



Bi-annual Environmental Monitoring Report

Bi-annual Environmental Monitoring Report
November 2012- April 2013

Islamic Republic of Pakistan: Loan2742/43-PAK: Flood Emergency Reconstruction
Projects (FERP)
Reconstruction and Rehabilitation of Irrigation Sector Sindh

Prepared by: Project Management Unit (PMU)
Sindh Irrigation Department, Pakistan

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ABBREVIATIONS

ADB	Asian Development Bank
DNA	Damage and Need Assessment
dB	Decibel
Gop	Government of Pakistan
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMMP	Environmental Management Monitoring Plan
ES	Environment Specialist
FERP	Flood Emergency Reconstruction Project
GoS	Government of the Sindh
HSE	Health Safety and Environment
IA	Implementation Agency
NEQS	National Environmental Quality Standards
PMC	Project Management Consultants
PMU	Project Management Unit
PAM	Project Administration Manual
TA	Technical Assistance

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Table of Contents

Part I Introduction.....	4
1. Background:	4
1.1 Construction activities of the project	5
1.2 Project Organization and Environmental Management Team	5
1.3 Relationship with the Contractor and the Project Manager	7
Part II Environmental Monitoring.....	8
2.1.1 Noise	8
2.1.2 Air Quality	8
2.1.3 Soil Erosion.....	9
2.1.4 Natural Habitat Protection.....	9
2.1.5 Health and Safety of Workers/ Locals.....	9
2.1.6 Cultural Heritage Protection	10
2.1.7 Contractor's Camp	10
2.1.8 Flora and Fauna.....	10
Part III Environmental Management.....	10
3.1 DDR review of the REA's:	10
3.1.1. DDR-1 of NCB Flood Embankments	11
3.1.2. DDR-2 of Canals and Drains	11
3.1.3. EMP Compliance Checklists	11
3.1.4. Conclusions and Recommendations	11
ANNEX 1-Construction Activities of the Project as of 30 th April 2013	14
ANNEX 2-Environmental Management Plan	32
ANNEX-3 Borrow Area Database format	39
ANNEX 4- Guidelines for Camp	43
Annex-5 EMP Monitoring Checklist	45
Annex-6-Consolidated Progress Checklist of NCB Embankment Packages. Month.....2012	48
ANNEX 7: Photographs	56

Part I Introduction

1. Background:

1. Pakistan faced unprecedented flooding in 2010 affecting an estimated 22 million people and damage to infrastructure across the country. This incident caused extensive human suffering due to displacement, food shortage, interruption to economic livelihoods, and disease outbreaks. The Asian Development Bank (ADB) is supporting the efforts of the Government of Pakistan (GoP), in irrigation, flood protection, road transport in Sindh province and the highway sector, nationwide. The assistance is being provided through the Flood Emergency Reconstruction Project (FERP) that comprises a \$650 million emergency loan to assist the Government in meeting urgent rehabilitation and reconstruction priorities focused on (i) roads (national and provincial roads and bridges); and (ii) irrigation, including drainage and flood-protection measures in Sindh Province.

2. The irrigation network of Sindh is controlled through three barrages, namely Guddu Barrage, Sukkur Barrage and Kotri Barrage. To protect the Sindh province from river spills, a continuous bund (flood protection embankments) line exists on both banks of Indus from Guddu Barrage to sea except in reaches where ground is high or there are hills. The Sindh irrigation sector suffered substantial damage caused by four breaches in flood protection embankments. The breaches occurred in the Left Marginal Bund of Guddu Barrage, Tori bund on right bank between Guddu and Sukkur barrages, MS Bund on left bank downstream Kotri barrage, and PB Bund on right bank downstream Kotri barrage. The project area of Irrigation component is spread over all the affected River Protective Bunds and the Irrigation networks in Sindh province under the administration of all the Six Regions of Sindh Irrigation Department i.e. Guddu barrage, Sukkur barrage right bank, Sukkur barrage left bank, Kotri barrage, Development region; and Sindh Irrigation and Drainage Authority (SIDA).

3. According to the requirements of ADB's Safeguard Policy Statement (SPS) 2009 monitoring and evaluation is being carried out and follow-up evaluation is also in progress to check the environmental impacts of project activities. For this, monitoring cycle is followed which consist of four activities: observation, analysis, reporting and reflection. In this way, Asian Development Bank and Irrigation Department get sufficient information about environmental safeguards impacts and address them appropriately. All subprojects that are undertaken as part of the FERP were screened, classified and assessed according to ADB's Safeguard Policy Statement (SPS), 2009 and Pakistan Environmental legislation. An environmental screening was carried out for each subproject through Rapid Environmental Assessment (REA) checklists which are specified in Environmental Assessment and Review Framework (EARF) to classify the category for each Flood Protection Embankment and Canal/Drain subproject.

4. The subprojects awards process commenced in December 2011/January 2012 but the major construction activities started in May 2012. Thus the reporting period of this biannual report is from Nov 2012 - to April 2013. This report fulfills the requirements to monitor the effectiveness of ADB safeguards policy, its implementation and process as well as to ensure

sound environmental planning. Potential environmental impacts are identified including indirect and cumulative impacts, and their significance assessed.

5. ADB uses a classification system to reflect the significance of a project's potential impacts. There are three categories on the basis of screening questions listed in Rapid Environmental Assessment (REA) checklists. The categories are based upon environmental sensitivity of the project. The REA determined that all irrigation projects do not have significant adverse environmental impacts of such nature or magnitude that would require a more detailed impact assessment. Therefore the projects were classified as category C.

1.1 Construction activities of the project

6. As stated above, the NCB embankments subprojects award process commenced in December 2011/January 2012 but the major construction activities were started in May 2012. For NCB Canal/Drains subprojects the construction activities started in July 2012. Contractual details of Embankment and Canal/Drain subprojects and physical progress achieved during the reported period are provided in Annex-1. During the period under review, 28 new sub-projects were completed.

1.2 Project Organization and Environmental Management Team

7. In order to ensure compliance with ADB *Safeguard Policy Statement (2009)*, the IA is responsible to ensure the implementation of the environmental management and monitoring requirements and procedures for FERP under the overall guidance of the Environmental Assessment and Review Framework (EARF). The objective of the EARF is to establish systems and functions that will ensure that conditionalities are built into each initiative at its design stage such that through reconstruction, improved and environmentally sustainable structures are built that have better resistance to natural calamities, particularly floods. EARF also requires ensuring that all the environmental mitigation measures proposed for the design phase are incorporated in the design and included in the contract documents.

8. The Irrigation Department Sindh is the Implementing Agency (IA) for Irrigation component of FERP. It established a Project Management Unit (PMU) in Hyderabad. The PMU is responsible for the subproject review based on the selection criteria, preparation, submission, implementation, and environmental management & monitoring and evaluation of all the subprojects. An Environment & Social Unit (ESU) is established under PMU in Hyderabad office and a Director Environment has been deputed for environmental safeguard compliance under the guidance of ADB Safeguard Specialist (TA Consultant). ADB Safeguard Specialist is responsible for explaining policy requirements to PMU/ESU, helping them to meet those requirements, building capacity, and monitoring implementation of agreed safeguards.

9. Moreover, IA has engaged a Project Management Consultants (PMC) team to strengthen their procurement capacity, support and help monitor design and construction supervision services, and support the preparation, implementation, monitoring and compliance of environmental safeguard actions plans including consultation and social and gender analysis as

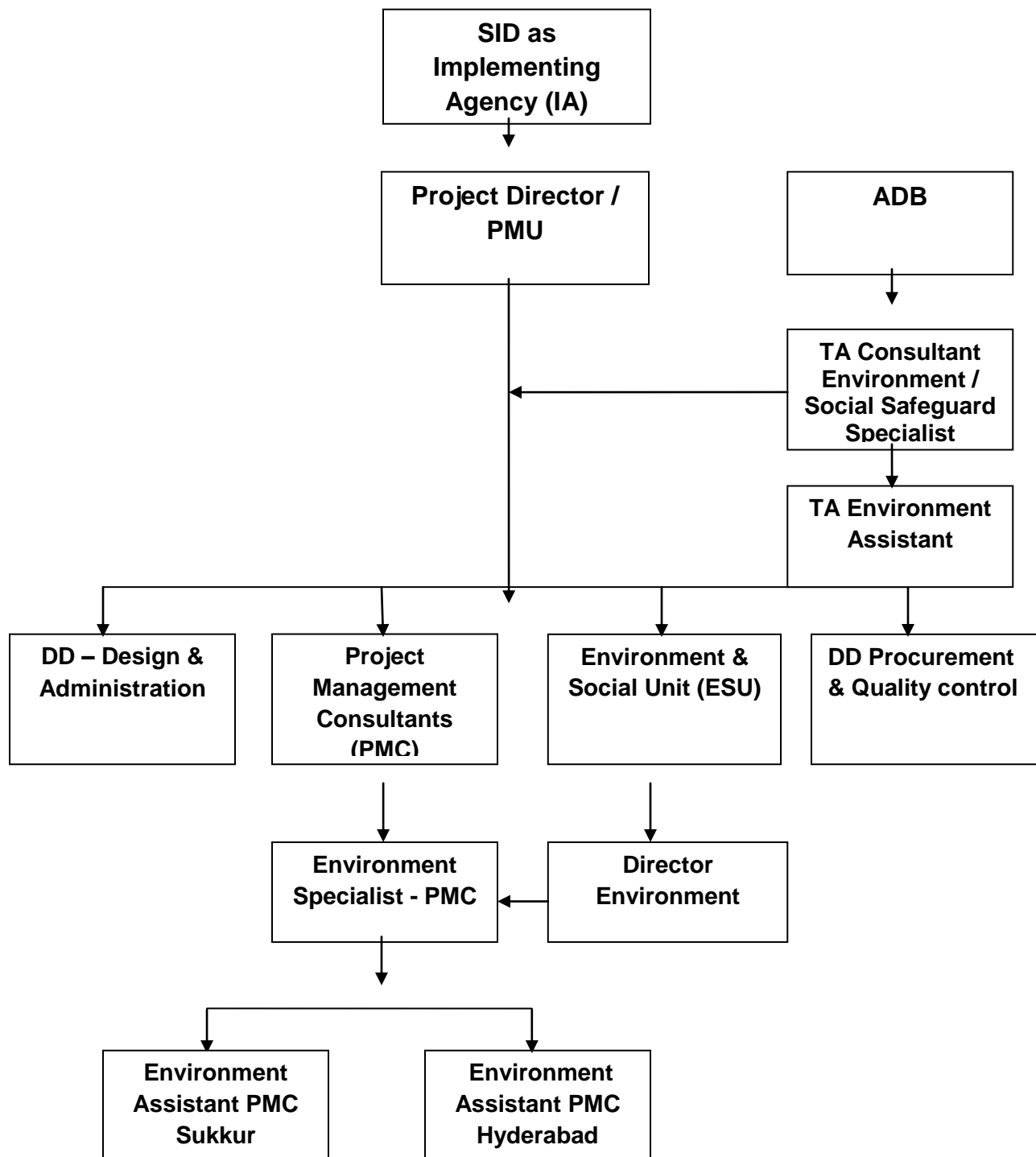
well as implementation and monitoring of gender action plans. The Project Management Consultants established their offices one in Hyderabad and one in Sukkur. PMC hired one Environment Specialist on intermittent basis who worked for both offices with the help of Assistants.

10. Director Environment ESU, under the guidance of TA - ADB Safeguard Specialist and in coordination with Environment Specialist of PMC, is responsible for preparing environmental screening checklists and classifying sub-projects. As required under the project EARF, sectoral initial environmental examination (IEEs) and environmental management plans (EMPs) were prepared. It is also ensured that the EMPs, including all proposed mitigation measures and monitoring programs are properly implemented.

11. The organizational chart for the implementation of the Environmental Management and Monitoring Plan is shown in Figure-1

Figure- 1

Organizational Chart



1.3 Relationship with the Contractor and the Project Manager

12. Executive Engineer (XEN) of the concerned Irrigation Division has a role of the Project Manager under the construction contracts. A good working relationship was maintained among the contractors and the XENs during the execution of the subprojects. Training workshops were arranged by the TA Environment Specialist in Hyderabad and Sukkur for the capacity building of the Project Managers, Contractors and their relevant staff. They were briefed on updating the environment monitoring checklists and strictly follow the EMPs which they submit on monthly

basis to adhere Environmental Management and Monitoring activities. During camps and subprojects sites visits, improvement in environmental safeguards were mutually discussed with Contractors and their field staff and they were advised to follow the EMP. PMC and XENs were advised to ensure the EMP compliance and give their feedback accordingly.

Part II Environmental Monitoring

2.1 Environmental Monitoring Summary

13. The sectoral IEE prepared for the irrigation sector includes Environmental management plan (EMP) that addresses the potential impacts. (Annex-2). Mitigation measures are considered so that the projects are designed, constructed, and operated in compliance with applicable laws and regulations and meets the requirements of ADB SPS (2009).

14. The EMP had been made part of bidding documents and contractors were bound to comply with. During execution each subproject is being monitored to check the compliance of EMP. The contractors submit EMP Monitoring Checklists to PMC on monthly basis, which are duly signed by the Project Managers. The record of the above parameters is kept as specified in bidding documents and performance indicators.

15. The Environmental Monitoring is also being carried out through visual observations to get information on the actual nature and extent of key impacts and the effectiveness on mitigation and enhancement measures outlined in the Environmental Management Plan (EMP). The monitoring of noise, air pollution, soil erosion, natural habitats protection, health and safety of workers, cultural heritage protection, camps, flora and fauna are discussed hereunder:

2.1.1 Noise

16. No noise or vibration related complaints from public or workers were registered during the reporting period. However the implementation of the mitigation measures is recommended in EMP to reduce the impact of noise and vibration. The camp sites were established away from the residential areas.

17. Contractors were advised to keep their machinery in good condition and provide personal protective equipments (PPE) like ear plugs to the working staff at noise generating sites as per the EMP. As a result all the PPE are provided to the labor where required.

18. Speed of the trucks and other vehicles used for construction activities was controlled and the construction activities were limited to daytime only.

2.1.2 Air Quality

19. The main objective was to minimize the airborne particulate matter, dust pollution and fumes of vehicular emissions into the atmosphere, which can be caused by the emission of dust from normal construction activities and movement of vehicles which may pose negative impacts to the health of construction workers, local residents and nearby vegetation.

20. Visual observations were made to monitor regular water sprinkling at dust prone areas during the construction activities and also to monitor the vehicular emissions to minimize the smoke emissions.

21. However some of the contractors were advised to regularly tune and checkup their construction vehicles and machinery to comply the vehicular exhaust emission levels.

22. As a result the contractors regularly tune their vehicles and provided masks, helmets, gloves etc to the construction workers as per the EMP requirement. The transportation of the excavated material mainly used for construction was to be carried in proper manner i.e. open dumpers were to be avoided in order to protect the surroundings.

2.1.3 Soil Erosion

23. All borrow areas were required to be approved by the Project managers and the contractors had signed agreements for borrow pits from land owners.

24. Contractors were advised to make complete line plans for excavation and transportation showing the distance of the borrow pits from the construction sites and to get them approved by the project managers.

25. For non-cultivable lands the borrowing of earth was allowed up to the depth of 1.0 m from the existing ground levels and for the cultivated lands it was allowed not more than 50 cm.

26. Borrow pits were to be located at least 500 m away from villages and settlements and in case of unavoidable factors; the contractors were advised to maintain the excavation depth not more than 30 cm. After completion of the projects the borrow areas need to be restored to the natural land profile.

27. No damages to the agricultural lands due to borrow pits or soil erosion was observed. The contractors restored the borrow pits in accordance with EMP requirements. XENs and PMC staff have the responsibility of effective monitoring. Whereas a borrow database has been maintained also for all the packages. (Annex-3)

2.1.4 Natural Habitat Protection

28. The contractors were advised to avoid damaging the natural habitats and to replant the damaged plants, if unavoidable, after construction. Also the native wildlife and habitats should not be disturbed.

29. However no tree was cut during construction processes and no native species were disturbed as well due to the reconstruction of already existing canals and embankments but still some of the contractors have planted some new plants in order to facilitate the environment. (Annex-7)

2.1.5 Health and Safety of Workers/ Locals

30. The contractors were made aware of the safety procedures for all relevant aspects of construction. It was also ensured that the workers were provided with proper safety equipments such as helmets, goggles, masks, shoes etc as during construction the workers can be exposed to accidents due to operation of construction vehicles and machinery and are more prone to be injured. (Annex-7)

31. The contractors were also advised to keep first aid kits and other necessary equipments at sites and camps. In response the first aid kits and other necessary equipments/medicines were kept on camp sites. Moreover, at some packages of embankments, junior medical officers were also hired by the contractors for the labor.

32. The safety of the local people was a major concern, due to which all the contractors were advised to place safety signs (safety cautions, safety cones, safety tapes etc) on site. In response much improvement has been observed since then.

2.1.6 Cultural Heritage Protection

33. No cultural heritage sites/ wetlands/ protected areas/ mangroves/ estuarine lies in the right of way (ROW) of the subprojects as almost all the subprojects (embankments, canals and drains) are being rehabilitated on the existing alignments.

2.1.7 Contractor's Camp

34. Guidelines (Annex-4) to establish campsite were prepared by TA Environment Specialist in the light of EMP recommendations. Camp sites of all subprojects sites were visited to assess environmental compliance. In initial visits, the copy of EMP was not available at camp sites, and no first aid kits were found at some of the camps. The contractors were advised to keep the EMP etc at camp sites.

35. During the construction stage, the contractors were recommended to properly dispose of the solid waste and the sanitary waste at the nearby designated place. They were also advised to avoid any wood burning. Excessive storage of construction material near work area was discouraged. The compliance of these requirements of EMP was ensured by the monitoring staff.

2.1.8 Flora and Fauna

36. During the reported period no flora and fauna was disturbed by the construction activity by the contractors. (Annex- 7)

Part III Environmental Management

3.1 DDR review of the REA's:

37. Due Diligence Review (DDR) of the Rapid Environmental Assessment (REA) screening checklists along with suitability of mitigation measures recommended in EMP were reviewed by TA Environment Specialist for all irrigation subprojects.

38. Documents including Project Administration Manual (PAM); Environmental Assessment and Review Framework (EARF), Sectoral Initial Environmental Examination reports, Generic Environmental Management and Monitoring Plans and project specific Rapid Environmental Assessment reports were reviewed and field visits were conducted.

3.1.1. DDR-1 of NCB Flood Embankments

39. Field visits of all NCB flood embankment subprojects were carried out along with the TA consultants, PMU and PMC officials every month. Consultation meetings were held with the contractors' representatives. Visual observations and photographs were taken during the field visits. Key findings were discussed with the concerned engineering staff and the contractors. DDR-1 had been generated on the basis of observations and submitted to PMU to meet the constraints. Recommendations had been made against all the environmental issues or problematic entities of the flood embankments. However, it is concluded that so far all the subprojects under execution have no significant and irreversible environmental impacts.

3.1.2. DDR-2 of Canals and Drains

40. Field visits of canals and drains (CD) subprojects for the verification of EMP compliance and camp sites were carried out along with the concerned XENs and PMC staff. Consultation meetings were held with the contractors and their representatives of all CD projects. Visual observations and photographs were taken during the field visits. Key findings were highlighted and discussed with PMU, the concerned XENs PMC staff and the contractors' representatives. Monthly EMP compliance checklists to monitor environmental performance were also discussed. Same as in the case of embankments, so far no significant and irreversible environmental impacts have been observed on any of the CD subprojects under execution.

3.1.3. EMP Compliance Checklists

41. Sample checklist (Annex-5) has been developed to monitor monthly environmental compliance of all irrigation projects. The checklist is generally based on the recommended mitigation measures given in the EMP for environmental safeguard at different stages of the subprojects. Contractor identifies about any impact on environmental concern categorized in the form of YES or NO during the reporting month which is then verified by the PMC staff and the TA consultants. Then this data of all the packages is recorded in consolidated checklists for NCB embankments and canal/drains, prepared by the TA consultant. (Annex-6)

42. In case, if an impact is observed, corrective action taken are provided in the remarks column and supported with objectively verifiable indicators like photographs, letters, test reports etc. But so far no significant and irreversible environmental impacts are reported or observed.

3.1.4. Conclusions and Recommendations

i. 33 NCB civil work contracts out of total 52 have been completed as of 30th April 2013 without any significant environmental impacts.

ii. Copy of the EMP, compliance guidelines and monthly EMP compliance checklists were available at all camp sites.

iii. No noise and vibration related complaints from public or workers were registered. Construction activities situated close to populated areas are limited to daylight hours only to minimize the impact of noise.

iv. No surface water or ground water contamination was reported due to oil spillages or solid waste dumping during the reporting period.

v. No flora or fauna was disturbed by the construction activities.

vi. No cultural sites/ wetlands/ protected areas/ mangrove/ estuarine lies in the right of way of the project alignment.

vii. Some of the land was found of not being dressed up properly after being used as borrow areas in initial visits but the concerned XENs and contractors were advised to dress them up properly. In result much improvement is observed and contractors are following the EMP guidelines.

viii. Almost on every site, personal protective equipment (PPE) was provided to the labor by the contractors.

ix. Overall no major conflict with community was observed. However, it was suggested that the contractor should execute the project by employing local labor as much as possible.

x. The contractors' staff has been advised to keep the copy of EMP on camp site which were found missing in the initial visits but after being given the deadline of July 2012, now all the contractors have their EMP's on the site.

xi. The safety of the local people was a major concern, due to which all the contractors were advised to place safety signs (safety cautions, safety cones, safety tapes etc) on site. . In response much improvement has been observed since then. (Annex-8)

ANNEXURES

ANNEX 1-Construction Activities of the Project as of 30th April 2013

Flood Emergency Reconstruction Project
Monthly Progress Report, Irrigation Component
April 30, 2013
NCB Civil Works

S r. N o	Sub- Project No	Sub- Project Name	Name of Bidder	Contract Cost (PKRs)	Variation Amount (PKRs)	Revised Contract Cost (PKRs)	ADB share (90%)(PK Rs)	Award Date	Completi on Date	Time Elapsed (%) Ongoing subprojec ts	% Weighted Physical Progress	Completed (Y)	ADB Disbursemen t	GoS Disbursement (excl taxes)	Total Disbursement (PKRs)	Financial Progress (%)	Area Protected / Irrigated / Drained (ha)	Length of FP Bund (KM)	Gender Specific Feature (Y)	Safeguards Impact (Y/N)			Remarks
																				I R	I P	E N	
Flood Protection Bund																							
Begari Sindh Feeder Kashmore (Guddu Region)																							
1	Package #26	Constructi ng stone pitching along K.K. Bund from Mile 3/0 to 6/0 and Mile 24/0 to 25/6.	M/s Abdul Qayoom Khan Mazari	105,524,611	-	105,524,611	94,972,150	3-Apr-12	3-Oct-12	Completed	100%	Y	93,789,792	4,163,435	97,953,227	93%	-	7.65	-	N	N	N	Subproject completed
2	Package #27	Raising of Stone Pitching along Haibat Bund from Mile 17/3 to 18/2 & Providing Stone Pitching along Haibat Bund from Mile 18/2 to 19/2, New Makhwani Bund from Mile 0/0 to 2/0, Old Tori Bund from Mile 6/4 to 6/6+300 and L.B Bund from Mile 3/1 to 6/4	M/s A.T-I.T (J.V)	192,245,502	-	192,245,502	173,020,952	23-May-12	30-Apr-13	Completed	100%	Y	144,324,743	4,791,693	149,116,436	78%	-	-	-	N	N	N	Subproject completed during the month. Completi on date extended by ADB on 14 Feb. 2013
Guddu Barrage Division Kashmore (Guddu Region)																							

3	Package #25	Raising & Strengthening and stone pitching along L.M bund Mile 0/0 to 7/2 & left spur mile 0/0 to 2/3.	M/s I.O.M (J.V)	331,411,389	-	331,411,389	298,270,250	5-Apr-12	30-Apr-13	Completed	100%	Y	263,591,189	-	263,591,189	80%	-	15.50	-	N	N	N	Subproject completed during the month. Completion date extended by ADB on 14 Feb. 2013
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Phulleli Canal Division (Sindh Irrigation Drainage Authority (SIDA))

4	Package #1	Construction of Stone Pitching/apron along Jamshoro Front Bund from Mile 0/0 to 0/2+300 & Mile 0/2+450 to 3/0 and repair of studs (3Nos.) along mile 2/4.	M/s Saeed Khan Construction Company	39,948,630	-	39,948,630	35,953,767	29-Dec-11	31-Jan-13	122%	82%		7,246,031	268,372	7,514,402	19%	-	4.78	-	N	N	N	Completion date extended by ADB on 14 Feb. 2013
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Ghokti Division, Sindh Irrigation Drainage Authority (SIDA)

5	Package #22	Raising and Strengthening of R.N Mangli Bund from mile from 0/0 to 1/3, Front Bund from mile 0/0 to 0/7 & R.N Bund from mile 0/2 to 1/1 (Ali Wahan Complex), Providing Stone Pitching along R.N Bund from mile from 22/4 to 26/4 and Genro Bund from mile from 11/4 to 13/4, Construction Bund Landhi along R.N Mangli Bund at mile 0/2 and Gauge Pillars, mile /furlong Stones	M/s Jan Muhammad & Brothers	226,873,883	13,761,719	240,635,602	216,572,042	28-Mar-12	30-Apr-13	Completed	100%	Y	152,392,539	-	152,392,539	63%	-	14.69	-	N	N	N	Subproject completed during the month. Completion date extended by ADB on 20 March 2013
Mirpur Division (Sindh Irrigation Drainage Authority (SIDA))																							
6	Package #24	Raising & Strengthening of Ghotki Feeder Bund from Mile 3/0 to 8/0 and Raising of Stone Pitching along Machka Bund from Mile 0/0 to 2/4+230	M/s Abdul Hakeem Chachar & Sons	46,189,856	5,212,343	51,402,199	46,261,979	29-Mar-12	15-Dec-12	Completed	100%	Y	41,109,949	1,323,351	42,433,300	83%	-	12.15	-	N	N	N	Subproject completed

7	Package #23	Raising & Strengthening of Dilwaro bund from Mile 0/0 to 7/0 and raising of Stone pitching from Mile 0/0 to 1/0 and providing stone pitching from Mile 1/0 to 4/0, construction of Bund Landhi, Guage Pillars and Mile/Furlong stones and providing stone pitching along Ranwati bund from Mile 7/2 to 11/0.	M/s Sher Muhammad Mugheri & Co.	154,163,620	-	154,163,620	138,747,258	29-Mar-12	29-Sep-12	Completed	100%	Y	136,578,281	5,609,780	142,188,060	92%	-	14.49	-	N	N	N	Subproject completed
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Rohri Division Moro (Sukkur Barrage Left Bank Region Sukkur)

8	Package #18	Earthwork strengthening of S.M Bund from Mile 60/0 to 80/0 and providing stone pitching from Mile 61/0 to 62/4, mile 64/0 to 65/0 and mile 74/4 to 78/5.	M/s Sher Muhammad Mugheri & Co.	264,465,635	29,833,089	294,298,724	264,868,852	21-Mar-12	21-Dec-12	Completed	100%	Y	260,654,715	5,380,505	266,035,220	90%	-	32.20	-	N	N	N	Subproject completed.
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9	Package #19	Earthwork strengthening of S.M Bund from Mile 0/0 to 0/5, 2/4 to 3/2, 8/0 to 12/0, Bakhri Loop Bund from Mile 1/0 to 2/0, S.M Bund from Mile 16/0 to 19/1, Moria Loop Bund from Mile 0/0 to 1/0, Pipri Loop Bund from Mile 1/0 to 3/5, Bugho Dero Loop Bund from Mile 0/0 to 1/0 and S.M Bund from Mile 29/0 to 54/6 & 57/1 to 60/0 and providing stone pitching along S.M Bund from mile 0/5 to 2/4, 40/0 to 41/0, 54/0 to 54/6.	M/s Thandani Enterprises	267,492,636	-	267,492,636	240,743,372	19-Mar-12	15-Mar-13	113%	96%		127,634,630	1,667,403	129,302,033	48%	-	68.83	-	N	N	N	Completion date extended by ADB on 14 Feb. 2013
Dad Division Shaheed Benazirabad (Sukkur Barrage Left Bank Region Sukkur)																							
10	Package #33	Earth work along S.M Bund from Mile 93/6 to 97/1 & 104/3 to 112/0 and Providing Stone Pitching from Mile 93/6 to 94/0+93 and 95/0 to 97/1 and Recouping Stone Apron from Mile 105/3+100 to 106/1+200.	M/s Hafiz Rabnawaz & Company	248,217,805	15,105,434	263,323,239	236,990,915	17-Jun-12	14-Feb-13	Completed	100%	Y	199,024,338	5,236,211	204,260,550	78%	-	17.71	-	N	N	N	Subproject completed. Completion date extended by ADB on 14 Feb. 2013
Irrigation West Div. Khairpur (Sukkur Barrage Left Bank Region Sukkur)																							

1 1	Package #36	Constructi ng Stone Pitching along Ring Bund from Mile 0/2 to1/2, L.B.B.G Bund from Mile 0/0 to 2/2, Ulra Jagir Bund from Mile 5/4 to 6/5 & Gerkino Bund from Mile 49/0 to 53/3 and Raising Stone Pitching on Old Pitching along Ulra Jagir Bund from Mile 0/0 to 5/4 & Faridabad Bund from Mile 4/0 to 8/6.	M/s Haji Muhkam Din Solangi	333,034,218	-	333,034,218	299,730,79 6	17-Jun- 12	14-Mar-13	Completed	100%	Y	247,559,053	285,016	247,844,069	74%	-	16.30	-	N	N	N	Subproject completed during the month. Completi n date extended by ADB on 12 Dec. 2012
Hala Division (Sukkur Barrage Left Bank Region Sukkur)																							

1 2	Package #34	Earthwork along S.M Bund from Mile 123/0 to 124/0, 125/0 to 126/4, 127/0 to 130/2, 137/0 to 137/6, New Fatehpur Bund from Mile 0/0 to 4/4, Old Fatehpur Bund from Mile 0/0 to 0/7, X Bund from Mile 0/0 to 0/7, S.M Bund from Mile 142/2 to 142/4+400, 143/1 to 144/4 and 148/0 to 156/4, Extension of Stone Pitching along S.M Bund from Mile 123/0 to 123/4, 129/ 4 to 130/2, New Fatehpur Bund from Mile 0/3+520 to 4/4, Old Fatehpur Bund from Mile 0/0 to 0/7, X Bund from Mile 0/0 to 0/7, S.M Bund from Mile 142/2 to 142/4+400, 143/1 to 144/1+180, 148/0 to 156/4 and Providing of Stone Pitching along S.M Bund from Mile 125/4 to 126/4, 144/ 1+180 to 144/4 and New Fatehpur Bund from Mile 0/0 to 0/3+520; and Repair of Stud No.2 at Mile 136/2 of S.M Bund.	M/s Haji Saeed Muhamma d & Sons	324,925,300	-	324,925,300	292,432,77 0	15-Jun- 12	20-Mar-13	Completed	100%	Y	191,126,143	2,334,360	193,460,503	60%	-	22.13	-	N	N	N	Subproject completed. Completi n date extended by ADB on 14 Feb. 2013
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Shahbaz Division (Sukkur Barrage Right Bank Region Sukkur)

13	Package #4	Raising and Strengthening of Sann Veeh Dari Bund from mile 4/0 to 13/4, Providing stone pitching with toe wall from mile 4/2 to 5/0, 7/4 to 8/0, 9/4 to 11/2 and 12/0 to 13/4 and Raising & Strengthening of Sann Veeh Dari Band from Mile 0/0 to 3/0 and 3/2+440 to 4/0 and providing stone pitching from Mile 0/0 to 0/6+330	M/s Saeed Khan Construction Company	193,514,818	47,136,232	240,651,050	216,585,945	30-Dec-11	29-Jun-12	Completed	100%	Y	216,523,358	6,947,984	223,471,342	93%	-	21.06	-	N	N	N	Subproject completed
14	Package #11	Providing Stone Pitching from mile 85/4 to 87/4 and Earthwork for Strengthening of Larkana Sehwan Bund from mile 97/4 to 102/0 and Raising & Strengthening of LS Bund from Mile 81/0 to 83/1.	M/s RPS Construction Company	84,077,459	10,069,158	94,146,617	84,731,955	7-Mar-12	7-Sep-12	Completed	100%	Y	79,535,270	869,640	80,404,910	85%	-	13.80	-	N	N	N	Subproject completed
15	Package #16	Raising of Manchar Containing Bank to design level and stone pitching from RD 0+0 to 62+00	M/s SCC & SE (J.V.)	388,865,890	-	388,865,890	349,979,301	1-Mar-12	1-Mar-13	Completed	100%	Y	282,901,608	-	282,901,608	73%	-	-	-	N	N	N	Subproject completed during the month.
16	Package #15	Raising of Manchar Containing Bank to design level and stone pitching from RD 63+100 To 100+00	M/s Thandani Enterprises	446,046,076	-	446,046,076	401,441,468	8-Mar-12	8-Mar-13	115%	90%		263,317,101	5,707,910	269,025,012	60%	-	-	-	N	N	N	

Northern Dadu Division (Sukkur Barrage
Right Bank Region Larkana)

17	Package #20	Raising & Strengthening of S.L Bund from Mile 5/2 To 9/0, 14/6 To 30/3, 37/0 To 40/5, Moria Loop Bund from Mile 0/0 To 1/2 and Providing Stone Pitching along S.L Bund from Mile 5/2 To 5/6, Nasrat Loop Bund Mile 4/0 to 4/6 & S.L Bund from Mile 37/0 To 40/5	M/s SKAFS International (Pvt.) Ltd	414,321,716	-	414,321,716	372,889,544	22-Mar-12	16-Mar-13	113%	83%		238,481,409	-	238,481,409	58%	-	39.04	-	N	N	N	Completion date extended by ADB on 14 Feb. 2013
18	Package #21	Raising and Strengthening of Palija Loop Bund from Mile 0/0 To 3/3, Abad Ring Bund from Mile 0/6 To 2/6, L.S Bund from Mile 9/4 To 17/2, Mile 20/0 To 23/2, Mile 26/2 To 27/4, Mile 28/0 to 32/3 and Providing Stone Pitching along L.S Bund from Mile 10/0 to 11/1.	M/s KMK-SE (J.V)	328,889,591	-	328,889,591	296,000,632	29-Mar-12	31-Mar-13	Completed	100%	Y	258,322,680	2,874,967	261,197,647	79%	-	35.42	-	N	N	N	Subproject completed. Completion date extended by ADB on 14 Feb. 2013
19	Package #35	Restoration of Damaged Stone Apron and Stone Pitching of Spurs along Ruk Bund at Miles 1/6 & 2/3.	M/s Sher Muhammad Mugheri & Co.	90,516,162	-	90,516,162	81,464,546	22-Jun-12	31-Mar-13	Completed	100%	Y	68,993,036	-	68,993,036	76%	-	-	-	N	N	N	Subproject completed during the month. Completion date extended by ADB on 14 Feb. 2013

Rice Canal Division (Sukkur Barrage Right Bank Region Larkana)

20	Package #9	Raising of stone pitching along Suprio Bund from RD 0 to 60, 65 to 80 and providing stone pitching from RD 60 to 65 and 80 to 95	M/s RPS Construction Company	177,139,767	-	177,139,767	159,425,790	19-Mar-12	19-Jan-13	Completed	100%	Y	139,888,521	576,270	140,464,791	79%	-	-	-	N	N	N	Subproject completed
21	Package #17	Providing stone pitching along F.P Bund RD-220 to RD-346.	M/s IT-TE (J.V.)	563,426,952	-	563,426,952	507,084,257	24-Mar-12	24-Mar-13	110%	92%		401,551,385	9,570,109	411,121,493	73%	-	40.57	-	N	N	N	
Southern Dadu Division (Sukkur Barrage Right Bank Region Larkana)																							
22	Package #3	Earth work Raising/Strenghing along F.P. Bund from RD 1 to 30, 120 to 147 and 192 to 220. Providing Stone Pitching from RD 120 to 147 and 192 to 220 and Service Track from RD 120 to 220.	M/s Sher Mohammad Mugheri & Co.	457,912,839	-	457,912,839	412,121,555	29-Dec-11	29-Jun-12	Completed	100%	Y	411,614,507	12,986,730	424,601,236	93%	-	-	-	N	N	N	Subproject completed
23	Package #10	Raising / Strengthening of L.S bund from Mile 52/0 to 66/0 and providing stone pitching from mile 58/0 to 66/0 and construction of Gauge Pillars.	M/s Haji Mokhumudin Solangi	443,895,652	-	443,895,652	399,506,087	12-Mar-12	30-Jan-13	Completed	100%	Y	379,402,292	15,001,202	394,403,494	89%	-	22.54	-	N	N	N	Subproject completed. Completion date extended by ADB on 14 Feb. 2013
24	Package #28	Raising and Strengthening of L.S Bund from Mile 66/0 to 77/2 and Providing Stone Pitching from Mile 66/0 to 74/1 and Raising of Stone Pitching from Mile 74/1 to 77/2	M/s Haji Saeed Mohammad & Sons	437,220,229	-	437,220,229	393,498,206	25-May-12	25-May-13	93%	88%		274,301,253	3,792,362	278,093,616	64%	-	18.11	-	N	N	N	

25	Package #29	Raising and Strengthening of L.S Bund from Mile 38/6 to 41/7 and Providing Stone Pitching from Mile 38/6 to 40/7	M/s Salman Enterprises	129,225,415	-	129,225,415	116,302,874	23-May-12	31-Mar-13	Completed	100%	Y	90,871,580	-	90,871,580	70%	-	5.03	-	N	N	N	Subproject completed. Completion date extended by ADB on 14 Feb. 2013
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Warah Division (Sukkur Barrage Right Bank Region Larkana)

26	Package #13	Raising & Strengthening of F.P Bund from RD 395 To 452 & Providing Stone Pitching from RD 395 To 435 & Construction of Landhi (1 No.) (S)	M/s Eid Muhammad Brohi & Co.	399,893,926	-	399,893,926	359,904,533	15-Mar-12	30-Apr-13	100%	63%		110,691,668	2,636,830	113,328,498	28%	-	18.35	-	N	N	N	Completion date extended by ADB on 14 Feb. 2013
27	Package #14	Raising and Strengthening of F.P Bund from RD 452 To 502 & Providing Stone Pitching from RD 475 To 502 & Construction of Landhi (01 No)	M/s Khyber Grace (Pvt.) Ltd	356,087,446	-	356,087,446	320,478,701	15-Mar-12	30-Apr-13	Completed	100%	Y	212,329,115	4,110,435	216,439,551	61%	-	16.10	-	N	N	N	Subproject completed during the month. Completion date extended by ADB on 14 Feb. 2013
28	Package #30	Raising and Strengthening of Extended Suprio Bund from RD 95 to 162.	M/s Qalandar Bux Abro and Company	213,637,470	-	213,637,470	192,273,723	29-May-12	4-Dec-12	178%	83%		99,503,962	-	99,503,962	47%	-	21.57	-	N	N	N	
29	Package #37	Providing Stone Pitching along F.P Bund from RD 346 to 347, RD 371 to 389.7 & Construction of Landhi (1No).	M/s Ghulam Nabi & Co	164,564,094	-	164,564,094	148,107,685	11-Jul-12	30-Apr-13	100%	84%		52,418,784	-	52,418,784	32%	-	-	-	N	N	N	Completion date extended by ADB on 14 Feb. 2013

Saifullah Magsi Branch Division, Shahdadkot (Sukkur Barrage Right Bank Region Larkana)

30	Package #12	Providing stone pitching and strengthening from RD-183 to 263.5 along F.P Bund and Construction of 2 Nos. Landhies.	M/s Qalandar Bux Abro & Co.	577,061,656	-	577,061,656	519,355,490	14-Mar-12	14-Mar-13	113%	79%		257,995,310	-	257,995,310	45%	-	25.92	-	N	N	N	
Kalari Baghar Division Thatta (Kotri Barrage Region Hyderabad)																							
31	Package #2	Raising and Strengthening of earth work along Jherruk Bund Mile 4/4 to 5/6 and R/S of earth work along Shaikhani Bund Mile 0/0 to 1/6.	M/s Agha Fateh Muhammad Khan & Co.	60,309,123	-	60,309,123	54,278,211	29-Dec-11	29-Jun-12	Completed	100%	Y	54,270,196	2,407,011	56,677,207	94%	-	4.83	-	N	N	N	Subproject completed
32	Package #7	Raising and strengthening of earth work along Link Canal Bund from RD 56 to 64 and Stone pitching from RD 70 to 80.	M/s Shams Builders & Developers, NKC (J.V.)	81,469,719	28,861,526	110,331,245	99,298,121	29-Feb-12	28-Feb-13	Completed	100%	Y	94,326,584	478,819	94,805,403	86%	-	5.80	-	N	N	N	Subproject completed
Lower Pinyari Division (Pinyari Circle) (Kotri Barrage Region Hyderabad)																							
33	Package #38	Recouping of Existing Stone Apron, Stone Pitching and Providing Steel Sheet Piles along MS Bund Mile 43/4 to 44/2 and Providing Stone Pitching along MS Bund Mile 34/7 to 35/7.	M/s CGC-RSL-SMMC (J.V.)	605,621,881	178,468,000	784,089,881	705,680,893	21-Nov-12	20-May-13	Completed	100%	Y	605,999,071	-	605,999,071	77%	-	-	-	N	N	N	Subproject completed during the month. Last contract locked in December 2012. Length covered in completed retro contract.
Upper Pinyari Division (Pinyari Circle) (Kotri Barrage Region Hyderabad)																							

34	Package #6	Raising & Strengthening of M.S Bund from Mile 12/0 to 18/1+150 and Mile 18/3+30 to 24/7 and raising of old stone pitching from mile 14/5 to 18/1+150 and Mile 18/3+30 to 22/0	M/s Mian Abdul Jabbar & Co.(MAJ) & Indus Construction Co (ICC) (J.V.)	197,599,169	-	197,599,169	177,839,252	27-Feb-12	10-Jan-13	Completed	100%	Y	177,163,933	4,353,478	181,517,411	92%	-	20.69	-	N	N	N	Subproject completed
Sakro Division (Kotri Barrage Region Hyderabad)																							
35	Package #5	Raising and strengthening of earthwork along Indo Bund from mile 0/0 to 15/6.	M/s Abdul Hakeem Chachar & Sons	195,363,440	-	195,363,440	175,827,096	27-Feb-12	30-Dec-12	Completed	100%	Y	175,526,449	6,821,030	182,347,478	93%	-	25.36	-	N	N	N	Subproject completed
36	Package #8	Raising and strengthening of earthwork along BU Bund from Mile 15/0 to 23/7, 27/6 to 35/3 & providing stone pitching from Mile 16/4 to 16/6, 20/7 to 21/4, 27/6 to 28/0, 29/6 to 30/3, 33/3 to 33/7.	M/s MJB & Co	296,717,447	-	296,717,447	267,045,702	25-Feb-12	15-Jan-13	Completed	100%	Y	251,324,699	2,498,104	253,822,803	86%	-	-	-	N	N	N	Subproject completed
37	Package #31	Raising and Strengthening of Earth work along B.U Bund from mile 23/7 to 27/6 and Providing Stone Pitching from Mile 24/2 to 25/5 and from Mile 27/0 to 27/6	M/s Kaybee Constructors	98,034,648	-	98,034,648	88,231,183	23-May-12	30-Jan-13	Completed	100%	Y	70,403,591	1,642,649	72,046,240	73%	-	6.24	-	N	N	N	Subproject completed. Completion date extended by ADB on 28 Nov 2012
Total F.P.B. Bund		37		9,935,905,670	328,447,501	10,264,353,171	9,237,917,854				94%	27	7,132,688,763	114,335,659	7,247,024,422	71%	-	566.86					

Canals/Drains																						
North Dadu Drainage Division, Development Region Hyderabad																						
1	CD-2	Restoration / Rehabilitation of Ghar Leading Channel, Ghar Main Drain System, Badeh Branch Drain System, Nasirabad Branch Drain, Nasir Branch Drain & allied structure works, Ghar Pump House, Operator Quarter, Sluice Gates & Transformers.	M/s Eid Muhammad Brohi & Co.	313,553,546	-	313,553,546	282,198,191	13-Jun-12	13-Mar-13	118%	45%		78,003,079	2,187,583	80,190,661	26%	-	-		N	N	N
2	CD-3	Restoration / Rehabilitation of Mehar & K.N.Shah Drainage Systems & Allied Structure works, Operator Quarters, Sluice Gates & Transformers	M/s Hafiz Rabnawaz & Co	351,512,459	-	351,512,459	316,361,213	30-Jul-12	29-Apr-13	100%	68%		141,114,616	-	141,114,616	40%	-	-		N	N	N
Larkana Drainage Division, Development Region Hyderabad																						
3	CD-1	Restoration / Rehabilitation of Shahdadkot and Mirokhan Drainage system and allied structures works.	M/s Madni Engineering Construction Company/ Cemcon JV	495,793,483	-	495,793,483	446,214,135	20-Jun-12	20-Jun-13	86%	65%		168,198,365	6,229,569	174,427,934	35%	-	-	Y	N	N	N
Shikarpur Drainage Division, Shikarpur (Development Region Hyderabad)																						

4	CD-13	Rehabilitati on of Drains,Wat ercourse crossings, Village road bridges and open type inlets in Shikarpur Drainage Division.	M/s Al-Rae e Constructi on Company	46,222,960	-	46,222,960	41,600,664	29-Aug-12	10-May-13	96%	79%		7,961,243	-	7,961,243	17%	-	-		N	N	N	Completi on date exte nded by ADB on 20 Marc h 2013
Begari Division Jacobabad (Guddu Region)																							
5	CD-7	Restoratio n of Banks along Begari Canal from Mile 7/0 to 33/0 (Various Portions), Reconstru ction of X-Regulator at Mile 28 of Begari Canal & Restoratio n of CC lining along 2R Distry RD 16 to 27 (Various Portions)	M/S Sher Muhamma d Mugheri & Co.	165,857,170	-	165,857,170	149,271,453	30-Jul-12	29-Mar-13	113%	90%		19,449,284	-	19,449,284.41	12%	-	-		N	N	N	
Begari Sindh Feeder Kashmore (Guddu Region)																							
6	CD-8	Restoratio n of Banks of BS Feeder at RD 225,226,238 & 239,Choi Branch from RD 0 to 1,Unhar Canal from RD 0 to 7 (Various Portions), Constructi ng Retaining walls along D/S Head Regulator Begari Canal & BS Feeder D/S X-regulator at RD -45 and Constructi ng Pre-Stressed Bridge at BS Feeder RD -226	M/s Muhkam Din Solangi	197,818,602	-	197,818,602	178,036,742	30-Jul-12	29-Mar-13	Completed	100%	Y	103,848,085	-	103,848,085	52%	-	-		N	N	N	Subp rojec t com plete d durin g the mont h.

Kandhkot Division Kashmore (Guddu Region)																							
7	CD-9	Restoration / Rehabilitation Work of Head & X-Regulators Embankments along Pat Feeder Canal RD 75 to 81 (L.P) & 91 (both sides) in Kandhkot Division	M/s Abdul Qayoom Khan Mazari	59,742,785	-	59,742,785	53,768,507	30-Jul-12	29-Mar-13	113%	81%		16,243,019	-	16,243,019	27%	-	-		N	N	N	
Rice Canal Division (Sukkur Barrage Right Bank Region)																							
8	CD-10	Raising and Strengthening of Embankments of Various Canals/Channels, Rehabilitation of Kudan Branch Pumping Station Leading Channel at RD 57, Saidpur Disty, Aqueduct at RD 45 and Qaim Shah Minor Pumping Station Leading Channel at RD 14+500 in Rice Canal Division	M/S Thadani Enterprises	92,168,099	-	92,168,099	82,951,289	31-Jul-12	28-Mar-13	Completed	100%	Y	71,163,052	-	71,163,052	77%	-	-		N	N	N	Subproject completed during the month.
Southern Dadu Division (Sukkur Barrage Right Bank Region Larkana)																							
9	CD-11	Rehabilitation of Johi Branch From RD 150+00 to 238+560 & Earth work along Pahore Minor from RD 41 to 51, Patoro Minor from RD 20 to 30, Chinjani Minor (Breach point) at tail portion 350 feet in Southern Dadu Division	M/S Haji Muhkam Din Solangi	45,525,466	-	45,525,466	40,972,919	30-Jul-12	29-Jan-13	Completed	100%	Y	40,907,165	823,629	41,730,794	92%	-	-		N	N	N	Subproject completed

Shahbaz Division Sehwan (Sukkur Barrage Right Bank Region Larkana)																							
10	CD-12	Reconstruction of Structures of Danistar Pumping Scheme including a staff Landhi, Trussel Plate farm and supporting pillars at New Sadabahar Pumping Scheme, Trussel Plate Farm at Head of Leading Channel 132 Mile (Dadu Canal Tail) and Road Bridge Opposite to Bubak Station	M/s Ghulam Nabi & Co	357,211,489	-	357,211,489	321,490,340	6-Aug-12	5-Apr-13	110%	91%		135,551,319	-	135,551,319	38%	-	-		N	N	N	
Warah Division (Sukkur Barrage Right Bank Region Larkana)																							
11	CD-4	Restoration / Rehabilitation Work of Head & X-Regulators , Village Road Bridges & Raising and Strengthening of Channels in Warah Division	M/s Abdul Karim Mengal	153,068,954	-	153,068,954	137,762,059	5-Jul-12	30-Apr-13	100%	85%		63,994,659	-	63,994,659	42%	-	-	Y	N	N	N	Completion date extended by ADB on 14 Feb. 2013
Saifullah Magsi Branch Division, Shahdadkot (Sukkur Barrage Right Bank Region Larkana)																							
12	CD-5	Rehabilitation of Banks along Saifullah Magsi Branch from RD-128 to 224 (IP Side).	M/s Ghulam Nabi & Co	123,462,891	-	123,462,891	111,116,602	11-Jul-12	30-Apr-13	Completed	100%	Y	84,611,345	294,355	84,905,700	69%	-	-		N	N	N	Subproject completed during the month. Completion date extended by ADB on 14 Feb. 2013

Kalari Baghar Division Thatta (Kotri Barrage Region Hyderabad)																							
13	CD-6	Restoration of Distributaries, Repair of Head Regulator, X-Regulators and Inlets in Kalri Baghar Division	M/s Madni Engineering Construction Company	85,010,729	-	85,010,729	76,509,656	24-Jul-12	31-Mar-13	Completed	100%	Y	65,633,616	1,625,132	67,258,748	79%	-	-	Y	N	N	N	Subproject completed. Completion date extended by ADB on 20 March 2013
Upper Pinyari Division (Pinyari Circle) (Kotri Barrage Region Hyderabad)																							
14	CD-14	Restoration/Rehabilitation of Banks of P.F.L from RD 50 to 55 & 103 to 112 (IP Side), RD 53 to 54 (NIP side), Fall Regulator along P.F.L at RD 35+00, Head Regulator Daro Branch at RD 0+00, X-Regulator Daro Branch at RD 5+700 and Repair of Road Bridge at P.F.L RD 135.	M/s SKAFS International (Pvt) Ltd	75,416,755	-	75,416,755	67,875,080	1-Aug-12	31-Mar-13	112%	59%		23,689,317	-	23,689,317	31%	-	-		N	N	N	
15	CD-16	Providing stone pitching and counter forts D/S of Dino Shah X Regulator RD 114 PFL.	M/s Sikander Ali Khokar	55,215,217	-	55,215,217	49,693,695	29-Aug-12	26-May-13	Completed	100%	Y	42,419,789	-	42,419,789	77%	-	-		N	N	N	Subproject completed.
Total CD		15		2,617,580,605	-	2,617,580,605	2,355,822,545				76%	6	1,062,787,953	11,160,269	1,073,948,222	41%			3				
Grand Total		52		12,553,486,275	328,447,501	12,881,933,776	11,593,740,398				90%	33	8,195,476,716	125,495,927	8,320,972,643	65%							

ANNEX 2-Environmental Management Plan

Environment Management Plan (EMP)					
Environment Concern	Impacts	Mitigation Measures	Responsibility		Cost
			Implementation	Supervision	
Noise nuisance to nearby localities	Noise may be generated during construction activities and use of vehicles/machinery etc., causing nuisance to nearby localities.	<ul style="list-style-type: none"> • Monitoring and supervision for strict enforcement/fulfilment of contractual obligations by the Contractor. • Providing residents with advance warning of construction activities. • Use of silencers and ban on excessive use of horns by the construction vehicles/ machinery • Regular tuning and check up of construction vehicles and machinery to comply vehicular noise emission levels as per NEQS. • Avoiding construction activities during the night time. • Providing ear muffs to construction workers who will be exposed to direct noise. 	Contractor	PMC/PMU	No Cost.
Air pollution	<ul style="list-style-type: none"> • Dust pollution and fumes of vehicular emissions due to construction activities and movement of vehicles may pose negative impacts to the health of construction workers, local residents and nearby vegetation (crops). 	<ul style="list-style-type: none"> • Monitoring and supervision for strict enforcement/fulfilment of contractual obligations by the Contractor. 	Contractor	PMC/PMU	Environment monitoring and mitigation cost (Rs-500,000) is being taken in the contract cost.

Environment Concern	Impacts	Mitigation Measures	Responsibility		Cost
			Implementation	Supervision	
		<ul style="list-style-type: none"> • Providing residents with advance warning of construction activities • Limiting the speed of the vehicles in the working area • Frequent sprinkling of water on katcha tracks and construction material • Regular tuning and check up of construction vehicles and machinery to comply vehicular exhaust emission levels as per NEQS • Transportation of excavated material to designated sites should be carried in a proper manner i-e No dust pollution- • Construction activities causing dust will not be carried out on excessively windy days. • Providing masks to the construction workers. 			
Soil Erosion	<ul style="list-style-type: none"> • During construction operations involving open excavations and removal of existing vegetation, the possibility of soil erosion exists due to silt run-off. • Slushy conditions may be created on bunds during rain, which can affect the construction activities 	<ul style="list-style-type: none"> • Careful construction planning and adequate monitoring of excavation operations so that the excavated areas and trenches are not left unattended. • Compaction of side slopes should strictly adhere to design specification. 	Contractor	PMC/PMU	No cost

Environment Concern	Impacts	Mitigation Measures	Responsibility		Cost
			Implementation	Supervision	
Damage of natural habitats	<ul style="list-style-type: none"> • During construction there are chances of damage to the natural habitats 	<ul style="list-style-type: none"> • Damage of natural habitats shall be avoided and replanting of any damaged plants shall be carried out after construction. • Native species shall be used for slope protection measures. Local wildlife and habitats shall not be disturbed 	Contractor	PMC/PMU	No cost
Health and Safety of Workers	<ul style="list-style-type: none"> • Increased air and noise pollution levels may also cause health-related impacts on the workers. 	<ul style="list-style-type: none"> • Use of machines and mechanical instruments should be done as per the manufacturers. 	Contractor	PMC/PMU	No cost
Accidental Risks	<ul style="list-style-type: none"> • The construction workers may also be vulnerable to increased incidences of diseases due to indiscriminate disposal of solid waste and wastewater in the area. • During the construction, workers can be exposed to accidents due to operation of construction vehicles and machinery. • The Project involves excavation operations and working at significant depths below surface. This increases probability of accidental injuries to workers and general public 	<ul style="list-style-type: none"> • The Contractor should ensure that the construction workers/labour are aware of safety procedures for all relevant aspects of construction; • Construction workers should be provided with proper safety equipment such as helmets, goggles, masks, etc.; • First aid kits and other necessary equipment should be kept available at site along with the list of emergency phone numbers to be contacted in case of any emergency/accident. For serious injuries access to nearby medical facility and travel time should be known by the site supervisors.. 			

Environment Concern	Impacts	Mitigation Measures	Responsibility		Cost
			Implementation	Supervision	
		<ul style="list-style-type: none"> • Safety signage should be erected at potentially dangerous working areas. • Public and animal access to construction site should be restricted by providing fences. • Proper lighting arrangements should be ensured for night shift working 			
Socio-Economic Impacts	<ul style="list-style-type: none"> • Cultural conflicts that may arise due to hiring of outside unskilled labour by the contractor, which could lead to intercultural tensions. • Reduction in the mobility of women. • Occupying of private-property by the Contractor 	<ul style="list-style-type: none"> • Contractor should give preference to local people while hiring skilled and unskilled labour. • Contractor and PMU/EA should take maximum care and adopt measures not to disturb the privacy of local women. Any workers reported to violate the rules and make problems for the local women should be reported to law enforcing agency • Contractor should be bound to locate its labour camp and offices so that mobility of local women is least hindered • Contractor should be bound to make payment in advance to the private property-owners if required for use as material depot, labour camp, offices etc. 	Contractor	PMC/PMU	No cost

Environment Concern	Impacts	Mitigation Measures	Responsibility		Cost
			Implementation	Supervision	
Obstruction to Traffic Flow	<ul style="list-style-type: none"> Excavation operations may result in temporary blockage of some roads, which may result in hindrance to normal traffic flow. 	<ul style="list-style-type: none"> Contractor should submit the construction schedule to PMC in advance. Spoils shall be disposed of at the designated sites. Providing residents with advance warning of construction activities. 	Contractor	PMC/PMU	No cost
Impacts related to Contractor's Camps	<ul style="list-style-type: none"> During the construction stage, the solid waste and sanitary wastewater will be generated from the contractor's camps due to the construction activities and presence of the temporary toilet. Staggering of solid waste and waste water will give rise to unhygienic conditions and spread of diseases. 	<ul style="list-style-type: none"> Contractor should be responsible for proper disposal of the solid waste and sanitary wastewater at the nearby-designated place. Contractor should provide septic tank for the toilets. Before taking-over by PMU/EA, Contractor should be responsible for site-clearance as per satisfaction of PMC/PMU. 	Contractor	PMC/PMU	No cost
Storage of Construction Materials	<ul style="list-style-type: none"> During the construction phase, the construction materials will need to be stored onsite. 	<ul style="list-style-type: none"> Contractor should submit the construction schedule to PMC in advance. 	Contractor	PMC/PMU	No cost

Environment Concern	Impacts	Mitigation Measures	Responsibility		Cost
			Implementation	Supervision	
	<ul style="list-style-type: none"> The Contractor may occupy the neighbouring private property for labour camps & offices, material depot, machinery yard, access road and work site. 	<ul style="list-style-type: none"> Sequencing of activities so that only controlled amount of construction material is stocked near work area. Providing residents with advance warning of construction activities Contractor should be bound contractually to utilize either the project site or the rented property for material storage, offices etc. 			
Borrow Areas	<ul style="list-style-type: none"> Land dispute Loss of cultivated land Loss of vegetation and Landscape degradation. Threat to inhabitants in the surrounding of borrow areas if left unattended 	<ul style="list-style-type: none"> Borrow areas should be approved by the Project Manager. Contractor should obtain necessary permits in writing or agreement for borrow pits from land owner(s) and the Engineer. Contractor cannot use soil/ material from areas other than approved borrow areas. Contractor shall get the detailed plan for excavation and transportation of borrowed material approved by the Project Manager 	Contractor	PMC/PMU/IA	No cost

Environment Concern	Impacts	Mitigation Measures	Responsibility		Cost
			Implementation	Supervision	
	<ul style="list-style-type: none"> • The risk of water-borne diseases from standing water found in open quarries and borrow pits 	<ul style="list-style-type: none"> • For Non Cultivable Lands: Borrowing of earth shall be carried out up to a depth of 1.0 m from the existing ground level and for cultivated land it should not exceed then 50 cm. • Borrow pits shall be located at least 500 m from villages and settlements. If they are located closer due to unavoidable factors, the excavation depth should not be more than 30 cm. • The borrow areas should be rehabilitated after use as directed by the project manager 			

ANNEX-3 Borrow Area Database format

FERP Borrow Area Database						
S.No.	Package No.	XEN Letter	Borrow Lead Chart	Borrow Agreements	EMP	Remarks
	Status	Yes/No/NA				
1	1					
2	2					
3	3					
4	4					
5	5					
6	6					
7	7					
8	8					
9	9					
10	10					
11	11					

12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					
21	21					
22	22					
23	23					
24	24					
25	25					

26	26					
27	27					
28	28					
29	29					
30	30					
31	31					
32	33					
33	34					
34	35					
35	36					
36	37					
37	38					
38	CD 1					
39	CD 2					

40	CD 3					
41	CD 4					
42	CD 5					
43	CD 6					
44	CD 7					
45	CD 8					
46	CD 9					
47	CD 10					
48	CD 11					
49	CD 12					
50	CD 13					
51	CD 14					
52	CD 16					

ANNEX 4- Guidelines for Camp

Site Selection

- Contractor should locate camp facilities preferably at distance of 500 m or with the approval of PMU at a minimum distance of 100 m from existing settlements, built up areas or wildlife habitats.
- The construction camp will be established in areas where vegetation cover removal and tree cutting can be avoided.
- The camp areas should have adequate natural drainage in order to facilitate the flow of treated effluents preferably within the works and services land.
- The camp site should not be at blind spots, sharp turns to avoid any accidents due to movement of machinery from the camp area. Properly designed warning signs and speed humps should be provided at inlet and outlet of the camp site.
- If camp land is on lease, the land owners should be compensated as per lease agreements.

Camp Site Management

- Contractor shall provide copy of the Environmental management and Monitoring Plan (EMMP) at the concerned sites. Copy of the EMMP should be available at camp site all the times.
- Contractor will nominate and authorize the individual(s) with role and responsibility to implement EMMP measures.
- EMP recommendations should be clearly understood by the concerned implementing individual(s).
- Contractor shall comply with the safety precautions for constructions as per ILO convention 62.
- Contractor shall provide PPE to construction workforce and monitor if they are appropriately used.
- The labor shall be provided with the adequate potable water at site.
- Wood shall not be used as fuel or for any other activity.
- Contractor shall provide LPF cylinders for cooking and heating purposes.
- Contractor shall provide first aid kit at camp site and nominate/train individuals to address any emergency.
- Camp site will be fenced to prevent trespassing.
- Maintain good liaison with local communities.
- Contractor shall maintain grievances log, where all community complaints are registered and follow up actions should be recorded.

Worker's Training

- Contractor shall provide trainings to effectively implement project specific EMP. It may involve special trainings of workers on specific jobs.

- Training of construction workforce on health and safety and use of PPE (safety shoes, helmets, gloves, masks).
- Construction workforce training in the storage and handling of material and chemicals that can potentially cause soil contamination and/or explosion.
- Contractor shall prohibit hiring of child labor and forced labor.
- Contractor shall encourage hiring of local labor.

Plans and Procedures

- Contractor shall prepare and submit health and safety plan.
- Contractor shall prepare and submit emergency response procedures for
 - a) Spills and leakages
 - b) Accident
 - c) Fire fighting
 - d) Electric
- Contractor shall prepare and submit worker's training plan.

Waste Management

- Contractor will be responsible for treatment of wastewater from camp toilets. Wastewater will primarily pass through septic tank and later be discharge into soak pit.
- Solid waste generated during construction at campsite will be properly collected at source, treated and safely disposed of only in selected waste disposal sites.
- Fuel and oil storage areas should be located away from any watercourses. They should be properly paved with contaminated ditch to control any spillage.
- Contractor will be responsible to contain, collect, cleanup and properly dispose-off the wastes in case of any emergency spill.
- Drinking water sources shall be at least 50 m away from soak pit to avoid contamination.
- Contractor will be responsible to implement proper dust and noise abatement procedures at camp site.

Annex-5 EMP Monitoring Checklist

NCB Package/CD No		Month	Division
EMP Monitoring Checklist, FERP Irrigation Sector Sindh			
	Activity	Status	Remarks
Noise nuisance to nearby localities	<input type="checkbox"/> Use of silencers and ban on excessive use of horns by the construction vehicles/ machinery	() YES () NO	
	<input type="checkbox"/> Regular tuning and check up of construction vehicles and machinery to comply vehicular noise emission levels as per NEQS.	() YES () NO	
	<input type="checkbox"/> Construction activities during the night time.	() YES () NO	
	<input type="checkbox"/> Ear muffs provision to construction workers who will be exposed to direct noise.	() YES () NO	
Air pollution	<input type="checkbox"/> Providing residents with advance warning of construction activities	() YES () NO	
	<input type="checkbox"/> Limiting the speed of the vehicles in the working area	() YES () NO	
	<input type="checkbox"/> Frequent sprinkling of water on katcha tracks and construction material	() YES () NO	
	<input type="checkbox"/> Regular tuning and check up of construction vehicles and machinery to comply vehicular exhaust emission levels as per NEQS	() YES () NO	
	<input type="checkbox"/> Transportation of excavated material to designated sites carried in a proper manner i-e No dust pollution-	() YES () NO	
	<input type="checkbox"/> Construction activities causing dust being carried out on excessively windy days.	() YES () NO	
	<input type="checkbox"/> Masks provision to the construction workers.	() YES () NO	
Soil Erosion	<input type="checkbox"/> Careful construction planning and adequate monitoring of excavation operations so that the excavated areas and trenches are not left unattended.	() YES () NO	
	<input type="checkbox"/> Compaction of side slopes should strictly adhere to design specification.	() YES () NO	
Damage of natural habitats	<input type="checkbox"/> Damage of natural habitats.	() YES () NO	
	<input type="checkbox"/> Replanting of any damaged plants being carried out.	() YES () NO	

NCB Package/CD No _____		Month _____	Division _____
EMP Monitoring Checklist, FERP Irrigation Sector Sindh			
	Activity	Status	Remarks
Health and Safety of Workers	<input type="checkbox"/> Use of machines and mechanical instruments are being done as per the manufacturers.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> Construction workers/labour are aware of safety procedures for all relevant aspects of construction;	() YES () NO	<input type="checkbox"/>
Accidental Risks	<input type="checkbox"/> Construction workers are provided with proper safety equipment such as helmets, goggles, masks, etc.;	() YES () NO	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/> First aid kits and other necessary equipment are available at site. along with the list of emergency phone numbers to be contacted in case of any emergency/accident.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> Safety signage are erected at potentially dangerous working areas.	() YES () NO	
	<input type="checkbox"/> Public and animal access to construction site is restricted by providing fences.	() YES () NO	
	<input type="checkbox"/> Proper lighting arrangements are ensured for night shift working	() YES () NO	
Socio-Economic Impacts	<input type="checkbox"/> Local people are preferred while hiring skilled and unskilled labour.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> Taking maximum care and adopting measures not to disturb the privacy of local women.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> Any workers reported to violate the rules and make problems for the local women is being reported to law enforcing agency.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> Mobility of local women is least hindered by the location of the contractors labour camp and office	() YES () NO	
Obstruction to Traffic Flow	<input type="checkbox"/> Submitted the construction schedule to PMC in advance.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> Spoils are being disposed of at the designated sites.	() YES () NO	
	<input type="checkbox"/> Residents have been warned of construction activities in advance.	() YES () NO	
Impacts related to Contractor's Camps	<input type="checkbox"/> Proper disposal of the solid waste and sanitary wastewater at the nearby-designated place.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> Septic tank for the toilets is provided.	() YES () NO	<input type="checkbox"/>

NCB Package/CD No _____ Month _____ Division _____		EMP Monitoring Checklist, FERP Irrigation Sector Sindh	
	Activity	Status	Remarks
Storage of Construction Materials	<input type="checkbox"/> Sequencing of activities so that only controlled amount of construction material is stocked near work area.	() YES () NO	<input type="checkbox"/>
Borrow Areas	<input type="checkbox"/> Borrow areas are approved by the Project Manager/XEN.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> Obtained necessary permits in writing or agreement for borrow pits from land owner(s) and the Engineer.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> Not using soil/ material from areas other than approved borrow areas.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> Detailed plan for excavation and transportation of borrowed material approved by the Project Manager/XEN.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> For Non Cultivable Lands: Borrowing of earth is being carried out up to a depth of 1.0 m from the existing ground level.	() YES () NO	<input type="checkbox"/>
	<input type="checkbox"/> For Cultivable lands: Borrowing of earth is not exceeding then 50 cm from the existing ground level.	() YES () NO	
	Borrow pits are located at least 500 m from villages and settlements.	() YES () NO	
	If they are located closer due to unavoidable factors, the excavation depth is not more than 30 cm.	() YES () NO	

1 Contractor: _____

Date: _____

2 PMC: _____

Date: _____

3 XEN: _____

Date: _____

Annex-6-Consolidated Progress Checklist of NCB Embankment Packages. Month.....2012

	Package 1	Package 2Package 37												
Activity	Status													
	YES/No/NA													
1. Noise nuisance to nearby localities														
• Use of silencers and ban on excessive use of horns by the construction vehicles/ machinery														
• Regular tuning and check up of construction vehicles and machinery to comply vehicular noise emission levels as per NEQS.														
Construction activities during the night time.														
• Ear muffs provision to construction workers who will be exposed to direct noise.														
2. Air pollution														
• Providing residents with advance warning of construction activities														
• Limiting the speed of the vehicles in the working area														
• Frequent sprinkling of water on katcha tracks and construction material														
• Regular tuning and check up of construction vehicles and machinery to comply vehicular exhaust emission levels as per NEQS														
• Transportation of excavated material to designated sites carried in a proper manner i- e No dust pollution-														
• Construction activities causing dust being carried out on excessively windy days.														
• Masks provision to the construction workers.														

3. Soil Erosion														
· Careful construction planning and adequate monitoring of excavation operations so that the excavated areas and trenches are not left unattended.														
· Compaction of side slopes should strictly adhere to design specification.														
4. Damage of natural habitats														
· Damage of natural habitats.														
· replanting of any damaged plants being carried out.														
5. Health and Safety of Workers														
· Use of machines and mechanical instruments are being done as per the manufacturers.														
· Construction workers/labour are aware of safety procedures for all relevant aspects of construction;														
6. Accidental Risks														
· Construction workers are provided with proper safety equipment such as helmets, goggles, masks, etc.;														
· First aid kits and other necessary equipment are available at site. along with the list of emergency phone numbers to be contacted in case of any emergency/accident.														
· Safety signage are erected at potentially dangerous working areas.														
· Public and animal access to construction site is restricted by providing fences.														
· Proper lighting arrangements are ensured														

for night shift working														
7. Socio-Economic Impacts														
· Local people are preferred while hiring skilled and unskilled labour.														
· Contractor and PMU/EA are taking maximum care and adopting measures not to disturb the privacy of local women.														
· Any workers reported to violate the rules and make problems for the local women is being reported to law enforcing agency														
· Mobility of local women is least hindered by the location of the contractors labour camp and office														
8. Obstruction to Traffic Flow														
· Contractor has submitted the construction schedule to PMC in advance.														
· Spoils are being disposed of at the designated sites.														
· Residents have been warned of construction activities in advance.														
9. Impacts related to Contractor's Camps														
· Proper disposal of the solid waste and sanitary wastewater at the nearby-designated place by the contractor.														
· Septic tank for the toilets is provided by the contractor.														
10. Storage of Construction Materials														
· Sequencing of activities so that only controlled amount of construction material is stocked near work area.														

11. Borrow Areas														
· Borrow areas is approved by the Project Manager.														
· Contractor has obtained necessary permits in writing or agreement for borrow pits from land owner(s) and the Engineer.														
· Contractor is not using soil/ material from areas other than approved borrow areas.														
· Contractor has got the detailed plan for excavation and transportation of borrowed material approved by the Project Manager														
· For Non Cultivable Lands: Borrowing of earth is being carried out up to a depth of 1.0 m from the existing ground level.														
· For Cultivable lands: Borrowing of earth is not exceeding then 50 cm from the existing ground level.														
Borrow pits are located at least 500 m from villages and settlements.														
If they are located closer due to unavoidable factors, the excavation depth is not more than 30 cm.														

	CD1	CD2	CD3	CD4	CD5	CD6	CD7	CD8	CD9	CD10	CD11	CD12	CD13	CD14	CD16
Activity	Status														
	YES/No/NA														
Noise nuisance to nearby localities															
· Use of silencers and ban on excessive use of horns by the construction vehicles/ machinery															
· Regular tuning and check up of construction vehicles and machinery to comply vehicular noise emission levels as per NEQS.															
· Construction activities during the night time.															
· Ear muffs provision to construction workers who will be exposed to direct noise.															
Air pollution															
· Providing residents with advance warning of construction activities															
· Limiting the speed of the vehicles in the working area															
· Frequent sprinkling of water on katcha tracks and construction material															
· Regular tuning and check up of construction vehicles and machinery to comply vehicular exhaust emission levels as per NEQS															
· Transportation of excavated material to designated sites carried in a proper manner i-e No dust pollution-															
· Construction activities causing dust being carried out on excessively windy days.															
· Masks provision to the construction workers.															
Soil Erosion															
· Careful construction planning and adequate monitoring of excavation operations so that the excavated areas and trenches are not left unattended.															
· Compaction of side slopes															

should strictly adhere to design specification.															
Damage of natural habitats															
· Damage of natural habitats.															
· replanting of any damaged plants being carried out.															
Health and Safety of Workers															
· Use of machines and mechanical instruments are being done as per the manufacturers.															
· Construction workers/labour are aware of safety procedures for all relevant aspects of construction;															
Accidental Risks															
· Construction workers are provided with proper safety equipment such as helmets, goggles, masks, etc.;															
· First aid kits and other necessary equipment are available at site. along with the list of emergency phone numbers to be contacted in case of any emergency/accident.															
· Safety signage are erected at potentially dangerous working areas.															
· Public and animal access to construction site is restricted by providing fences.															
· Proper lighting arrangements are ensured for night shift working															
Socio-Economic Impacts															
· Local people are preferred while hiring skilled and unskilled labour.															
· Contractor and PMU/EA are taking maximum care and adopting measures not to disturb the privacy of local women.															
· Any workers reported to violate the rules and make problems for the local women is being reported to law enforcing agency															
· Mobility of local women is least hindered by the location of the contractors labour camp and office															

Obstruction to Traffic Flow															
· Contractor has submitted the construction schedule to PMC in advance.															
· Spoils are being disposed of at the designated sites.															
· Residents have been warned of construction activities in advance.															
Impacts related to Contractor's Camps															
· Proper disposal of the solid waste and sanitary wastewater at the nearby-designated place by the contractor.															
· Septic tank for the toilets is provided by the contractor.															
Storage of Construction Materials															
· Sequencing of activities so that only controlled amount of construction material is stocked near work area.															
Borrow Areas															
· Borrow areas is approved by the Project Manager.															
· Contractor has obtained necessary permits in writing or agreement for borrow pits from land owner(s) and the Engineer.															
· Contractor is not using soil/ material from areas other than approved borrow areas.															
· Contractor has got the detailed plan for excavation and transportation of borrowed material approved by the Project Manager															
· For Non Cultivable Lands: Borrowing of earth is being carried out up to a depth of 1.0 m from the existing ground level.															
· For Cultivable lands: Borrowing of earth is not exceeding then 50 cm from the existing ground level.															
Borrow pits are located at least 500 m from villages and settlements.															

If they are located closer due to unavoidable factors, the excavation depth is not more than 30 cm.															
---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

ANNEX 7: Photographs



(a)- Trees have been protected during stone pitching.



(b)-Agricultural land has been conserved.



©- Agricultural land is conserved.



(d)-Trees being protected during the stone pitching.



(e)- A ramp has been provided for the local people's Convenience.



(f)- A Washing bay has been made for the local women.



(g)- Construction material stored on site.



(h)- New plants have been planted by the contractor at camp.



(i)- New plants have been planted at camp.



(j)- Fencing has been done at required places during work.



(k)- Tree conservation during work.



(l)- Tree conservation during work.



(m)- Warning boards installed at site.



(n)- Tree conservation on bund.



(o)-Labor working with proper personal protective equipment.



(p)- Warning boards and fencing provided at required places.