff of the Federal Agency shall be entitled to enter and inspect the project site, factory building, and plant and equipment installed therein.

(2) The proponent shall ensure full cooperation of the project staff at site to facilitate the inspection and shall provide such information as may be required by the Federal Agency for this purpose and pursuant thereto.

19. Monitoring

(1) After issue of approval, the proponent shall submit a report to the Federal Agency on completion of construction of the project.

(2) After issue of confirmation of compliance, the proponent shall submit an annual report summarizing operational performance of the project, with reference to the conditions of approval and maintenance and mitigatory measures adopted by the project.

(3) To enable the Federal Agency to effectively monitor compliance with the conditions of approval, the proponent shall furnish such additional information as the Federal Agency may require.

20. Cancellation of approval

(1) Notwithstanding anything contained in these Regulations, if, at any time, on the basis of information or report received or inspection carried out, the Federal Agency is of the opinion that the conditions of an approval have not been complied with, or that the information supplied by a proponent in the approved IEE or EIA is incorrect, it shall issue notice to the proponent to show cause, within two weeks of receipt thereof, why the approval should not be cancelled.

(2) If no reply is received or if the reply is considered unsatisfactory, the Federal Agency may, after giving the proponent an opportunity of being heard:

- (i) require the proponent to take such measures and to comply with such conditions within such period as it may specify, failing which the approval shall stand cancelled; or
- (ii) cancel the approval.

(3) On cancellation of the approval, the proponent shall cease construction or operation of the project forthwith.

(4) Action taken under this Regulation shall be without prejudice to any other action that may be taken against the proponent under the Act or rules or regulations or any other law for the time being in force.

21. Registers of IEE and EIA projects

Separate Registers to be maintained by the Federal Agency for IEE and EIA projects under sub-section (7) of section 12 shall be in the form prescribed in Schedule VIII.

22. Environmentally sensitive areas

(1) The Federal Agency may, by notification in the official Gazette, designate an area to be an environmentally sensitive area.

(2) Notwithstanding anything contained in Regulations 3, 4 and 5, the proponent of a project situated in an environmentally sensitive area shall be required to file an EIA with the Federal Agency.

(3) The Federal Agency may from time to time issue guidelines to assist proponents and other persons involved in the environmental assessment process to plan and prepare projects located in environmentally sensitive areas.

(4) Where guidelines have been issued under sub-regulation (3), the projects shall be planned and prepared, to the extent practicable, in accordance therewith and any departure therefrom justified in the EIA pertaining to the project.

23. Environmental Assessment Advisory Committee

For purposes of rendering advice on all aspects of environmental assessment, including guidelines, procedures and categorization of projects, the Director-General shall constitute an Environmental Assessment Advisory Committee comprising –

- (a) Director EIA, Federal Agency ... Chairman

- | | | |
|-----|--|---------|
| (b) | One representative each of the Provincial Agencies ... | Members |
| (c) | One representative each of the Federal Planning Commission and the Provincial Planning and Development Departments ... | Members |
| (d) | Representatives of industry and non-Governmental organizations, and legal and other experts ... | Members |

24. Other approvals

Issue of an approval under section 12 read with Regulation 12 shall not absolve the proponent of the duty to obtain any other approval or consent that may be required under any law for the time being in force.

SCHEDULE I
(See Regulation 3)

List of projects requiring an IEE

A. Agriculture, Livestock and Fisheries

1. Poultry, livestock, stud and fish farms with total cost more than Rs.10 million
2. Projects involving repacking, formulation or warehousing of agricultural products

B. Energy

1. Hydroelectric power generation less than 50 MW
2. Thermal power generation less than 200 KW
3. Transmission lines less than 11 KV, and large distribution projects
4. Oil and gas transmission systems
5. Oil and gas extraction projects including exploration, production, gathering systems, separation and storage
6. Waste-to-energy generation projects

C. Manufacturing and processing

1. Ceramics and glass units with total cost more than Rs.50 million
2. Food processing industries including sugar mills, beverages, milk and dairy products, with total cost less than Rs.100 million
3. Man-made fibers and resin projects with total cost less than Rs.100 million
4. Manufacturing of apparel, including dyeing and printing, with total cost more than Rs.25 million
5. Wood products with total cost more than Rs.25 million

D. Mining and mineral processing

1. Commercial extraction of sand, gravel, limestone, clay, sulphur and other minerals not included in Schedule II with total cost less than Rs.100 million
2. Crushing, grinding and separation processes
3. Smelting plants with total cost less than Rs.50 million

E. Transport

1. Federal or Provincial highways (except maintenance, rebuilding or reconstruction of existing metalled roads) with total cost less than Rs.50 million

2. Ports and harbor development for ships less than 500 gross tons

F. Water management, dams, irrigation and flood protection

1. Dams and reservoirs with storage volume less than 50 million cubic meters of surface area less than 8 square kilometers
2. Irrigation and drainage projects serving less than 15,000 hectares
3. Small-scale irrigation systems with total cost less than Rs.50 million

G. Water supply and treatment

Water supply schemes and treatment plants with total cost less than Rs.25 million

H. Waste disposal

Waste disposal facility for domestic or industrial wastes, with annual capacity less than 10,000 cubic meters

I. Urban development and tourism

1. Housing schemes
2. Public facilities with significant off-site impacts (e.g. hospital wastes)
3. Urban development projects

J. Other projects

Any other project for which filing of an IEE is required by the Federal Agency under sub-regulation (2) of Regulation 5

SCHEDULE II
(See Regulation 4)

List of projects requiring an EIA

A. Energy

1. Hydroelectric power generation over 50 MW
2. Thermal power generation over 200 MW
3. Transmission lines (11 KV and above) and grid stations
4. Nuclear power plans
5. Petroleum refineries

B. Manufacturing and processing

1. Cement plants
2. Chemicals projects
3. Fertilizer plants
4. Food processing industries including sugar mills, beverages, milk and dairy products, with total cost of Rs.100 million and above
5. Industrial estates (including export processing zones)
6. Man-made fibers and resin projects with total cost of Rs.100 M and above
7. Pesticides (manufacture or formulation)
8. Petrochemicals complex
9. Synthetic resins, plastics and man-made fibers, paper and paperboard, paper pulping, plastic products, textiles (except apparel), printing and publishing, paints and dyes, oils and fats and vegetable ghee projects, with total cost more than Rs.10 million
10. Tanning and leather finishing projects

C. Mining and mineral processing

1. Mining and processing of coal, gold, copper, sulphur and precious stones
2. Mining and processing of major non-ferrous metals, iron and steel rolling
3. Smelting plants with total cost of Rs.50 million and above

D. Transport

1. Airports
2. Federal or Provincial highways or major roads (except maintenance, rebuilding or reconstruction of existing roads) with total cost of Rs.50 million and above
3. Ports and harbor development for ships of 500 gross tons and above
4. Railway works

E. Water management, dams, irrigation and flood protection

1. Dams and reservoirs with storage volume of 50 million cubic meters and above or surface area of 8 square kilometers and above
2. Irrigation and drainage projects serving 15,000 hectares and above

F. Water supply and treatment

Water supply schemes and treatment plants with total cost of Rs.25 million and above

G. Waste Disposal

1. Waste disposal and/or storage of hazardous or toxic wastes (including landfill sites, incineration of hospital toxic waste)
2. Waste disposal facilities for domestic or industrial wastes, with annual capacity more than 10,000 cubic meters

H. Urban development and tourism

1. Land use studies and urban plans (large cities)
2. Large-scale tourism development projects with total cost more than Rs.50 million

I. Environmentally Sensitive Areas

All projects situated in environmentally sensitive areas

J. Other projects

1. Any other project for which filing of an EIA is required by the Federal Agency under sub-regulation (2) of Regulation 5.
2. Any other project likely to cause an adverse environmental effect

SCHEDULE III
(See Regulation 7)

IEE/EIA Review Fees

| Total Project Cost | IEE | EIA |
|----------------------------|------------|------------|
| Upto Rs.5,000,000 | NIL | NIL |
| Rs.5,000,001 to 10,000,000 | Rs.10,000 | Rs.15,000 |
| Greater than Rs.10,000,000 | Rs.15,000 | Rs.30,000 |

SCHEDULE IV
[See Regulation
8(2)(a)]

Application Form

| | | | | |
|-----|---|---|--|---|
| 1. | Name and address of proponent | | Phone: Fax: Telex: | |
| 2. | Description of project | | | |
| 3. | Location of project | | | |
| 4. | Objectives of project | | | |
| 5. | IEE/EIA attached? | IEE/EIA | : | Yes/No |
| 6. | Have alternative sites been considered and reported in IEE/EIA? | Yes/No | | |
| 7. | Existing land use | | Land requirement | |
| 8. | Is basic site data available, or has it been measured? | (only tick yes if the data is reported in the IEE/EIA) Meterology (including rainfall) Ambient air quality Ambient water quality Ground water quality | <u>Available</u> Yes/No Yes/No Yes/No Yes/No | <u>Measured</u> Yes/No Yes/No Yes/No Yes/No |
| 9. | Have estimates of the following been reported? | Water balance Solid waste disposal Liquid waste treatment | <u>Estimated</u> Yes/No Yes/No Yes/No | <u>Reported</u> Yes/No Yes/No Yes/No |
| 10. | Source of power | | Power requirement | |
| 11. | Labour force (number) | Construction: Operation: | | |

Verification. I do solemnly affirm and declare that the information given above and contained in the attached IEE/EIA is true and correct to the best of my knowledge and belief.

Date: _____

Signature, name and _____
Designation of proponent
(with official stamp/seal)

SCHEDULE VI
[See Regulation 12]

Decision on EIA

- 1. Name and address of proponent _____

- 2. Description of project _____
- 3. Location of project _____
- 4. Date of filing of EIA _____
- 5. After careful review of the EIA, and all comments thereon, the Federation Agency has decided –

(a) to accord its approval, subject to the following conditions:

or (b) that the proponent should submit an EIA with the following modifications-

or (c) to reject the project, being contrary to environmental objectives, for the following reasons:

[Delete (a)/(b)/(c), whichever is inapplicable]

Dated _____

Tracking no. _____

Director-General
Federal Agency
(with official stamp/seal)

SCHEDULE VII
[See Regulation 13(2)]

Undertaking

I, (full name and address) as proponent for (name, description and location of project) do hereby solemnly affirm and declare that I fully understand and accept the conditions contained in the approval accorded by the Federal Agency bearing tracking no. _____ dated _____, and undertake to design, construct and operate the project strictly in accordance with the said conditions and the IEE/EIA.

Date: _____

Signature, name and _____
Designation of proponent
(with official stamp/seal)

Witnesses
(full names and addresses)

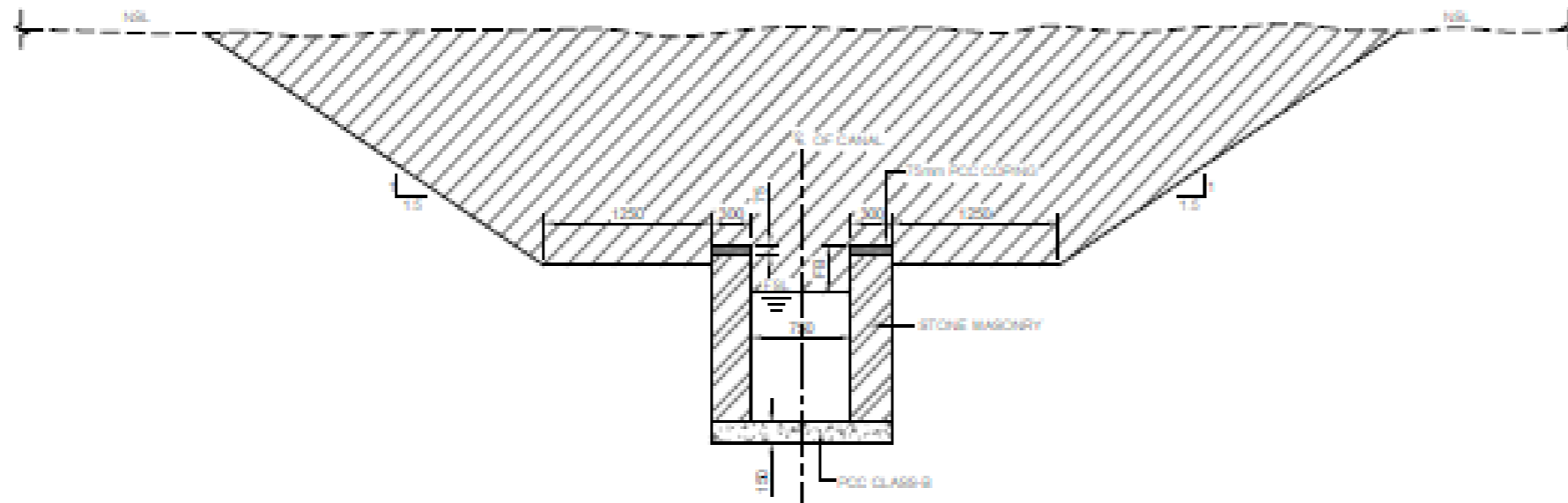
(1) _____

(2) _____

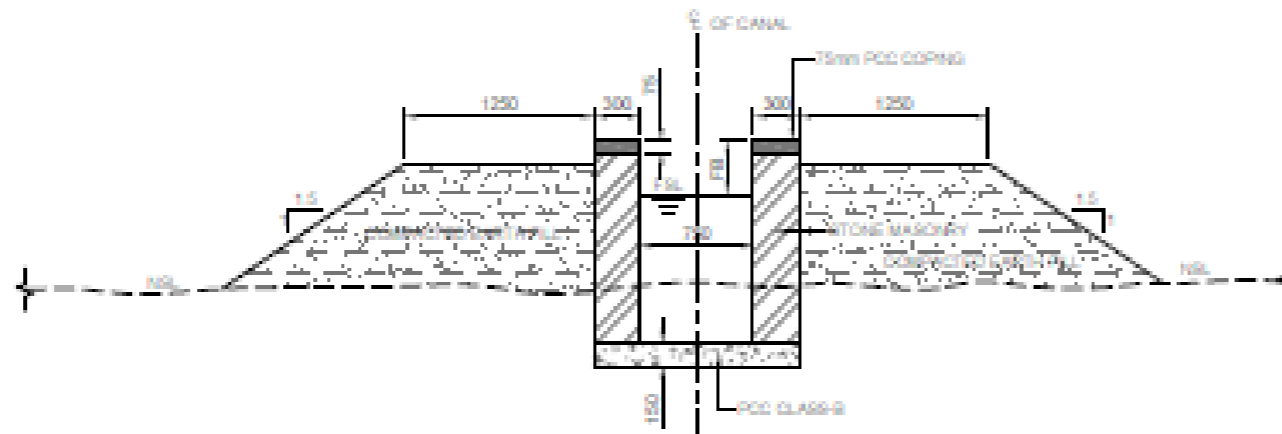
SCHEDULE VIII
(See Regulation 21)
Form of Registers for IEE and EIA projects

| S. No. | Description | Relevant Provisions |
|--------|---|---------------------|
| 1 | 2 | 3 |
| 1. | Tracking number | |
| 2. | Category type (as per Schedules I and II) | |
| 3. | Name of proponent | |
| 4. | Name and designation of contact person | |
| 5. | Name of consultant | |
| 6. | Description of project | |
| 7. | Location of project | |
| 8. | Project capital cost | |
| 9. | Date of receipt of IEE/EIA | |
| 10. | Date of confirmation of completeness | |
| 11. | Approval granted (Yes/No) | |
| 12. | Date of approval granted or refused | |
| 13. | Conditions of approval/reasons for refusal | |
| 14. | Date of Undertaking | |
| 15. | Date of extension of approval validity | |
| 16. | Period of extension | |
| 17. | Date of commencement of construction | |
| 18. | Date of issue of confirmation of compliance | |
| 19. | Date of commencement of operations | |
| 20. | Dates of filing of monitoring reports | |
| 21. | Date of cancellation, if applicable | |

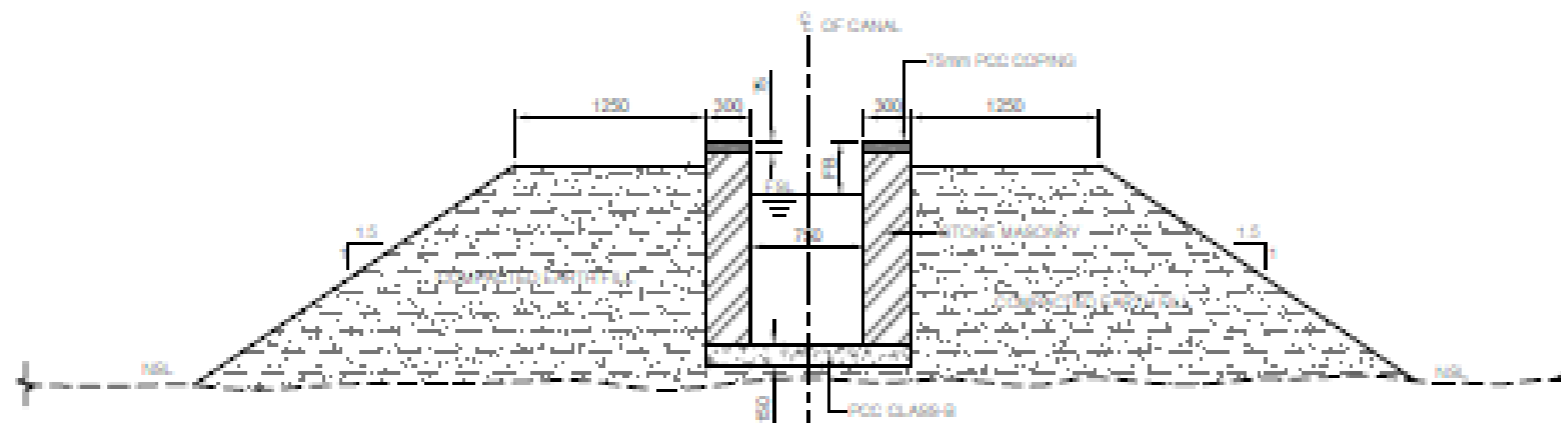
Typical Section of Canal



OPEN CHANNEL IN CUT



OPEN CHANNEL IN CUT AND FILL



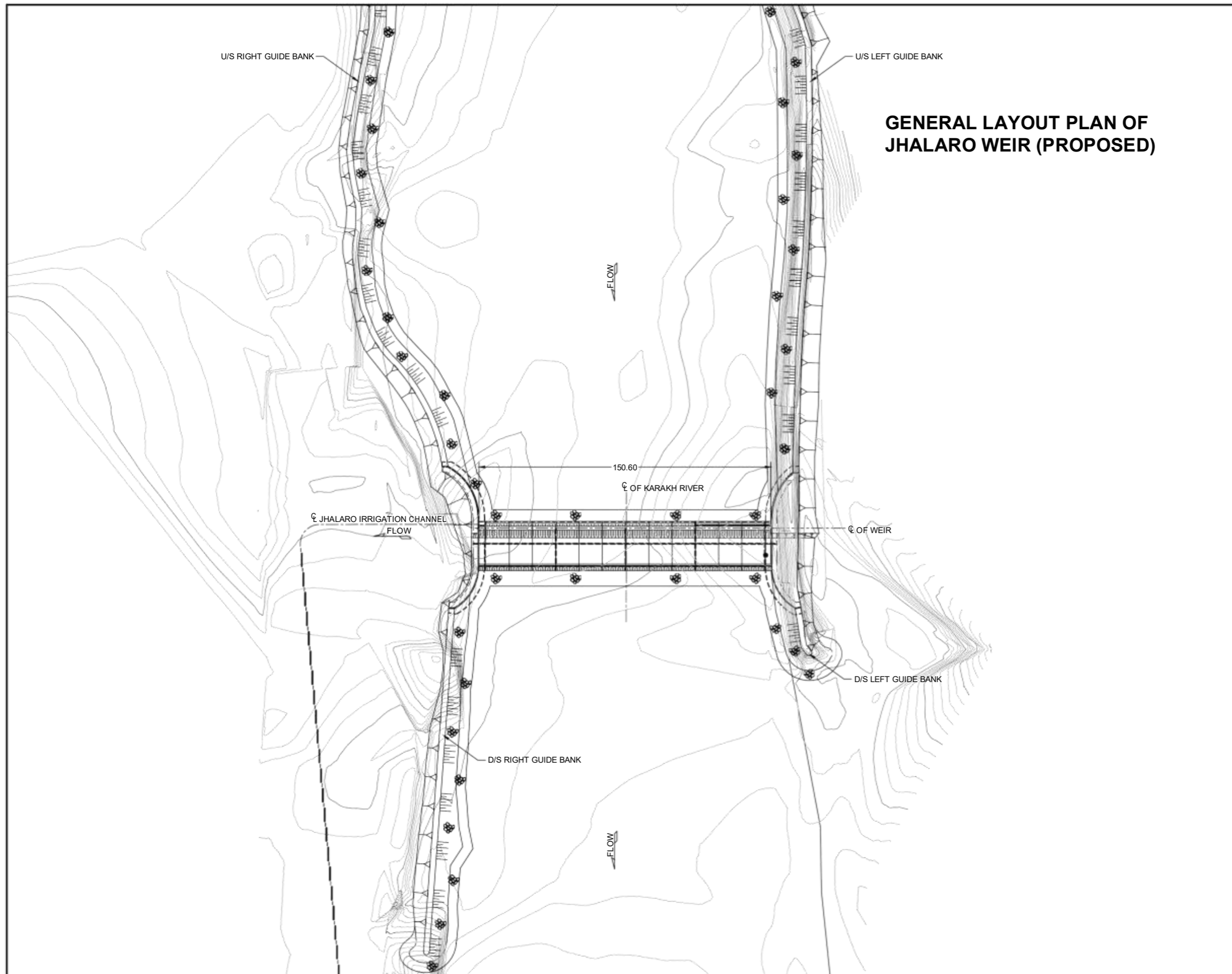
OPEN CHANNEL IN FILL

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS AND ELEVATIONS ARE IN METERS UNLESS INDICATED OTHERWISE.

**TENDER
DRAWING**

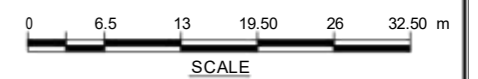




GENERAL LAYOUT PLAN OF JHALARO WEIR (PROPOSED)

- NOTES:**
1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS INDICATED OTHERWISE.
- REFERENCE DRAWING:**
1. GENERAL NOTES BWRDSP/NCB-01/TD/03-04
 2. FLOOD PROTECTION BUNDS..BWRDSP/NCB-01/TD/FB/01-24
 3. JOINT DETAILS BWRDSP/NCB-01/TD/JD/01
 4. JHALARO WEIR MECBWRDSP/NCB-01/TD/ME/01-04

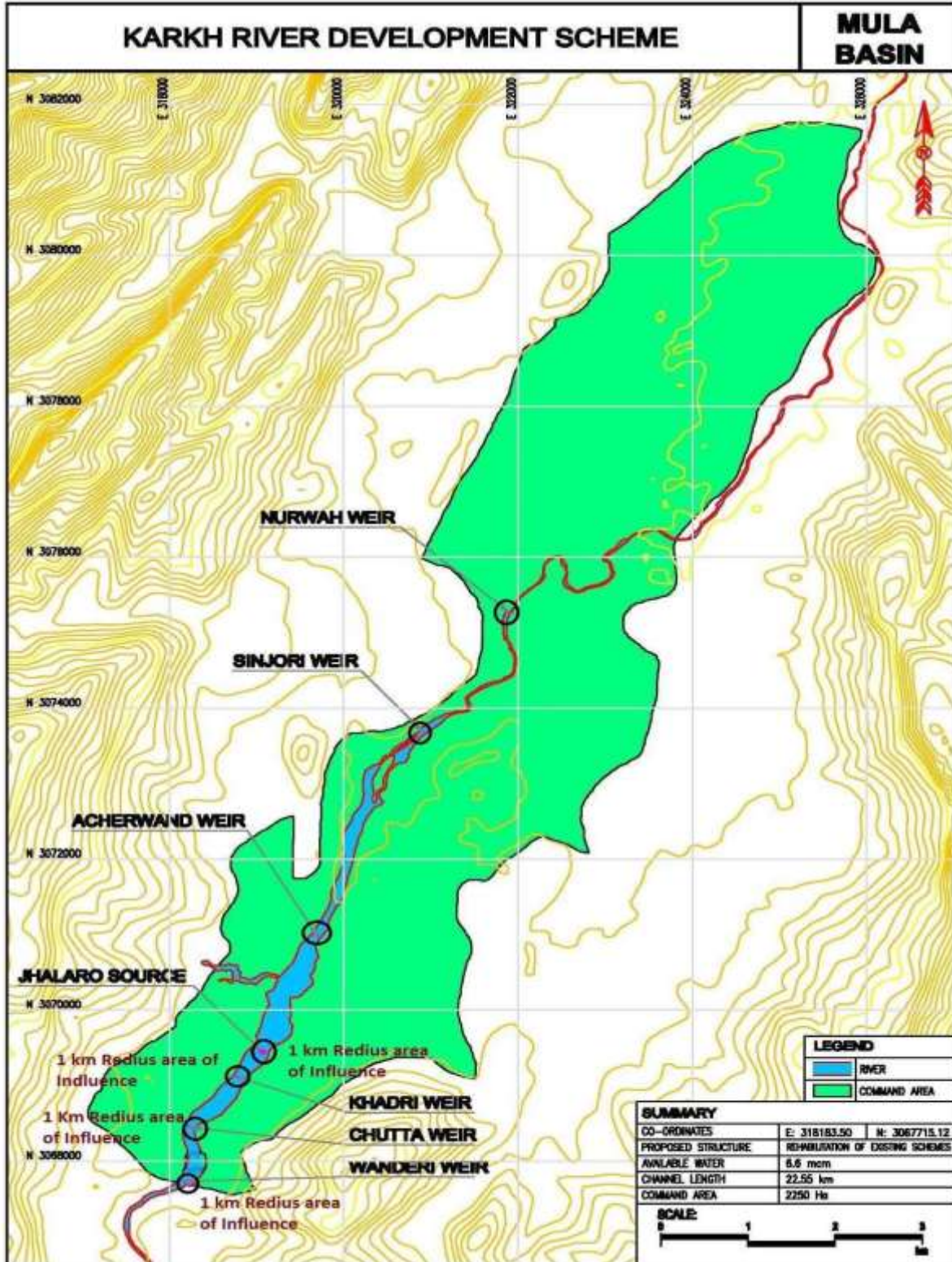
TENDER DRAWING



| | | | | | | | |
|---|---|---|--|--|-------------------|--------------------|--|
| CLIENT GOVERNMENT OF BALOCHISTAN IRRIGATION DEPARTMENT | CONSTRUCTION OF KARAKH RIVER CORE SUB-PROJECT - MULA RIVER BASIN | BWRDSP CONSULTANTS: A JOINT VENTURE OF NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD REHMAN HABIB CONSULTANTS (PVT.) LTD (JV PARTNER) ENGINEERING GENERAL CONSULTANTS (PVT.) LTD (JV PARTNER) ASIAN ADVISORY SERVICES (PVT.) LTD (IN ASSOCIATION) | | | | DRAWN M.R | KARAKH RIVER CORE SUB-PROJECT JHALARO WEIR (PROPOSED) GENERAL LAYOUT PLAN |
| | | PROJECT BALOCHISTAN WATER RESOURCES DEVELOPMENT SECTOR PROJECT (ADB LOAN NO. 3700-PAK) | CONTRACT PACKAGE NO. NCB -01 | REV. DATE DESCRIPTION BY CKD APPR. | APPROVED Z.I.W | DATE JULY, 2020 | |

Annexure 5: Area of Influence around the Proposed Subproject Interventions

Karkh River Interventions with Area of Influence





Annexure 6: A history of recorded earthquakes in Balochistan

| Year | Place | Intensity at R/Scale |
|------|--|----------------------|
| 1909 | Kech | 7.2 |
| 1987 | Quetta, Chaman | 5.6 |
| 1935 | Quetta, Mach | 7.0 |
| 1990 | Quetta, Kalat, Khuzdar, Mastung, Kalat, Nushki, Surab | 5.8-6.1 |
| 1935 | Quetta, Mastung, Kalat | 7.5 |
| 1992 | Khuzdar, Nal, Quetta | 5.7 |
| 1941 | Quetta | 5 |
| 1993 | Quetta/Pishin, Makran/Gwadar | 5.7 |
| 1945 | Pasni/Makran | 8.6 |
| 1995 | Quetta | 5.2 |
| 1952 | Loralai | 5.8 |
| 1996 | Quetta | 5.3 |
| 1954 | Khuzdar, Nal, Wadh | 5.7 |
| 1997 | Quetta, Mastung, Mach, Sibi, Harnai | 5-6.2 |
| 1955 | Quetta | 6 |
| 1998 | Quetta, Dalbandin | 5.3 |
| 1956 | Kalat, Barkan | 6 |
| 1999 | Barkan | 5.2 |
| 1957 | Khuzdar | 5.5 |
| 2000 | Quetta, Sibi, Ziarat, Harnai and Duki | 6 |
| 1975 | Quetta | 5.4 |
| 2002 | Balochistan Boarder | 6 |
| 1978 | Quetta, Nushki | 5.3 |
| 2003 | Naukundi, Musa Khail | 5.3 |
| 1983 | Khuzdar | 6.5 |
| 2004 | Sibi | 5.5 |
| 1986 | Khuzdar | 5.4 |

Source: Data extracted from Meteorological Department – Quetta Station

Annexure 7: Laboratory Results








PERAC RESEARCH & DEVELOPMENT FOUNDATION

| TEST REPORT | | Page 02 of 12 | |
|--------------------|------------------------------|----------------|-----------------|
| Customer's Name | M/s NEC Consultant (Pvt) Ltd | Test Report No | 2421A/2016-2017 |
| Customer's Ref | E-mail | Reporting Date | 08-06-2017 |
| Date | 05-05-2017 | Sample Code | 7001 |
| Sample Description | Surface Water (Wandari) | Sampling Date | 16-05-2017 |

| TEST METHOD | METHOD TITLE | TEST RESULTS |
|-------------|------------------------------------|--------------|
| HACH-8237 | Turbidity, NTU | 1 |
| APHA-209C | Total Suspended Solids, mg/L | Nil |
| APHA-209B | Total Dissolved Solids (TDS), mg/L | 542 |
| D-1295 | pH @ 25 °C | 7.89 |
| | Chemical | |
| By AA | Aluminum (Al), mg/L | Nil |
| By AA | Antimony (Sb), mg/L | Nil |
| By AA | Arsenic (As), mg/L | Nil |
| By AA | Barium (Ba), mg/L | Nil |
| By AA | Boron (B), mg/L | Nil |
| By AA | Cadmium (Cd), mg/L | Nil |
| By AA | Chromium (Cr), mg/L | Nil |
| By AA | Copper (Cu), mg/L | Nil |
| By AA | Lead (Pb), mg/L | Nil |
| By AA | Manganese (Mn), mg/L | Nil |
| By AA | Nickel (Ni), mg/L | Nil |
| APHA-320 | Mercury (Hg), mg/L | Nil |
| By AA | Selenium (Se), mg/L | Nil |
| By AA | Zinc (Zn), mg/L | Nil |

| | | |
|---|---|--|
|  Prepared by |  Section In charge (E) |  Head R&ASD |
|---|---|--|

The analyses based on Sample (s) provided to us by the Client. The interpretation or opinions expressed represent the best judgment (E.&O.E.). We have no responsibility and warranty of representation in connection with which such report is used.

| | | |
|------------|-------------------|---------|
| Rev. No. 0 | Dated: 21-01-2000 | P-10-05 |
|------------|-------------------|---------|

7-B, Korangi Industrial Area, Adjacent NRL, Karachi-74900

Ph: +(92-21) 35121857, 35121805, 35054669-72, Fax: +(92 21) 35054745

Website : www.prdlab.com E-mail: info@prdlab.com, prd@cyber.net.pk



PERAC RESEARCH & DEVELOPMENT FOUNDATION

| TEST REPORT | | Page 03 of 12 | |
|--------------------|------------------------------|----------------|-----------------|
| Customer's Name | M/s NEC Consultant (Pvt) Ltd | Test Report No | 2421B/2016-2017 |
| Customer's Ref | E-mail | Reporting Date | 08-06-2017 |
| Date | 05-05-2017 | Sample Code | 7002 |
| Sample Description | Surface Water (Khadri) | Sampling Date | 16-05-2017 |

| TEST METHOD | METHOD TITLE | TEST RESULTS |
|-------------|------------------------------------|--------------|
| HACH-8237 | Turbidity, NTU | 1 |
| APHA-209C | Total Suspended Solids, mg/L | Nil |
| APHA-209B | Total Dissolved Solids (TDS), mg/L | 588 |
| D-1293 | pH @ 25 °C | 7.97 |
| | Chemical | |
| By AA | Aluminium (Al), mg/L | Nil |
| By AA | Antimony (Sb), mg/L | Nil |
| By AA | Arsenic (As), mg/L | Nil |
| By AA | Barium (Ba), mg/L | Nil |
| By AA | Boron (B), mg/L | Nil |
| By AA | Cadmium (Cd), mg/L | Nil |
| By AA | Chromium (Cr), mg/L | Nil |
| By AA | Copper (Cu), mg/L | Nil |
| By AA | Lead (Pb), mg/L | Nil |
| By AA | Manganese (Mn), mg/L | Nil |
| By AA | Nickel (Ni), mg/L | Nil |
| APHA-320 | Mercury (Hg), mg/L | Nil |
| By AA | Selenium (Se), mg/L | Nil |
| By AA | Zinc (Zn), mg/L | Nil |

| | | |
|------------------------|----------------------------------|---------------------------|
| Prepared by | Section In charge (E) | Head R&ASD |
|------------------------|----------------------------------|---------------------------|

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| TEST REPORT | | Page 04 of 12 | |
|--------------------|------------------------------|----------------|-----------------|
| Customer's Name | M/s NEC Consultant (Pvt) Ltd | Test Report No | 2421C/2016-2017 |
| Customer's Ref | E-mail | Reporting Date | 08-06-2017 |
| Date | 05-05-2017 | Sample Code | 7003 |
| Sample Description | Surface Water (Jhalaro) | Sampling Date | 16-05-2017 |

| TEST METHOD | METHOD TITLE | TEST RESULTS |
|-------------|------------------------------------|--------------|
| HACH-8237 | Turbidity, NTU | Nil |
| APHA-209C | Total Suspended Solids, mg/L | Nil |
| APHA-209B | Total Dissolved Solids (TDS), mg/L | 600 |
| D-1293 | pH @ 25 °C | 7.91 |
| | Chemical | |
| By AA | Aluminum (Al), mg/L | Nil |
| By AA | Antimony (Sb), mg/L | Nil |
| By AA | Arsenic (As), mg/L | Nil |
| By AA | Barium (Ba), mg/L | Nil |
| By AA | Boron (B), mg/L | Nil |
| By AA | Cadmium (Cd), mg/L | Nil |
| By AA | Chromium (Cr), mg/L | Nil |
| By AA | Copper (Cu), mg/L | Nil |
| By AA | Lead (Pb), mg/L | Nil |
| By AA | Manganese (Mn), mg/L | Nil |
| By AA | Nickel (Ni), mg/L | Nil |
| APHA-320 | Mercury (Hg), mg/L | Nil |
| By AA | Selenium (Se), mg/L | Nil |
| By AA | Zinc (Zn), mg/L | Nil |

| | | |
|-------------|-----------------------|------------|
| | | |
| Prepared by | Section In charge (E) | Head R&ASD |

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| TEST REPORT | | Page 05 of 12 | |
|--------------------|------------------------------|----------------|-----------------|
| Customer's Name | M/s NEC Consultant (Pvt) Ltd | Test Report No | 2421D/2016-2017 |
| Customer's Ref | E-mail | Reporting Date | 08-06-2017 |
| Date | 05-05-2017 | Sample Code | 7004 |
| Sample Description | Surface Water (Acharwand) | Sampling Date | 16-05-2017 |

| TEST METHOD | METHOD TITLE | TEST RESULTS |
|-------------|------------------------------------|--------------|
| HACH-8237 | Turbidity, NTU | 1 |
| APHA-209C | Total Suspended Solids, mg/L | Nil |
| APHA-209B | Total Dissolved Solids (TDS), mg/L | 1099 |
| D-1293 | pH @ 25 °C | 7.87 |
| | Chemical | |
| By AA | Aluminum (Al), mg/L | Nil |
| By AA | Antimony (Sb), mg/L | Nil |
| By AA | Arsenic (As), mg/L | Nil |
| By AA | Barium (Ba), mg/L | Nil |
| By AA | Boron (B), mg/L | Nil |
| By AA | Cadmium (Cd), mg/L | Nil |
| By AA | Chromium (Cr), mg/L | Nil |
| By AA | Copper (Cu), mg/L | Nil |
| By AA | Lead (Pb), mg/L | Nil |
| By AA | Manganese (Mn), mg/L | Nil |
| By AA | Nickel (Ni), mg/L | Nil |
| APHA-320 | Mercury (Hg), mg/L | Nil |
| By AA | Selenium (Se), mg/L | Nil |
| By AA | Zinc (Zn), mg/L | Nil |

| | | |
|-------------|-----------------------|------------|
| | | |
| Prepared by | Section In charge (E) | Head R&ASD |

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| TEST REPORT | | Page 06 of 12 | |
|--------------------|------------------------------|----------------|-----------------|
| Customer's Name | M/s NEC Consultant (Pvt) Ltd | Test Report No | 2421E/2016-2017 |
| Customer's Ref | E-mail | Reporting Date | 08-06-2017 |
| Date | 05-05-2017 | Sample Code | 7005 |
| Sample Description | Surface Water (Sinjori) | Sampling Date | 16-05-2017 |

| TEST METHOD | METHOD TITLE | TEST RESULTS |
|-------------|------------------------------------|--------------|
| HACH-8237 | Turbidity, NTU | Nil |
| APHA-209C | Total Suspended Solids, mg/L | Nil |
| APHA-209B | Total Dissolved Solids (TDS), mg/L | 1050 |
| D-1293 | pH @ 25 °C | 8.30 |
| | Chemical | |
| By AA | Aluminum (Al), mg/L | Nil |
| By AA | Antimony (Sb), mg/L | Nil |
| By AA | Arsenic (As), mg/L | Nil |
| By AA | Barium (Ba), mg/L | Nil |
| By AA | Boron (B), mg/L | Nil |
| By AA | Cadmium (Cd), mg/L | Nil |
| By AA | Chromium (Cr), mg/L | Nil |
| By AA | Copper (Cu), mg/L | Nil |
| By AA | Lead (Pb), mg/L | Nil |
| By AA | Manganese (Mn), mg/L | Nil |
| By AA | Nickel (Ni), mg/L | Nil |
| APHA-320 | Mercury (Hg), mg/L | Nil |
| By AA | Selenium (Se), mg/L | Nil |
| By AA | Zinc (Zn), mg/L | Nil |

| | | |
|-------------|-----------------------|------------|
| | | |
| Prepared by | Section In charge (E) | Head R&ASD |

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| TEST REPORT | | Page 01 of 12 | |
|--------------------|------------------------------|----------------|----------------|
| Customer's Name | M/s NEC Consultant (Pvt) Ltd | Test Report No | 2421/2016-2017 |
| Customer's Ref | E-mail | Reporting Date | 08-06-2017 |
| Date | 05-05-2017 | Sample Code | 7000 |
| Sample Description | Surface Water (ChuttaWeir) | Sampling Date | 16-05-2017 |

| TEST METHOD | METHOD TITLE | TEST RESULTS |
|-------------|------------------------------------|--------------|
| HACH-8237 | Turbidity, NTU | Nil |
| APHA-209C | Total Suspended Solids, mg/L | Nil |
| APHA-209B | Total Dissolved Solids (TDS), mg/L | 540 |
| D-1295 | pH @ 25 °C | 7.87 |
| | Chemical | |
| By AA | Aluminum (Al), mg/L | Nil |
| By AA | Antimony (Sb), mg/L | Nil |
| By AA | Arsenic (As), mg/L | Nil |
| By AA | Barium (Ba), mg/L | Nil |
| By AA | Boron (B), mg/L | Nil |
| By AA | Cadmium (Cd), mg/L | Nil |
| By AA | Chromium (Cr), mg/L | Nil |
| By AA | Copper (Cu), mg/L | Nil |
| By AA | Lead (Pb), mg/L | Nil |
| By AA | Manganese (Mn), mg/L | Nil |
| By AA | Nickel (Ni), mg/L | Nil |
| APHA-320 | Mercury (Hg), mg/L | Nil |
| By AA | Selenium (Se), mg/L | Nil |
| By AA | Zinc (Zn), mg/L | Nil |

| | | |
|-------------|-----------------------|------------|
| | | |
| Prepared by | Section In charge (E) | Head R&ASD |

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|--------------------|---------------|
| TEST REPORT | Page 11 of 12 |
|--------------------|---------------|

| | | | |
|--------------------|------------------------------|----------------|-----------------|
| Customer's Name | M/s NEC Consultant (Pvt) Ltd | Test Report No | 2421J/2016-2017 |
| Customer's Ref | E-mail | Reporting Date | 08-06-2017 |
| Date | 05-05-2017 | Sample Code | 7010-7019 |
| Sample Description | Noise Analysis | Sampling Date | 16-05-2017 |

TEST RESULTS

| Code # | LOCATION | Noise dB (A) By Analyzer |
|-------------|--------------------------------------|-----------------------------|
| 7010 | Chutta | 38 |
| 7011 | Wandari | 41 |
| 7012 | Khadri | 35 |
| 7013 | Jhalaro | 36.2 |
| 7014 | Acharwand | 37 |
| 7015 | Sinjori | 36 |
| 7016 | Hatachi Khizran Infiltration Gallery | 32 |
| NEQS Limits | | 85 |

| | | |
|-----------------|---------------------------|----------------|
| Prepared by | Section In charge (E) | Head R&ASD |
|-----------------|---------------------------|----------------|

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| | |
|--------------------|---------------|
| TEST REPORT | Page 12 of 12 |
|--------------------|---------------|

| | | | |
|--------------------|---|----------------|-----------------|
| Customer's Name | M/s NEC Consultant (Pvt) Ltd | Test Report No | 2421K/2016-2017 |
| Customer's Ref | E-mail | Reporting Date | 08-06-2017 |
| Date | 05-05-2017 | Sample Code | 7020-7029 |
| Sample Description | SPM, $\mu\text{g}/\text{Nm}^3$ Analysis | Sampling Date | 16-05-2017 |

| Code # | LOCATION | TEST RESULTS |
|--------|---------------------------------------|--------------|
| 7020 | Chutta | 12 |
| 7021 | Wandari | 14 |
| 7022 | Khadri | 15 |
| 7023 | Jhalaro | 11 |
| 7024 | Acharwand | Nil |
| 7025 | Sinjori | 4 |
| 7026 | Hatachi Khizrzan Infiltration Gallery | Nil |
| | | |
| | | |

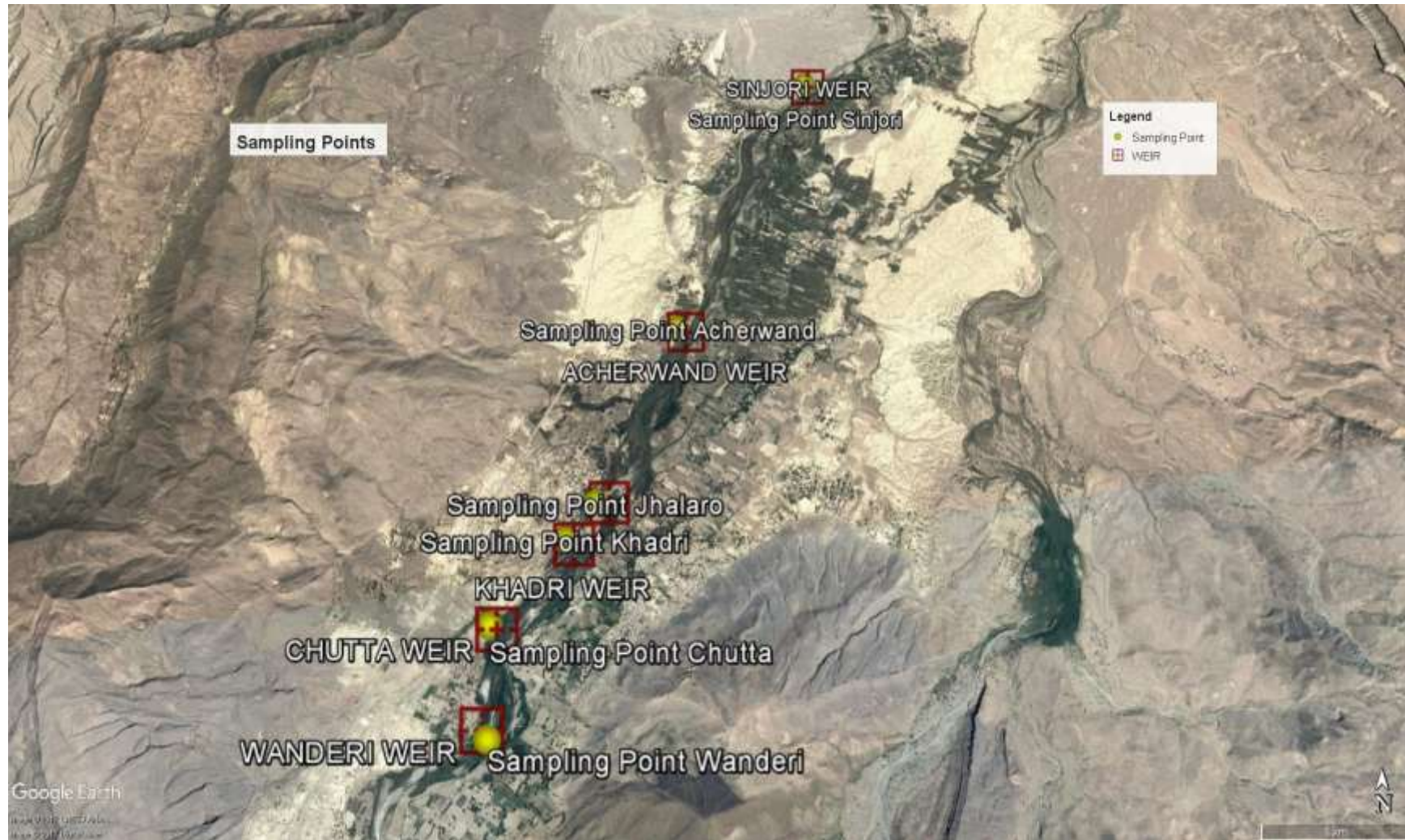
| | | |
|------------------------|----------------------------------|---------------------------|
| Prepared by | Section In charge (E) | Head R&ASD |
|------------------------|----------------------------------|---------------------------|

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Annexure 8: Location Map of Sampling Points



Annexure 9: Combined Location Map of Project Area with Protected Forest



Initial Environmental Examination

February 2018

PAK: Balochistan Water Resources Development Sector Project

Project No. 48098-002

Part 4 of 4

Prepared by Irrigation and Power Department, Government of Balochistan for the Asian Development Bank (ADB).

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Annexure 10: Karkh River Development Subproject

Proposed gross irrigation requirements - Karkh River Development Subproject

| Conveyance efficiency | | 82% | Field efficiency | | | 80% | Irrigation efficiency | | | 65% | Command Area 2250 Hectare | |
|---------------------------------------|-----------------|--------|------------------|---------|--------|-------|-----------------------|-------|-------|---------|------------------------------|--------------|
| Months | Crops | Cotton | Fodder | Kh. veg | Pulses | Onion | Barley | Wheat | Melon | Orchard | Rabi veg | Total |
| | % | 10 | 7 | 15 | 4 | 5 | 2 | 50 | 2 | 14 | 11 | 120 |
| | Area in Hectare | 225 | 157 | 338 | 90 | 113 | 45 | 1125 | 45 | 315 | 247 | 2,700 |
| Apr | | 0 | 17 | 28 | 0 | 13 | 4 | 121 | 8 | 15 | 0 | 206 |
| May | | 15 | 25 | 53 | 0 | 29 | 8 | 71 | 9 | 23 | 0 | 233 |
| Jun | | 62 | 33 | 98 | 0 | 28 | 12 | 0 | 9 | 21 | 0 | 264 |
| July | | 56 | 35 | 84 | 0 | 18 | 2 | 0 | 8 | 19 | 0 | 221 |
| August | | 25 | 37 | 56 | 0 | 0 | 0 | 0 | 7 | 19 | 0 | 144 |
| September | | 20 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 68 |
| October | | 12 | 19 | 0 | 1 | 0 | 0 | 81 | 0 | 10 | 0 | 123 |
| November | | 0 | 11 | 0 | 10 | 0 | 0 | 86 | 0 | 6 | 19 | 131 |
| December | | 0 | 3 | 0 | 5 | 0 | 0 | 73 | 0 | 2 | 11 | 95 |
| January | | 0 | 3 | 0 | 1 | 0 | 0 | 78 | 0 | 2 | 15 | 98 |
| February | | 0 | 3 | 0 | 0 | 0 | 0 | 104 | 4 | 4 | 20 | 134 |
| March | | 0 | 7 | 0 | 0 | 6 | 1 | 112 | 6 | 7 | 0 | 137 |
| Maximum Demand (Hectare-Meter) | | | | | | | | | | | | 1,854 |
| Annual Demand (MCM) | | | | | | | | | | | | 18.5 |
| Maximum Demand (Cumec) | | | | | | | | | | | | 1.01 |

Agriculture with and without project - Karkh River Development Subproject

| | | | | | | | | | | | | | | | | CCA 2,250 Ha | |
|-----------------|--------------------------|--------|-------|-------|-------------|--------|--------|--------|--------|---------|--------|---------|--------|--------|-------|--------------|-------|
| Crop | | Cotton | Maize | Rice | Lady finger | Tomato | Fodder | Guar | Mung | Sorghum | Melon | Spinach | Wheat | Barley | Onion | Cabbage | Total |
| Without Project | Area (Ha) | 113 | 0 | 0 | 158 | 113 | 158 | 68 | 0 | 90 | 0 | 45 | 203 | 785 | 45 | 225 | 2,000 |
| | Cropping intensities (%) | 5 | 0 | 0 | 7 | 5 | 7 | 3 | 0 | 4 | 0 | 2 | 9 | 35 | 2 | 10 | 89 |
| | Yield (Kg/Ha) | 1,800 | 1,100 | 2,650 | 4,000 | 14,250 | 14,820 | 18,000 | 600 | 850 | 900 | 13,000 | 4,500 | 2,285 | 1,279 | 16,500 | |
| | Production (Tons) | 203 | 0 | 0 | 630 | 1,603 | 2,334 | 1,215 | 0 | 77 | 0 | 585 | 911 | 1,794 | 58 | 3,713 | |
| With Project | Area (Ha) | 225 | 0 | 0 | 225 | 113 | 158 | 113 | 0 | 90 | 0 | 45 | 315 | 1,125 | 45 | 248 | 2,700 |
| | Cropping intensities (%) | 10 | 0 | 0 | 10 | 5 | 7 | 5 | 0 | 4 | 0 | 2 | 14 | 50 | 2 | 11 | 120 |
| | Yield (Kg/Ha) | 3,256 | 1,250 | 2,850 | 6,600 | 6,160 | 19,200 | 16,700 | 16,060 | 634 | 17,050 | 9,265 | 11,550 | 2,750 | 1,375 | 16,700 | |
| | Production (Tons) | 733 | 0 | 0 | 1,485 | 693 | 3,024 | 1,879 | 0 | 57 | 0 | 417 | 3,638 | 3,094 | 62 | 4,133 | |

Economic and financial analysis - Karkh River Development Subproject

| Benefits From Farming | | | | | |
|---|--|-----------------------|-------------|-----------|-------|
| Scenario | Conditions | Area (ha) | Million Rs. | | |
| | | | GVP | Farm Cost | NVP |
| Main Crops - Financial Prices | Without Project | 2000 | 202.9 | 90.7 | 112.2 |
| | With Project | 2700 | 530.0 | 242.0 | 288.0 |
| Main Crops - Economic Prices | Without Project | 2000 | 213.8 | 94.4 | 119.4 |
| | With Project | 2700 | 525.0 | 237.6 | 287.4 |
| Watershed & Rangeland Farming - Financial Prices | With Project | 210 | 18.7 | 4.1 | 14.6 |
| Watershed & Rangeland Farming - Economic Prices | With Project | 210 | 15.5 | 3.8 | 11.8 |
| Benefits From Livestock (Rangeland) | | | | | |
| Yearly Net Revenue of Production From Livestock | | | | | |
| Year | Livestock (Cattle, Sheep, Goat and Poultry) in Million Rs. | | | | |
| | Financial Value of NRP | Economic Value of NRP | | | |
| 1 | 1.0 | 0.9 | | | |
| 2 | 4.9 | 4.4 | | | |
| 3 | 5.9 | 5.3 | | | |
| 4 | 7.1 | 6.4 | | | |
| 5 | 8.5 | 7.6 | | | |
| 6 | 10.2 | 9.2 | | | |
| Gender Economic and Financial Activity | | | | | |
| Benefits From Health "With Project" | | | | | |
| (Benefits) In Million Rs. | | | | | |
| Analysis | Financial | | Economic | | |
| According to Women Labor Wage Rates | 1.6 | | 1.12 | | |
| Women Economic Activity in Poultry, Tailoring and Embroidery Sector | 0.4 | | 0.34 | | |
| Internal Rate of Return (IRR) | | | | | |
| Financial Internal Rate of Return (Base Model) FIRR | | | 17.77% | | |
| Economic Internal Rate of Return (Base Model) EIRR | | | 18.78% | | |

Annexure 11: List of the Villages where Public Consultation was held

| Location | Participants |
|---|---|
| Khuzdar, Guest House | Mr. Salim |
| Karakh(meeting with land lord/ Stake Holders) | Mr. Rafiq Jamot (Sinjori/Acharwand) Mr. Ghous Baksh(Khadri) Mr. Arif(Khadri) Mr. Kamran(Khadri) Mr. Saeed Ahmed(Lakhoru) Mr. Abdul Ghaffar(Chutta) |
| Khuzdar | Mr. Iqbal, Forest Dept |
| Quetta | Mr. Nassebullah, IUCN |



Stakeholder consultation with agriculturists of Chutta, Acherwant at Wandhri



Stakeholder consultation with agriculturists of Chutta, Acherwant at Wandhri

Annexure 12: Public Consultation in Project Area



Stakeholder consultation with agriculturists of Khadri at Wandhri



Meeting with Sub-Engineer, Irrigation and Power Department at Khuzdar



Meeting with agriculturist at Chutta weir



Sampling during field visit at Khadri

Annexure 13: Emergency Response Plan for Breach of Canal Bank

Flood-fighting measures are emergency measure deployed in the event when flood protection / control structures and flood proofing measures have failed or rendered ineffective with a sole objective of mitigating flood impacts

Reasons of Flooding:

- Failure of dykes, flood walls and embankments;
- Reduced capacity of river channels, flood ways, and flood bypass channels;
- Failure of weirs and barrages with consequent devastating flood waves;
- Failure of land drainage systems causing flooding of agriculture land; and
- Failure of urban drainage systems causing flooding within protected urban area.

Emergency Responses for flood-fighting in a typical case of failure of flood protection / control structures include the following:

- Closing of gaps in flood walls by sand bags or other available methods;
- Protection of river banks by sand bags, stone, or other available methods;
- Counteracting piping which is the main cause of collapse of embankment and dykes etc.;
- Protection of bridge piers, weirs, barrages and dams against erosion by rockfill, sand bags and other available methods;
- Construction of temporary non-structural protection measures to prevent the propagation of flood on non-protected land;
- Cutting of embankment, dykes etc. in order to allow flooding of less important areas, and thus to save other more important areas;
- Removing obstacles from active or potential flood ways, relief and flood bypass channels; and
- Protection of structures exposed to strong wind wash action.

Annexure 14: Emergency Response Plan for Flood Protection Bund

Flood-fighting measures are emergency measure deployed in the event when flood protection / control structures and flood proofing measures have failed or rendered ineffective with a sole objective of mitigating flood impacts

Reasons of Flooding:

- Failure of flood walls and embankments;
- Failure of land drainage systems causing flooding of agriculture land; and

Emergency Responses for flood-fighting in a typical case of failure of flood protection / control structures include the following:

- Closing of gaps in flood walls by sand bags or other available methods;
- Protection of river banks by sand bags, stone, or other available methods;
- Counteracting piping which is the main cause of collapse of embankment and dykes etc.;
- Construction of temporary non-structural protection measures to prevent the propagation of flood on non-protected land;
- Cutting of embankment, dykes etc. in order to allow flooding of less important areas, and thus to save other more important areas;
- Removing obstacles from active or potential flood ways, relief and flood bypass channels; and
- Protection of structures exposed to strong wind wash action.

Annexure 15: Emergency Response Plan for Damage of Weir

Flood-fighting measures are emergency measure deployed in the event when flood protection / control structures and flood proofing measures have failed or rendered ineffective with a sole objective of mitigating flood impacts.

Reasons of Flooding:

- Failure of dykes, flood walls and embankments;
- Reduced capacity of river channels, flood ways, and flood bypass channels;
- Failure of weirs and barrages with consequent devastating flood waves;
- Failure of land drainage systems causing flooding of agriculture land; and
- Failure of urban drainage systems causing flooding within protected urban area.

Emergency Responses for flood-fighting in a typical case of failure of flood protection / control structures include the following:

- Closing of gaps in flood walls by sand bags or other available methods;
- Protection of river banks by sand bags, stone, or other available methods;
- Counteracting piping which is the main cause of collapse of embankment and dykes etc.;
- Protection of bridge piers, weirs, barrages and dams against erosion by rockfill, sand bags and other available methods;
- Construction of temporary non-structural protection measures to prevent the propagation of flood on non-protected land;
- Cutting of embankment, dykes etc. in order to allow flooding of less important areas, and thus to save other more important areas;
- Removing obstacles from active or potential flood ways, relief and flood bypass channels; and
- Protection of structures exposed to strong wind wash action.

Annexure 16: Chance Find Procedure

Project routing does not envisage any archaeological site. However, in case of any chance find, the **Construction Contractor** will immediately report through **Chief Resident Engineer** of Supervision Consultant to **Deputy Commissioner (DC)** or his nominated representative, to take suitable further actions to preserve such antiques or sensitive remains; and contact the “**Culture, Tourism & Archives Department, (Archaeology Directorate) Government of Balochistan**” for further action.

Representative of the “**Culture, Tourism & Archives Department, (Archaeology Directorate) Government of Balochistan**” will visit the site and observed the significance of the antique, artifact & Cultural (religious) properties and significance of the project. The site visit report will be prepared and given to the **concerned official** of the **Archaeology Directorate**.

In case any artifact, antiques and sensitive remains are discovered, *Chance Find Procedures* should be adopted by Construction Contractors as follows;

- Stop the construction activities in the areas of chance find;
- Delineate the discovered site or area;
- Consult with the local community and provincial archaeological department;
- The suggestion of the local communities and the concerned authorities will be suitable incorporated during taking the preventive measures to conserve the antique, artifact and Cultural (religious) properties;
- Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remain, a night guard shall be arranged until the responsible local authorities take over;
- After stopping work, the Construction Contractor must immediately report the discovery to the **Chief Resident Engineer** of Supervision Engineer for onwards communication to **Deputy Commissioner (DC)**;
- Once authorization has been given by the responsible authorities (Archaeological Department), the Construction Contractor will be informed when works can resume.

Annexure 17: The List of Restricted Pesticides

Table 1. Extremely Hazardous (Class Ia) Technical grade Active Ingredients in Pesticides

| Common name | CAS no | UN no | Chem type | Phys state | Main use | GHS | LD ₅₀ mg/kg | Remarks |
|-------------------------|-------------|-------|-----------|------------|----------|-----|------------------------|--|
| dicarb [ISO] | 116-06-3 | 2757 | C | 5 | I-S | 1 | 0.93 | DS 53; EHC121; HSG 64; IARC53; ICSC 94; JMPR 1993, 1996a |
| difacoum [ISO] | 56073-10-0 | 3027 | CO | 5 | R | 1 | 0.3 | DS 57; EHC175; HSG 93 |
| radiolone [ISO] | 28772-56-7 | 3027 | CO | 5 | R | 1 | 1.12 | DS 88; EHC175; HSG 94 |
| methalin [ISO] | 63333-35-7 | 2588 | | 5 | R | 1 | 2 | |
| calcium cyanide [C] | 592-01-8 | 1575 | | 5 | FM | 2 | 39 | Adjusted classification; see note 1; ICSC 407 |
| atafol [ISO] | 2425-06-1 | | | 5 | F | 5 | 5000 | Adjusted classification; see note 2; HSG 49; IARC 53; ICSC 119; JMPR 1978, 1986a; see note 3 |
| prothoxyfos [ISO] | 54593-83-8 | 3018 | OP | L | I | 1 | 1.8 | Extremely hazardous by skin contact (LD = 12.5 mg/kg); ICSC 1681 |
| ormephos [ISO] | 24934-91-6 | 3018 | OP | L | I | 2 | 7 | ICSC 1682 |
| prophacinone [ISO] | 3691-35-8 | 2588 | | 5 | R | 1 | 3.1 | DS 62; EHC175 |
| fenacoum [ISO] | 56073-07-5 | 3027 | CO | 5 | R | 1 | 1.8 | EHC 175; HSG 95 |
| methialone [ISO] | 104653-34-1 | 2588 | | 5 | R | 1 | 0.56 | EHC 175 |
| phacinone [ISO] | 82-66-6 | 2588 | | 5 | R | 1 | 2.3 | EHC 175 |
| ulfoton [ISO] | 298-04-4 | 3018 | OP | L | I | 1 | 2.6 | DS 68; JMPR 1992, 1997a; ICSC 1408 |
| l | 2104-64-5 | 2783 | OP | 5 | I | 2 | 14 | See note 4; ICSC 753 |
| oprophos [ISO] | 13194-48-4 | 3018 | OP | L | I-S | 2 | D26 | DS 70; JMPR 2000; ICSC 1660; [Oral LD = 33 mg/kg] |
| coumafen | 90035-08-8 | 3027 | | 5 | R | 1 | 0.25 | EHC 175; ICSC 1267 |
| tachlorobenzene [ISO] | 118-74-1 | 2729 | OC | 5 | FST | 5 | D10000 | Adjusted classification (notes 3 and 5); IARC 79; ICSC 895; EHC 195 |
| mercuric chloride [ISO] | 7487-94-7 | 1624 | HG | 5 | F-S | 1 | 1 | See note 3; ICSC 979 |
| vinphos [ISO] | 26718-65-0 | 3018 | OP | L | I | 1 | D4 | DS 14; ICSC 924; JMPR 1998b; [Oral LD = 3.7 mg/kg] |
| methion [ISO] | 56-38-2 | 3018 | OP | L | I | 2 | 13 | See note 3; DS 6; HSG 74; IARC 30, Suppl. 7; ICSC 6; JMPR 1996b |
| methion-methyl [ISO] | 298-00-0 | 3018 | OP | L | I | 2 | 14 | See note 3; DS 7; EHC 145; HSG 75; ICSC 626; JMPR 1985c, 1996b |

| Common name | CAS no | UN no | Chem type | Phys state | Main use | GHS | LD ₅₀ mg/kg | Remarks |
|-----------------------------|------------|-------|-----------|------------|----------|-----|------------------------|--|
| Phenylmercury acetate [ISO] | 62-38-4 | 1674 | HG | S | FST | 2 | 24 | Adjusted classification; see notes 3 and 6; ICSC 540 |
| Phorate [ISO] | 298-02-2 | 3018 | OP | L | I | 1 | 2 | DS 75; JMPR 1997b, 2005; ICSC 1060 |
| Phosphamidon | 13171-21-6 | 3018 | OP | L | I | 2 | 7 | See note 3; DS 74; ICSC 189; JMPR 1987b |
| Sodium fluoroacetate [C] | 62-74-8 | 2629 | | S | R | 1 | 0.2 | DS 16; ICSC 484 |
| Sulfotep [ISO] | 3689-24-5 | 1704 | OP | L | I | 1 | 5 | ICSC 985 |
| Tebupirimfos [ISO*] | 96182-53-5 | 3018 | OP | L | I | 1 | 1.3 | Extremely hazardous by skin contact (LD 9.4 mg/kg in rats) |
| Terbufos [ISO] | 13071-79-9 | 3018 | OP | L | I-S | 1 | c2 | JMPR 1991, 2004 |

EHC = Environmental Health Criteria Monograph; DS = Pesticide Data Sheet; HSG = Health and Safety Guide; IARC = IARC Monographs on the Evaluation of

Carcinogenic Risks to Humans; ICSC = International Chemical Safety Card; JMPR = Evaluation by the Joint FAO/WHO Meeting on Pesticide Residues.

Notes to Class Ia

1. Calcium cyanide is in Class Ia as it reacts with moisture to produce hydrogen cyanide gas. The gas is not classified under the WHO system (see Table 8).
2. Captafol is carcinogenic in both rats and mice.
3. The international trade of captafol, hexachlorobenzene, mercury compounds, parathion, parathion-methyl, and phosphamidon is regulated by the Rotterdam convention on Prior Informed Consent (see <http://www.pic.int/>), which entered into force on 24 February 2004. See Table 7, p. 51
4. EPN has been reported as causing delayed neurotoxicity in hens.
5. Hexachlorobenzene has caused a serious outbreak of porphyria in humans. The use and production of hexachlorobenzene is severely restricted by the Stockholm convention on persistent organic pollutants, which entered into force on 17 May, 2004. See <http://www.pops.int/>
6. Phenylmercury acetate is highly toxic to mammals and very small doses have produced renal lesions: teratogenic in the rat.

THE FINAL CLASSIFICATION OF ANY PRODUCT DEPENDS ON ITS FORMULATION
See Pages 7 & 8, and the Appendix

Table 2. Highly hazardous (Class Ib) technical grade active ingredients in pesticides

| Common name | CAS no | UN no | Chem type | Phys state | Main use | GHS | LD ₅₀ mg/kg | Remarks |
|------------------------------|-------------------|-------|-----------|------------|----------|----------|------------------------|---|
| Acrolein [C] | 107-02-8 | 1092 | | L | H | 2 | 29 | EHC 127; HSG 67; IARC 63; ICSC 90 |
| Allyl alcohol [C] | 107-18-6 | 1098 | | L | H | 3 | 64 | Highly irritant to skin and eyes; ICSC 95; <i>Adjusted classification (see note 3)</i> |
| Azinphos-ethyl [ISO] | 2642-71-9 | 2783 | OP | S | I | 2 | 12 | DS 72; JMPR 1974 |
| Azinphos-methyl [ISO] | 86-50-0 | 2783 | OP | S | I | 2 | 16 | DS 59; ICSC 826; JMPR 1992, 2009b |
| Blasticidin-S | 2079-00-7 | 2588 | | S | F | 2 | 16 | |
| Butocarboxim [ISO] | 34681-10-2 | 2992 | C | L | I | 3 | 158 | JMPR 1986a; <i>Adjusted classification (see note 3)</i> |
| Butoxycarboxim [ISO] | 34681-23-7 | 2992 | C | L | I | 3 | D288 | <i>Adjusted classification (see note 3)</i> |
| Cadusafos [ISO] | 95465-99-9 | 3018 | OP | L | N,I | 2 | 37 | JMPR 1992 |
| Calcium arsenate [C] | 7778-44-1 | 1573 | AS | S | I | 2 | 20 | EHC 18, 224; IARC 84; ICSC 765; JMPR 1969 |
| Carbofuran [ISO] | 1563-66-2 | 2757 | C | S | I | 2 | 8 | DS 56; ICSC 122; JMPR 1997b, 2003b, 2009a; <i>See note 2.</i> |
| Chlorfenvinphos [ISO] | 470-90-6 | 3018 | OP | L | I | 2 | 31 | ICSC 1305; JMPR 1995b |
| 3-Chloro-1,2-propanediol [C] | 96-24-2 | 2689 | | L | R | 3 | 112 | <i>Adjusted classification (see notes 1 and 3)</i> |
| Coumaphos [ISO] | 56-72-4 | 2783 | OP | S | AC,MT | 2 | 7.1 | ICSC 422; JMPR 1991 |
| Coumatetralyl [ISO] | 5836-29-3 | 3027 | CO | S | R | 2 | 16 | |
| <i>Cyfluthrin [ISO]</i> | <i>68359-37-5</i> | | <i>PY</i> | <i>S</i> | <i>I</i> | <i>2</i> | <i>c15</i> | <i>JMPR 2008; See note 9, p. 8</i> |
| <i>Beta-cyfluthrin [ISO]</i> | <i>68359-37-5</i> | | <i>PY</i> | <i>S</i> | <i>I</i> | <i>2</i> | <i>c11</i> | <i>JMPR 2008; See note 9, p. 8</i> |
| Zeta-cypermethrin [ISO] | 52315-07-8 | 3352 | PY | L | I | 3 | c86 | See note 9, p. 8; HSG 22; ICSC 246; JMPR 2008; <i>Adjusted classification (see note 3)</i> |
| Demeton-S-methyl [ISO] | 919-86-8 | 3018 | OP | L | I | 2 | 40 | DS 61, EHC 197; ICSC 705; JMPR 1990 |
| Dichlorvos [ISO] | 62-73-7 | 3018 | OP | L | I | 3 | 56 | Volatile, DS 2; EHC 79; HSG 18; IARC 20, 53; ICSC 690; JMPR 1994; <i>Adjusted classification (see note 3)</i> |
| Dicrotophos [ISO] | 141-66-2 | 3018 | OP | L | I | 2 | 22 | ICSC 872 |
| Dinoterb [ISO] | 1420-07-1 | 2779 | NP | S | H | 2 | 25 | |

| Common name | CAS no | UN no | Chem type | Phys state | Main use | GHS | LD ₅₀ mg/kg | Remarks |
|-------------------------|------------|-------|-----------|------------|----------|-----|------------------------|--|
| DNOC [ISO] | 534-52-1 | 2779 | NP | S | I-S,H | 2 | 25 | JMPR 1965a; EHC 220; ICSC 462. See note 2. |
| Edifenphos [ISO] | 17109-49-8 | 3018 | OP | L | F | 3 | 150 | JMPR 1982. <i>Adjusted classification (see note 3)</i> |
| Ethiofencarb [ISO] | 29973-13-5 | 2992 | C | L | I | 3 | 200 | JMPR 1983. <i>Adjusted classification (see note 3)</i> |
| Famphur | 52-85-7 | 2783 | OP | S | I | 2 | 48 | |
| Fenamiphos [ISO] | 22224-92-6 | 2783 | OP | S | N | 2 | 15 | DS 92; ICSC 483; JMPR 1998b, 2003b |
| Flucythrinate [ISO] | 70124-77-5 | 3352 | PY | L | I | 3 | c67 | JMPR 1986b; see note 9, p.8; <i>Adjusted classification (see note 3)</i> |
| Fluoroacetamide [C] | 640-19-7 | 2588 | | S | R | 2 | 13 | ICSC 1434. See note 2 |
| Formetanate [ISO] | 22259-30-9 | 2757 | C | S | AC | 2 | 21 | |
| Furathiocarb | 65907-30-4 | 2992 | C | L | I-S | 2 | 42 | |
| Heptenophos [ISO] | 23560-59-0 | 3018 | OP | L | I | 3 | 96 | <i>Adjusted classification (see note 3)</i> |
| Isoxathion [ISO] | 18854-04-8 | 3018 | OP | L | I | 3 | 112 | <i>Adjusted classification (see note 3)</i> |
| Lead arsenate [C] | 7784-40-9 | 1617 | AS | S | L | 2 | c10 | EHC 18, 224; IARC 84; ICSC 911; JMPR 1969 |
| Mecarbam [ISO] | 2595-54-2 | 3018 | OP | Oil | I | 2 | 36 | JMPR 1987a |
| Mercuric oxide [ISO] | 21908-53-2 | 1641 | HG | S | O | 2 | 18 | ICSC 981; CICAD 50. See note 2 |
| Methamidophos [ISO] | 10265-92-6 | 2783 | OP | S | I | 2 | 30 | HSG 79; ICSC 176; JMPR 1991, 2003b; See note 2 |
| Methidathion [ISO] | 950-37-8 | 3018 | OP | L | I | 2 | 25 | JMPR 1998b; ICSC 1659 |
| Methiocarb [ISO] | 2032-65-7 | 2757 | C | S | I | 2 | 20 | JMPR 1999 |
| Methomyl [ISO] | 16752-77-5 | 2757 | C | S | I | 2 | 17 | DS 55, EHC 178; HSG 97; ICSC 177, JMPR 1989, 2002 |
| Monocrotophos [ISO] | 6923-22-4 | 2783 | OP | S | I | 2 | 14 | See note 2; HSG 80; ICSC 181; JMPR 1996b |
| Nicotine [ISO] | 54-11-5 | 1654 | | L | | 1 | D50 | ICSC 519 |
| Omethoate [ISO] | 1113-02-6 | 3018 | OP | L | I | 2 | 50 | JMPR 1997a |
| Oxamyl [ISO] | 23135-22-0 | 2757 | C | S | I | 2 | 6 | DS 54; JMPR 1986b, 2003b |
| Oxydemeton-methyl [ISO] | 301-12-2 | 3018 | OP | L | I | 3 | 65 | JMPR 1990, 2003b; <i>Adjusted classification (see note 3)</i> |
| Paris green [C] | 12002-03-8 | 1585 | AS | S | L | 2 | 22 | Copper-arsenic complex |
| Pentachlorophenol [ISO] | 87-86-5 | 3155 | | S | I,F,H | 2 | D80 | See note 2; Irritant to skin; EHC 71; HSG 19; IARC 20, 53; ICSC 69 |

| Common name | CAS no | UN no | Chem type | Phys state | Main use | GHS | LD ₅₀ mg/kg | Remarks |
|----------------------|------------|-------|-----------|------------|----------|-----|------------------------|---|
| Propetamphos [ISO] | 31218-83-4 | 3018 | OP | L | I | 3 | 106 | <i>Adjusted classification (see note 3)</i> |
| Sodium arsenite [C] | 7784-46-5 | 1557 | AS | S | R | 2 | 10 | EHC 224; IARC 84; ICSC 1603 |
| Sodium cyanide [C] | 143-33-9 | 1689 | | S | R | 2 | 6 | ICSC 1118; CICAD 61 |
| Strychnine [C] | 57-24-9 | 1692 | | S | R | 2 | 16 | ICSC 197 |
| Tefluthrin | 79538-32-2 | 3349 | PY | S | I-S | 2 | c22 | See note 9, p. 8 |
| Thallium sulfate [C] | 7446-18-6 | 1707 | | S | R | 2 | 11 | DS 10, EHC 182; ICSC 336 |
| Thiofanox [ISO] | 39196-18-4 | 2757 | C | S | I-S | 2 | 8 | |
| Thiometon [ISO] | 640-15-3 | 3018 | OP | Oil | I | 3 | 120 | DS 67; ICSC 580; JMPR 1980; <i>Adjusted classification (see note 3)</i> |
| Triazophos [ISO] | 24017-47-8 | 3018 | OP | L | I | 3 | 82 | JMPR 1994, 2003b; <i>Adjusted classification (see note 3)</i> |
| Vamidothion [ISO] | 2275-23-2 | 3018 | OP | L | I | 3 | 103 | JMPR 1989; ICSC 758; <i>Adjusted classification (see note 3)</i> |
| Warfarin [ISO] | 81-81-2 | 3027 | CO | S | R | 2 | 10 | DS 35, EHC 175; HSG 96; ICSC 821 |
| Zinc phosphide [C] | 1314-84-7 | 1714 | | S | R | 2 | 45 | DS 24, EHC 73; ICSC 602 |

EHC = Environmental Health Criteria Monograph; DS= Pesticide Data Sheet; HSG = Health and Safety Guide; IARC = IARC Monographs on the Evaluation of Carcinogenic Risks to Humans; ICSC = International Chemical Safety Card; JMPR = Evaluation by the Joint FAO/WHO Meeting on Pesticide Residues.

Notes to Class Ib

1. 3-Chloro-1,2-propanediol in nonlethal dosage is a sterilant for male rats. This compound is also known as alpha chlorhydrin.
2. The international trade of carbofuran, DNOC, fluoroacetamide, mercury compounds, methamidophos, monocrotophos and pentachlorophenol is regulated by the Rotterdam convention on Prior Informed Consent (see <http://www.pic.int/>), which entered into force on 24 February 2004. See Table 7, p. 51.
3. As a precautionary measure, the classification of certain liquid pesticides has been adjusted to avoid those pesticides being assigned to a less hazardous Class in the process of aligning the WHO Classification with the GHS. Details of how the WHO Classification has been aligned with the GHS Acute Toxicity Hazard Categories are described in the introductory notes for Part II.

THE FINAL CLASSIFICATION OF ANY PRODUCT
DEPENDS ON ITS FORMULATION
See Pages 7 & 8, and the Appendix

Table 3. Moderately Hazardous (Class II) Technical Trade Active Ingredients in Pesticides

| Common name | CAS no | UN no | Chem type | Phys state | Main use | GHS | LD ₅₀ mg/kg | Remarks |
|--------------------|-------------|-------|-----------|------------|----------|-----|------------------------|--|
| Acephate [ISO] | 30560-19-1 | | OP | S | I | 4 | 945 | JMPR 1991, 2003b, 2006b; ICSC 748 |
| Acifluorfen [ISO] | 50594-66-6 | | | S | H | 4 | 1370 | Strong irritant to eyes |
| Alachlor [ISO] | 15972-60-8 | 2588 | | S | H | 4 | 930 | See note 1; DS 86; IARC 19, 36, 63; ICSC 371 |
| Alanycarb [ISO] | 83130-01-2 | | C | S | I | 4 | 330 | |
| Allethrin [ISO] | 584-79-2 | | PY | Oil | I | 4 | c685 | See note 9, page 8; EHC 87; HSG 24; ICSC 212; JMPR 1965a |
| Ametryn [ISO] | 834-12-8 | | T | S | H | 4 | 110 | |
| Amitraz [ISO] | 33089-61-1 | | | S | AC | 4 | 800 | ICSC 98; JMPR 1999 |
| Anilofos [ISO] | 64249-01-0 | | OP | S | H | 4 | 472 | |
| Azaconazole | 60207-31-0 | | | S | F | 4 | 308 | |
| Azamethiphos [ISO] | 35575-96-3 | | OP | S | I | 4 | 1010 | |
| Azocyclotin [ISO] | 41083-11-8 | 2786 | OT | S | AC | 3 | 80 | JMPR 1990, 1995b, 2006b |
| Bendiocarb [ISO] | 22781-23-3 | 2757 | C | S | I | 3 | 55 | DS 52 |
| Benfuracarb [ISO] | 82560-54-1 | 2992 | C | L | I | 3 | 205 | |
| Bensulide [ISO] | 741-58-2 | 2902 | | L | H | 3 | 270 | ICSC 383 |
| Bensultap [ISO] | 17606-31-4 | | | S | I | 4 | 1100 | |
| Bentazone [ISO] | 25057-89-0 | | | S | H | 4 | 1100 | HSG 48; ICSC 828; JMPR 1999, 2005 |
| Bifenthrin | 82657-04-3 | 3349 | PY | S | I | 3 | c55 | JMPR 1993 |
| Bilanafos [ISO] | 71048-99-2 | | | S | H | 3 | 268 | |
| Bioallethrin [C] | 584-79-2 | | PY | L | I | 4 | c700 | See note 2; note 9, p. 8; ICSC 227 |
| Bromoxynil [ISO] | 1689-84-5 | 2588 | | S | H | 3 | 190 | |
| Bromuconazole | 116255-48-2 | | | S | F | 4 | 365 | ICSC 1264 |
| Bronopol | 52-51-7 | | | S | B | 3 | 254 | ICSC 415 |
| Butamifos [ISO] | 36335-67-8 | | OP | L | H | 4 | 630 | |
| Butralin [ISO] | 33629-47-9 | | | S | H | 4 | 1049 | |

| Common name | CAS no | UN no | Chem type | Phys state | Main use | GHS | LD ₅₀ mg/kg | Remarks |
|------------------------------|-------------|-------|-----------|------------|----------|-----|------------------------|---|
| Butoxydim [ISO] | 138164-12-2 | | | S | H | 4 | 1635 | |
| Butylamine [ISO] | 13952-84-6 | 1992 | | L | F | 4 | 380 | Irritant to skin; ICSC 401; JMPR 1982, 1985b |
| Carbaryl [ISO] | 63-25-2 | 2757 | C | S | I | 3 | c300 | DS 3; EHC 153; HSG 78; IARC 12, Suppl.7; ICSC 121; JMPR |
| Carbosulfan [ISO] | 55285-14-8 | 2992 | C | L | I | 3 | 250 | JMPR 1987a, 2004 |
| Cartap [ISO] | 15263-53-3 | | | S | I | 4 | 325 | EHC 76; JMPR 1996a |
| Chloralose [C] | 15879-93-3 | | | S | R | 4 | 400 | |
| Chlordane [ISO] | 57-74-9 | 2996 | OC | L | I | 4 | 460 | See notes 3 and 4; DS 36; EHC 34; HSG 13; IARC 79; ICSC 740; JMPR 1995a |
| Chlorfenapyr [ISO] | 122453-73-0 | | | S | I,MT | 4 | 441 | |
| Chlormequat (chloride) [ISO] | 999-81-5 | | | S | PGR | 4 | 670 | ICSC 781; JMPR 2000 |
| Chloroacetic acid [C] | 79-11-8 | 1751 | | S | H | 4 | 650 | Irritant to skin and eyes; data refer to sodium salt; ICSC 235 |
| Chlorphonium chloride [ISO] | 115-78-6 | 2588 | | S | PGR | 3 | 178 | Irritant to skin and eyes |
| Chlorpyrifos [ISO] | 2921-88-2 | 2783 | OP | S | I | 3 | 135 | DS 18; ICSC 851; JMPR 2000 |
| Clomazone [ISO] | 81777-89-1 | | | L | H | 4 | 1369 | |
| Copper hydroxide [C] | 20427-59-2 | | CU | S | F | 4 | 1000 | |
| Copper oxychloride [C] | 1332-40-7 | | CU | S | F | 4 | 1440 | |
| Copper sulfate [C] | 7758-98-7 | | CU | S | F | 3 | 300 | ICSC 751 |
| 4-CPA [ISO] | 122-88-3 | | PAA | S | PGR | 4 | 850 | |
| Cuprous oxide [C] | 1317-39-1 | | CU | S | F | 4 | 470 | ICSC 421, EHC 200 |
| Cyanazine [ISO] | 21725-46-2 | | T | S | H | 3 | 288 | ICSC 391 |
| Cyanophos [ISO] | 2636-26-2 | | OP | L | I | 4 | 610 | |
| Cyhalothrin [ISO] | 68085-85-8 | 3352 | PY | Oil | Ix | 3 | c144 | See note 9, p. 8; EHC 99; HSG 38; ICSC 858; JMPR 1985c; JECFA 2000b |
| Cyhexatin [ISO] | 13121-70-5 | | OT | S | AC | 3 | 265 | EHC 15; JMPR 1995b, 2006b |
| Cymoxanil [ISO] | 57966-95-7 | | | S | F | 4 | 1196 | |

| Common name | CAS no | UN no | Chem type | Phys state | Main use | GHS | LD ₅₀ mg/kg | Remarks |
|-----------------------------------|-------------|-------|-----------|------------|----------|-----|------------------------|--|
| Cypermethrin [ISO] | 52315-07-8 | 3352 | PY | L | I | 3 | c250 | See note 9, p. 8; DS 58; EHC 82; HSG 22; ICSC 246; JECFA 1996 |
| Alpha-cypermethrin [ISO] | 67375-30-8 | 3349 | PY | S | I | 3 | c79 | See note 9, p 8; EHC 142; JECFA 1996; <i>JMPR 2008</i> |
| Cyphenothrin [(1R)-isomers] [ISO] | 39515-40-7 | 3352 | PY | L | I | 4 | 318 | |
| Cyproconazole | 94361-06-5 | | | S | F | 4 | 1020 | |
| 2,4-D [ISO] | 94-75-7 | 3345 | PAA | S | H | 4 | 375 | DS 37; EHC 29, 84; HSG 5; IARC 41, Suppl. 7; ICSC 33; JMPR |
| Dazomet [ISO] | 533-74-4 | | | S | F-S | 4 | 640 | Irritant to skin and eyes; ICSC 786 |
| 2,4-DB | 94-82-6 | | | S | H | 4 | 700 | |
| DDT [ISO] | 50-29-3 | 2761 | OC | S | I | 3 | 113 | See notes 3 and 4; DS 21; EHC 9, 83; IARC 53; ICSC 34; JMPR |
| Deltamethrin [ISO] | 52918-63-5 | 3349 | PY | S | I | 3 | c135 | See note 9, p. 8; DS 50; EHC 97; HSG 30; IARC 53; ICSC 247; <i>JMPR 2001</i> |
| Diazinon [ISO] | 333-41-5 | 3018 | OP | L | I | 4 | 300 | DS 45, EHC 198; ICSC 137; <i>JMPR 1994, 2002, 2008</i> |
| Dicamba [ISO] | 1918-00-9 | | | S | H | 4 | 1707 | ICSC 139 |
| Dichlorobenzene [C] | 106-46-7 | | | S | FM | 4 | 500-5000 | Mixture of isomers: ortho (3) 95-50-1, meta (3) 541-73-1, para (2B) |
| Dichlorophen [ISO] | 97-23-4 | | OC | S | F | 4 | 1250 | |
| Dichlorprop [ISO] | 7547-66-2 | | | S | H | 4 | 800 | ICSC 38 |
| Diclofop [ISO] | 40483-25-2 | | | S | H | 4 | 565 | |
| Dicofol [ISO] | 115-32-2 | | OC | S | AC | 4 | c690 | DS 81; IARC 30; ICSC 752; <i>JMPR 1993</i> |
| Difenoconazole [ISO] | 119446-68-3 | | | S | F | 4 | 1453 | <i>JMPR 2009b</i> |
| Difenzoquat [ISO] | 43222-48-6 | 2588 | | S | H | 4 | 470 | |
| Dimepiperate [ISO] | 61432-55-1 | | TC | S | H | 4 | 946 | |
| Dimethachlor [ISO] | 50563-36-5 | | | S | H | 4 | 1600 | |
| Dimethipin [ISO] | 55290-64-7 | | | S | H | 4 | 1180 | <i>JMPR 2000, 2005</i> |

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Annexure 19: Guidelines

Health & Safety of Building & Construction Workers during COVID-19 Outbreak

Objective

To provide guidelines for the workers involved in building and construction work during the current epidemic of COVID-19.

Rationale

Construction processes are dynamic with significantly varying number of workers on a construction project site from day to day. The workers coming from diverse environments and working closely together increases the risk of exposure to COVID 19.

Building construction involves earth work, procurement of materials and supplies and their storage, construction work done by masons, blacksmiths, electricians, carpenters, plumbers, painters, supervisors, managers and security personnel. These guidelines provide the safety measure to be implemented at the construction site having a dusty environment, continuous flow of different materials and make-shift type of arrangements for storage, food and sanitation calls for implementation of safety precautions at the very basic level of personal hygiene only.

Advice for Site Managers:

Without prejudice to the following, all possible and prescribed actions shall be taken at the project site, as should facilitate the health of all life present at the site.

- Every construction project shall make proper arrangements for uninterrupted building services including but not restricted to, electricity, fuel, water supply, water disposal and sanitation, communication links, washrooms with hand hygiene and shower facility and with proper and adequate supply of soaps and disinfectants.
- Workers should not use biometric attendance machines or crowd during attendance, entry or exit to the premises of the construction site
- Ensure the availability of the thermal gun at the entry and exit of the construction site and no worker should be allowed without getting his/her temperature checked.
- Site manager must maintain a register of all contact details with NID number and addresses of all present at the site in case a follow up or tracing and tracking of contacts is required at a later stage.
- Develop the employee roster to decrease the number of people on the site very day. Split the shifts of the workers in morning and evening with limit of each shift to 8 working hours.



- Every worker must change into standard working attire at the time of commencement of duty and change back to their regular dress after taking shower when their duty hours end.
- In addition to all other internationally recognized safety precaution for construction workers and other staff, every individual must be provided with a face mask. It must be ensured that everyone during his or her presence at the site continues to wear the mask. Face mask shall be replaced as and when soiled or otherwise removed. Outer surface of face mask must not be touched with hands.
- Non-essential work trainings must be postponed avoiding gathering of people.
- Ensure the physical distance by creating more than one route of entry and exit to the site.
- Instruct the workers to inform the construction manager (or authorities) if
 - They develop any symptoms of cough, flu or fever.
 - They have been exposed to someone suspected or confirmed with COVID 19.
 - They have met someone who has a travel history of COVID 19 endemic country
 - They have travelled in last couple of days or plan to travel soon
- All incidences of appearance of the symptoms of COVID-19 shall be immediately documented and maintained at the site and information regarding which shall be immediately communicated through e-mail or else, to the designated health facility, and the sick worker shall be transported to the health facility for further advice and action. The site manager must establish a link with a nearby healthcare facility with arrangements for quick transportation of workers in case of an emergency.
- Persuade the workers to inform the authorities for their safety and of other if they observe any signs and symptoms in a colleague
- Do not allow any worker at the construction site who has the symptoms
- Display the awareness banners about hand hygiene and physical distancing, where you can, around the work site.
- Everyone on the construction site must observe sneezing and coughing etiquettes.
- Workers shall be requested and required to wash their hands as frequently as practicable and shall also be advised not to touch their face with their hands during work.
- Workers must maintain no less than two arm lengths between them before, during after work at all the times. They shall not make physical contact and shall be required to maintain separate personal gears and assets which must be clearly labelled and stored without intermix.
- Only sanitize-able dinning surfaces shall be used, which must be cleaned before each service. Food must be heated to a temperature to no less than 70° C before consumption and shall preferably be served in disposable utensils. If reusable utensils are used, these must be washed with soap and water immediately after use and stored at a safe place.
- The lunch breaks and stretch breaks of the workers must be staggered to avoid the clustering of workers. Workers must not sit at less than 2 meters distance while having meals and while any other activity requiring interpersonal communications.
- In the wake of current restrictions on transportations site mangers will ensure safe transport arrangements for worker which should not be crowded and should have social distancing in place during the entire process from pickups till drops at destination



- In case of workers sleeping in at the site of construction, a safe distance of 2 meters must be ensured in the sleeping rooms
- A supply of safe drinking water must be made available at the project site and maintained.

Advice for Construction Workers:

- All possible and prescribed measures shall be taken to ensure your and others health
- Enter your contact details in the register maintained at the site, in case a follow up or tracing and tracking of contacts is required at a later stage.
- Follow hygiene practices at washrooms and shower facility with proper and adequate use of soaps and disinfectants.
- Every worker must change into standard working attire at the time of commencement of duty and change back to their regular dress after taking shower when their duty hours end.
- In addition to all other internationally recognized safety precaution for construction workers and other staff, every individual must use face mask. Face mask shall be replaced as and when soiled or otherwise removed. Outer surface of face mask must not be touched with hands.
- Workers should wash their hands as frequently as practicable and shall not to touch their face with their hands during work.
- Everyone on the construction site must observe sneezing and coughing etiquettes.
- Workers must maintain no less than two arm lengths between them before, during after work at all the times. They shall not make physical contact and shall be required to maintain separate personal gears and assets which must be clearly labelled and stored without intermix.
- Sick worker should immediately inform the site manager and must get medical advice from nearby health centre.
- Only sanitize able dinning surfaces shall be used. Food must be heated to a temperature to no less than 70° C before consumption and shall preferably be in disposable utensils. If reusable utensils are used, these must be washed with soap and water immediately after use and stored at a safe place.
- Do not sit at less than 2 meters distance while having meals and while any other activity requiring interpersonal communications.
- Do not use biometric attendance machines or crowd during attendance, entry or exit to the premises of the construction site.
- Use safe transport arrangements which should not be crowded and should have social distancing in place during the entire process from pickups till drops at destination.
- In case sleeping in at the site of construction, a safe distance of 2 meters must be ensured in the sleeping rooms.

Deliveries or Other Contractors Visiting the Site

- Non-essential visits to the construction sites should be cancelled or postponed.

- Delivery workers or other contractors who need to visit the construction site must go through temperature check before entering and should be given clear instructions for precautions to be taken while on site.
- Designate the workers, with protective gears or at least gloved and mask, to attend to the deliveries and contractors.
- Make alcohol-based hand sanitizer (at least 70%) available for the workers handling deliveries.
- Instruct the visiting truck drivers to remain in their vehicles and whenever possible make use of contactless methods, such as mobile phones, to communicate with your workers.

Note: The above recommendations are being regularly reviewed by the Ministry of National Health Services, Regulations & Coordination and will be updated based on the international & national recommendations and best practices.

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<http://covid.gov.pk/>

<http://nhsrc.gov.pk/> <http://www.hsa.edu.pk/>

<https://www.nih.org.pk/> <https://twitter.com/nhsrcofficial>

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