Environmental Monitoring Report

Project Number: 42399-02
Grant Number: ADB Loan No. 2755-KGZ (SF)
Reporting Period: June to December 2013

Kyrgyz Republic
CAREC Transport Corridor -1
(Bishkek – Torugart road) Project 3
SECTION KM479 to 539

Prepared By the Ministry of Transport and Communications of the Kyrgyz Republic

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This report is prepared to update the status of all project components and their implementation progress. It is designed to feed ADB's internal Project Progress Report and will form the basis of the draft Project Completion Report upon project completion.

TABLE OF CONTENTS

Abbreviations

ADB	Asian Development Bank	
AQP	Air Quality Plan	
BPAP	Borrow Pit Action Plan	Prepared by Contractor

BPMP	Borrow Pit Management Plan	Part of the EIA (Appendix 9)
BPMRT	Borrow Pit Monitoring and Response Team	
BNT3	Bishkek-Naryn-Torugart Road – Project 3	The Project
CAREC	Central Asia Regional Economic Cooperation	
CCP	Plan for Construction Camps	
CRBC	China Road and Bridge Corporation	The Contractor
EA	Executing Agency	*## Not Environmental Assessment*
EIA	Environmental Impact Assessment	
EMP	Environmental Management Plan	
ERP	Emergency Response Plan	
EcolRP	Ecological Response Plan	
GRM	Grievance Redress Mechanism	
HDDV	Heavy Duty Diesel Vehicles	
HSP	Health and Safety Plan	
IPIG	Investment Projects Information Group	Agent for Executing Agency
KJSR	Karatal-Japaryk State Reserve	
KR	Kyrgyz Republic	
LARP	Land Condemnation and Land Acquisition and Resettlement Plan	
MOTC	Ministry of Transport and Communication	The Executing Agency
MPC	Maximum Permitted Concentration	
OVOS	Assessment of Environmental Impacts	*Russian Acronym*
PM	Project Manager	
PRC	People's Republic of China	
SAEPF	State Agency for Environmental Protection and Forestry	
SSEMP	Site Specific Environmental Management Plan	
TAEPF	Territorial Agency for Environmental Protection and Forestry	
TERA	TERA International Inc.	The Engineer
WMP	Waste Management Plan	

Part I Introduction

Overview of Activities

1. This document is the six monthly Environmental Monitoring Report for the 2013 construction season. Construction work commenced on 31st May 2013. Snow fell on 31 October 2013, effectively marking the end of construction onsite. The works program is broadly on schedule. Though there were delays in mobilization the Contractor has brought sufficient resources to the site and by the end of the construction season in October 2013 the formation had been placed from Km479 to Km507.

Establishing the Construction Camp

2. The Contractor has established a dedicated construction camp at Km 500, on a hill on the west side of the existing road (Figure 1 and Figure 2). The camp is located outside the border of the Karatal-Japaryk State Reserve (KJSR). The KJSR contains Lake Chater Kul, which is a RAMSAR recognized site. Lake Chater Kul represents a highly sensitive use close to the Project and with potential to be adversely impacted by Project implementation. The camp comprises site offices for Contractor and Consultant and accommodation for staff working on the Project. There are mobile connections available at the camp. Provision of 3G broadband is being investigated.

Figure 1: Construction Camp at Km500 – Looking East from Asphalt Plant access road

Figure 2: Construction Camp at Km500 looking North across Maintenance Area

3. The camp includes a work shop engineering laboratory and fuel store. A crushing plant, asphalt plant and precast yard are sited close-by. Freshwater is available and the camp has a dedicated sewerage system directed to a septic tank. Septic tank and solid waste are regularly collected for disposal at an approved site. During its occupation, a

Doctor is employed fulltime at the camp and has access to an equipped medical facility (Figure 20, pg 35)

Project Activities

4. This section summarises the Project activities during the 2013 construction season.

5. Construction work commenced on 31 May 2013 with preparation of the Engineers and Contractors facilities at Km500 and preparation of foundations for crushers, screens and the asphalt plant (See Figure 16). A borrow area was established close to the crushers and screens adjacent to Muz Tor River (See Figure 17).

6. Initial road reconstruction works focused on the section between Km479-500 where there was development and operation of seven borrow pits and clearing and works on the alignment to form the road foundation (Figure 3 and Figure 4 show typical before and after condition). During Borrow Pit development emphasis was placed on carefully removing and storing topsoil for use in the rehabilitation stage.

Figure 3: Typical Road Alignment prior to works (around Km520)

Figure 4: Typical Road Alignment after 2013 works on road foundation (around Km 502)

7. The crushing and screening of material continued through the construction season with materials used in concrete for pre-cast and in-situ work or in the alignment foundation. Material stockpiles have been built up for the coming construction season

8. Erection of the asphalt plant has been completed but the facility was not used in the 2013 construction season.

9. Approval for the use of borrow pits inside the KJSR (Km 500 to Km 530) was not granted in the 2013 construction season but approval was given for work to proceed upto Km512 using material from borrow pits outside the KJSR.

10. The first snow fell at site on 24 October 2013 and effectively signaled the end of construction. A formal closedown meeting was held at the site on 31 Oct 2013.

ADB Visits

11. The ADB Safeguards team visited the site on 31 March, 31 May and 24 September 2013. An ADB Mission visited the Kygyz Republic from 11 to 19 November and visited the site on 14 November 2013.

Contaminated Material

12. No contaminated material has been identified within the project boundary to date. If contaminated material is encountered it will be subject to investigation to determine type, extent and quantity and final disposal. The closest disposal area is a town dump in At Bashy.

Project Organisation

13. The primary environmental stakeholders in the Project are the Loan Authority (ADB), the Executing Agency (MOTC – IPIG) the Consultant (TERA), the Contractor (CRBC) and supporting Government Agencies. They are identified in the following figure.

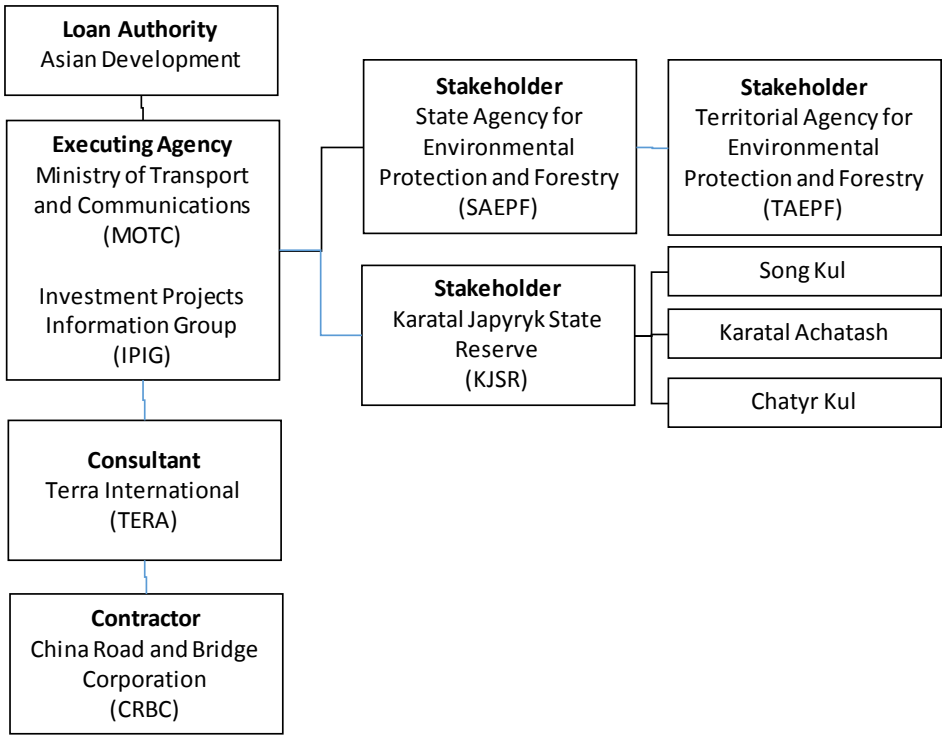


Figure 5: Environmental Stakeholders in the Project

14. There have been no changes in Project organization but there have been additions to the environmental management team in the appointment of an International Environmental Specialist (Dr. David Green) by MOTC and the appointment of a replacement International Environmental Specialist (Mr. Andrew Taylor) by the Consultant (replacing Mr. Tarek Tarawneh).

15. Dr. Green was present on the Project in Kyrgyzstan from 11 to 21 November 2013. He visited the site on 11 November 2013 and met with members of KJSR, Naryn Territorial

Administration of State Agency for Environmental Protection and Forestry (SAEPF), IPIG and TERA on 12 November 2013 at the offices of KJSR in Naryn.

16. Mr. Taylor was active on the Project in Kyrgyzstan from 7 October to 28 November 2013 and visited the site regularly during that period.

Stakeholder Relationships

17. Relations between the Executing Agency (EA), the Consultant and the Contractor have been satisfactory, and a good working relationship has evolved.

Other Environmental Reporting

18. Monthly reports have been submitted that include environmental test results for air quality, water quality, noise and vibration. In addition, regular camp and road safety audits have been performed.

19. The preparation, by CRBC, of a Site Specific Environmental Management Plan (SSEMP) is a requirement of the Project EIA. A SSEMP has been prepared by CRBC and submitted to IPAG in November 2013.

20. A site specific Borrow Pit Action Plan (BPAP) has been prepared by CRBC with focus on the operation of borrow pits within the KJSR. The BPAP forms an Appendix to the Borrow Pit Management Plan (BPMP) that forms Appendix 9 of the EIA. Preparation of a satisfactory BPAP was a requirement for approval of borrow pits within the KJSR.

Part II Environmental Monitoring

Physical Characteristics

21. The starting point of the road is located beyond the Ak Beit Pass in the Arpa Valley at km 479, just past a border control point at km 478. From this point the road runs across a plain until around Km 458 at the existing road maintenance facility where it rises to the Tuz Bel Pass where the Construction Camp is located (Km 500). At this point the road enters the KJSR and the alignment skirts Lake Chatyr Kul on its western and southern sides. Beyond the lake, the road reaches a border control holding area at Km 531. At this point there are vehicle parking areas and trailers that provide rudimentary accommodation and catering facilities. Beyond this border control holding area and checkpoint there is a further 8km to the official border with the People's Republic of China (PRC) at Km 539, the end of the Project.

Affected Persons

22. The Project alignment does not pass through any recognized villages or built up areas so there are no identified Affected Persons (AP). There are two isolated official facilities close to the alignment: (i) a Road Maintenance Unit building at the Tuz Bel Pass, immediately before the Km 500 Construction camp; and (ii) Barracks for personnel manning the frontier post the border facility. In addition there are a number of trailer units providing rudimentary accommodation and refreshment facilities at the border holding area. Neither

of the official facilities require reprovisioning but the trailers will have to be relocated due to road rehabilitation and construction of a vehicle parking area as part of the Project. An ADB Safeguards Mission visited the site on 24 September 2013 and met with potentially affected persons.

Compensation Claims

23. In the completed 2013 construction season there have been no compensation claims for loss of livestock, trees, crops, structures or any other items. There have been no complaints or environmental grievances filed in the reporting period. There was one observation by a nomadic herdsman who advised the Contractor of the potential for dust being generated by vehicles travelling on roads near the crushers. The Contractor reviewed the situation and decided it was appropriate to increase frequency of watering. There was no further observation and the incident was not considered to warrant further action. However, while there was no identifiable event, it is noted that all interactions with the public, either verbal or written, should be recorded and reported to the Engineer for inclusion in the site log. This requirement must be made clear to the Contractor prior to the 2014 construction season.

Grievance Redress Mechanism

24. A Grievance Redress Mechanism (GRM) has been formally established on site and training and orientation was provided in July 2013. Meeting of the Grievance Redress Group was held in Naryn on 4 July 2013. The TERA Deputy Team Leader is the contact person for the GRM. Arrangements for a Grievance Redress Consideration Group are set out in Appendix 10 of the Project EIA.

25. Community and stakeholder interactions are monitored and the formal GRM is now established based on instructions from IPIG and ADB. A Grievance Redress Mechanism log is maintained in the Consultants office at the camp.

Monthly Environmental Monitoring

26. Monthly monitoring data has been collected each month from July through October 2013 for:

- noise and vibration at six sites in key locations along or close to the road alignment within KJSR;
- water quality at four sites within KJSR; and
- air quality at eight sites (representing active borrow pits in the 2013 season).

27. The monitoring sites are indicated in Figure 6 and the monitoring data are included in Annex 1: Monitoring Results – Air, Noise & Vibration and Water Quality.

Figure 6: Location of the noise & vibration, air quality and water quality monitoring stations

Noise and Vibration

28. **Noise** (Annex 1, Table 3, page 26) and **vibration** (Table 4, page 27) testing has been carried out at six locations along or close to the road alignment at sensitive locations within the KJSR. The locations are: the CRBC construction camp at Km500 (NV1/2); around Km511 at the small river (Water quality point 4) half way along the road on the south side of Lake Chatyr Kul; Aroung Km518 for the Barracks housing personnel manning the frontier post; Narzyn Stream; the trailers; and the border holding area. At each location two measurements are taken, one at culvert level below road level and one for vehicle activity. For the purposes of analysis the vehicle influenced results, considered to be a worst case, have been reviewed. The review indicates that the maximum permissible level (MPL) was only exceeded on one occasion at one location. This was at the Barracks for personnel manning the frontier post [99dB(A) compared to the MPL of 75dB(A)] on 30 September 2013. There appears to be an unusual and isolated incident as a noise level of this intensity equates to a powered vehicle or machine operating close to the receiver. AS the monitoring location is isolated a sustained noise level at this intensity would be clearly identifiable. This monitoring location will be kept in view in the coming construction season. In the coming construction season, the operators of monitoring equipment will be required to take photos and provide a description of the activities and weather conditions occurring during the sampling exercise. Monitoring shall be suspended in conditions of fog, rain and when wind exceeds 5m/sec as this influences noise results. Other than the isolated incident, all noise levels were below the MPL of 75 dB(A), in the range of 57 to 66 dB(A).

29. For vibration, results are compliant except for an anomaly during the first monitoring exercise where results from five of the six monitoring stations were not compliant. Results on the monitoring day were: 112 dB, 111dB, 114dB, 98db, 117db and 121dB against and MPL of 108dB. In subsequent monitoring months all results were compliant in the range of 82 -

108dB with levels generally higher in the Border Holding Area as expected, where Heavy Duty Diesel Vehicles (HDDV) are maneuvering and loading engines. Given the relatively low intensity of operations on the road, it is suggested that monitoring equipment may have been inappropriately set up and operated on the initial monitoring operation in July 2013 and the results treated with caution. This situation has not been repeated, subsequent results are all compliant and no further investigation is proposed. It is noted that vibration measurements are generally higher, though compliant, in the border control holding area at Km 531.

30. The current monitoring situation reflects a before project condition and no noise or vibration mitigation actions are required at this time. However, it is proposed that future monitoring includes a photo record of the position of the noise / vibration monitor.

Water Quality

31. **Water quality,** in terms of Ph, Nitrates, Sufates and oil products, is tested at four locations to detect impact on sensitive water bodies within the KJSR and at a river close to the Construction camp. The locations are:

- Muz Tor River, outside KJSR and close to the asphalt and crushing plant and camp;
- Lesser Lake – representing the closest open water to the alignment;
- Narzan Spring; and
- Unnamed Stream (around Km511)– on south side of Lake Chatyr Kul

32. The results for Ph (Table 5 and Figure 10 on page 28), nitrates (Table 6 on page 28), sulfates (Table 7 and Figure 11 on page 29) and oil products (Table 8 on page 29) are all within permissible levels. Though the current works are unlikely to be having any impact on water quality it is noted that Ph values at the Lesser Lake were marginally high in August and September. It is also noted that results of nitrate and oil product testing were compliant and below detection limits. The current results indicate that project activities including the asphalt and crushing plants and camp have had limited or no impact on water quality.

Air Quality

33. For **air quality**, suspended particulates, carbon monoxide and sulfur dioxide are sampled and tested at operating borrow pits. Test results for suspended particles (Table 9 on page 30) were compliant with all results below the MPL. The first sampling exercise in July 2013 identified excedence of both the sulfur dioxide (all operating pits) and carbon monoxide (two pits). In such isolated locations excedence is not expected and has not been repeated in subsequent monitoring exercises. It is suggested that monitoring locations were compromised by direct influence from sources (HDDV), without opportunity for normal dispersion and are therefore not typical. It is therefore considered to be an isolated incident and it is proposed that future monitoring includes a photo record of the position of the monitor during the sampling exercise and also a written description of activities occurring in the area. It is also noted that the asphalt plant has not been operated in the 2013 construction season. Following the initial early season incidents, there have been no excedence of permitted air quality levels in the 2013 construction season.

Ecology - Flora and Fauna

34. In addition to the sampling and testing data, visual inspections relating of **flora and fauna** are regularly undertaken by relevant qualified staff on a daily and site specific basis.

To date, there have been no noticeable changes with respect to the conditions along the alignment. Commonly seen mammals are marmots and voles. No protected or rare species have been detected on the alignment save for the observance of an insect species on the site of a provisional borrow pit site at Km 508 (LHS). Due to the presence of this species the use of this borrow pit was suspended. In addition a focused marmot relocation programme was initiated. The programme was agreed with SAEPF and marmots were relocated.

35. There is considerable livestock raising carried on in the area that may adversely impact on native ecology but this is outside control of the project. It is noted, however, that livestock could be affected by both construction activity and increased traffic. This aspect will be monitored by the Borrow Pit Monitoring and Response Team (BPMRT) that will be set up to observe and report on borrow pit activities within the KJSR. The role and duties of the BPMRT are identified in the Borrow Pit Action Plan prepared by the Contractor and forming an attachment to the Borrow Pit Action Plan (Appendix of the Project EIA).

Road Safety

36. Road accidents have been monitored. There have been no accidents reported to the project during the reporting period.

37. Similarly, safety accidents with workers are monitored and none have been reported during the reporting period.

Temporary Road Signage

38. Temporary road signage has been noted as an issue during monthly reporting. A recurrent issue has been the size of signage (too small) and its location (too close to the area of danger). However by the end of the 2013 construction season the situation had improved and following an end of Road Safety Audit on 31 October 2013 and remedial actions signage was considered satisfactory. The form of new signage to warn road users that they are entering the KJSR will be agreed with representatives of KJSR in the next construction season.

Traffic Surveys

39. A traffic survey was conducted and submitted in 2011, which indicates that traffic, especially of heavily-loaded large trucks is increasing. This could pose safety issues for area residents and their livestock. The Traffic Police have conducted awareness raising seminars in schools and community centers. The Traffic Survey has been included in the 2013 Project Performance Monitoring System (PPMS) report.

Part III Environmental Management

Introduction

40. This section addresses compliance with the Project Environmental Management Plan (EMP) and other contractual obligations relating to the environment and health and safety issues.

41. The main concern of the ADB in relation to the project is that it should not "*result in degradation of the Chatyr Kul protected area, which is considered to be a critical habitat due to its designation under the Convention of Wetlands of International Importance, also known as the Ramsar Convention". Extract from the Project EIA Section 2.6 ADB safeguards (para39).*

42. The Environmental Management Plan (EMP) contained in the Project EIA (Chapter 8) comprises a :two track strategy of:

- Pollutant control and monitoring; and
- Receptor Protection.

43. The EMP is considered to be a dynamic document and will be adjusted in line with new information, contractor's performance and monitoring results. IPIG will identify and include any modifications in this EMR document (from Project EIA Chapter 8, para 384).

Project Resources for Environmental Management

44. The **Contractor**, CRBC, works under a Design and Build contract to deliver the road between Km479 to Km 539, this work includes all development associated with the road. In carrying out the work the Contractor follows the environmental requirements of the Project EIA, with particular emphasis on the requirements of the EMP. In carrying out the work in line with the EMP the Contractor prepares a Site Specific Environmental Management Plan (SSEMP) that identifies how environmental controls will be implemented. The contractor has produced a SSEMP.

45. The Contractor is responsible for ensuring that all workers engaged on the Project (including Sub-contractors) are suitably trained and perform their duties in an environmentally responsible manner.

46. In terms of resources the Contractor, the Project Manager is responsible for ensuring that the requirements of the EMP have been implemented. Implementation of the EMP and SSEMP on a day to day basis are through an Environmental Officer and a Deputy Environmental Officer. For development of Borrow Pits the Contractor has prepared a Borrow Pit Action Plan (supplementing the Borrow Pit Management Plan in the Project EIA) and for borrow areas within KJSR a dedicated Borrow Pit Monitoring and Response Team (BPMRT) will be formed and trained for the 2014 construction season.

47. The Consultant (TERA) is responsible for reviewing and approving Contractor generated Contractor environmental material (in particular the SSEMP) and submitting environmental material to the Executing Agency (MOTC) and monitoring the performance of the Contractor on site. The Consultants team works under the direction of the Team Leader and comprises and International Environmental Expert and an Environmental Specialist. They are supported on site by the Consultants engineering and team.

48. The Exectuting Agency (MOTC) is responsible ensuring for the delivery of the project in line Kyrgyz Republic and ADB environmental requirements. The MOTC report directly to ADB. On a day to day basis IPIG, comprising a team of Safeguard and Environmental Specialists, perform this activity.

49. An organisation chart showing the interactions between Executing Agency, Consultant, Contractor and the identified monitoring teams and the identified individuals is shown in Annex 4 on Page 45.

Health, Safety and Environmental Monitoring Progress Reports

50. The Contractor has submitted monthly Health, Safety and Environmental Monitoring Progress Reports (HSEMPRs) as required under the contract. All necessary approvals for borrow pits, camps and work sites have been received as noted in these reports. These reports also indicate that the required training in safety and provision of safety equipment have been undertaken. In addition, medical exams have been given, condoms distributed, and HIV/AIDS training provided.

51. With respect to audits and site visits, camp and road safety audits are conducted weekly and work sites are visited daily. Collectively, the audits and site visits provide the basis for identifying non-compliance with the EMP.

Site Specific Environmental Management Plan

52. It is a requirement of the project EIA that a Site Specific Environmental Management Plan (SSEMP) is produced by the Contractor to provide a guidance document for staff on the site of their requirements and responsibilities. This document has been prepared by the Contractor. The SSEMP is the primary environmental document for the implementation phase of the Project that is supported by other environmental plans identified in Table 8.1 of the EIA[1] and indicated in the following figure.

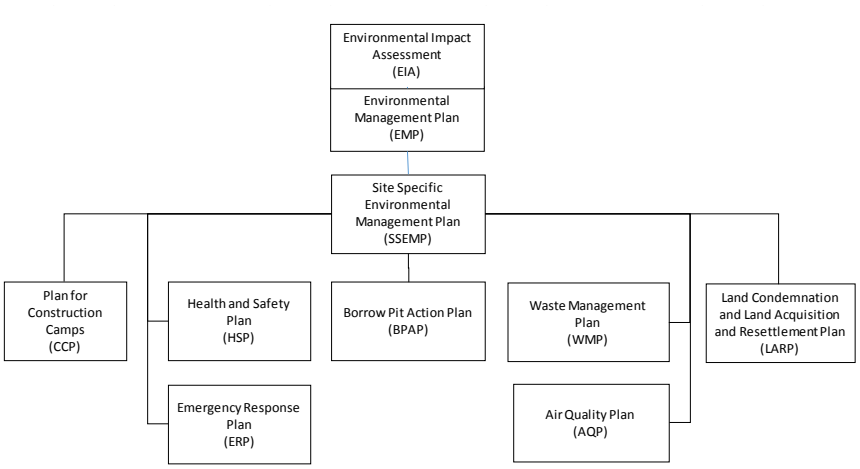


Figure 7: The SSEMP and its supporting documents

53. The supporting plans are:

- Borrow Pit Action Plan (BPAP);
- Health and Safety Plan (HSP) and Emergency Response Plan (ERP);

[1] EIA Table 8.1 – Mitigation Plan at the Pre-Design Stage.

- Plan for Construction Camps (CCP);
- Air Quality Plan (AQP) and Waste Management Plan (WMP); and
- Land Condemnation and Land Acquisition and Resettlement Plan (LARP).

Borrow Pits

54. **Borrow Pits.** There are a total of twelve borrow pits identified for the Project. The Contractor has received approvals from the local authorities and the local territorial ecology department and the State Agency for Environmental Protection and Forestry to utilize all twelve borrow pits. The Contractor has also received approvals of areas for disposal of spoils. The Eight borrow pits located in section Km479 to Km500 have been operated in the 2013 construction season.

55. The use of the borrow pits from Km501 to Km532 in the Karatal-Japaryk State Reserve (KJSR) will be jointly determined with additional input from ADB, SAEPF, and the KJSR. In support of borrow pit operation within the KJSR the Contractor has prepared a Borrow Pit Action Plan (BPAP) that acts as a contractor prepared manual for borrow pit operations. The BPAP specifically identifies the requirements for a dedicated Borrow Pit Monitoring and Response Team (BPMRT) that will be set up for borrow pit operations inside KJSR. The BPMRT will be responsible for daily monitoring of each operating borrow pit and responding to any environmental incidents. The BPAP has been incorporated as an attachment to the Borrow Pit Management Plan (BPMP) that Forms Appendix 9 of the EIA for the Project.

56. On the operation of Borrow Pits and the need to rehabilitate on completion of operation, the Contractor has stated that he will restore all the borrow pits and spoils areas at the end of construction as multiple pits operating simultaneously are needed to provide suitable material for sections at different stages of road upgrading. Photos for each borrow pit are included in Annex 3: Status of Borrow Pits.

Table 1: Location, Characteristics and Status of Borrow Pits

Borrow Pit	Location (km) (L=left side of road to Torugart; R=right)	Volume to be Removed (m^3)	Dimensions (m x m)	Area (ha)	Distance from Road (m)	Distance from Lake Chatyr Kul (m)	Status
B1	480+750 R	150,000	100 x 600	6	200	Outside Lake Chatyr Kul catchment	Open, not in use
B2	484+400 R	240,000	600 X 200	12	150		Opened, backfilling
B3	489+750 R	120,000	300 x 200	6	200		Open, backfilling
B4	491+100 R	480,000	800 x 300	24	200		Open, backfilling
B5	493+000 R	120,000	300 x 200	6	100		Open, backfilling
B6	495+500 R	120,000	300 x 200	6	100		Open, active
B7	497+500 R	160,000	400 x 200	8	100		Open, active
Q8#	499+000 R	3,000,000	750 x 2,000	150	6,000		Streambed. Open, Active
B9	507+600 L	225,000	450 x 250	11.25	200	3.1km	Not open
B10	514+600 L	250,000	500 x 250	12.5	150	2.3km	Not open
B11	518+000 L	325,000	650 x 250	16.25	100	3.0km	Not open
B12	528+200 L	325,000	650 x 250	16.25	160	3.4km##	Not open

N.B Q8 is the quarry located next to the rock crusher and asphalt plant some 6km from the road.
B12 is 1.38KM from Kosh-Kul, a small lake flowing into Chatyr Kul
Information source is Borrow Pit Management Plan (BPMP), Appendix 9 of the Environmental Impact Assessment (EIA) Dec 2013.

Audits and Meetings

57. Periodic audits of the work camps and construction sites have been conducted during the construction period and have resulted in improved conditions at the camps and

sites. Camps and sites will be regularly monitored throughout the construction season and particular focus will be given to works within KJSR.

58. Monthly meetings between the Contractor's Project management staff and the Consultant are held to discuss the Project, including road and other safety issues and camp cleanliness. There is positive responsiveness to the concerns raised at meetings resulting in improved environmental performance. The Consultant will continue to audit construction sites and camps to ensure that issues are resolved in a timely and appropriate manner.

Consultations and Complaints

59. In terms of consultations and complaints, there have been no formal complaints received and recorded during the June to December reporting period.

Performance measured against Environmental Management Plan

60. With respect to the EMP, the Contractor is generally compliant. A number of minor non-compliance issues are noted below:

- During the start-up phase dust associated with vehicles running on dry surfaces was identified as an issue and addressed by increased watering frequency;
- Oil drums not stored within bunded areas in the pre-casting crushing plant area; and
- Minor Oil spotting and incorrect disposal of oil filter within an operating borrow pit.

61. An Environmental Management Plan (EMP) is included as Chapter 8 of the Project EIA. The EMP identifies environmental mitigation plans for the pre-design, design, construction and operations & maintenance phases of the project (EIA Tables 8.1 to 8.4). Table 8.3 of the EIA – Mitigation Plan for the Construction Stage is the most applicable to this report and is summarized in Table 2, below together with a review of the contractor performance in the reporting period.

Table 2: Project Adherence to the Environmental Management Plan in the EIA

Area	Potential impact	Mitigation measures	Observed on-site 22/23 October 2013	Overall Evaluation
Air quality	Open burning of wastes	Contractor will not burn wastes or other materials without approval by Engineer.	During inspections there was no observed instances of on-site burning.	Performance satisfactory.
	Smoke from burning	Contractor will not install burners, boilers or similar equipment fed by any type of fuel that might generate polluting substances without due approval by Engineer.	At this stage no hot-works on the project. Equipment subject to Engineer approval.	Performance satisfactory.
	Exhaust fumes from construction equipment	Contractor will maintain and service construction equipment to keep it in proper technical condition to control emissions. Such equipment (including controlling equipment) are subject to regular inspections by Engineer. Such inspections shall be registered in the Log Book as part of the monitoring activity. Contractor shall: • Avoid equipment running idle; • Prohibit housing equipment and tools in the open areas which emit visible smoke	The Contractor has supplied new construction plant and equipment for the Project. It appears to be well maintained and adverse impact from inefficient engine operation is not anticipated and has not been identified during inspections.	Performance satisfactory.
	Volatile pollutants from asphalt plants and borrow pits.	Contractor will allocate conveyor belts against the wind protection fencing (borrow pit areas); discharge chutes of hoppers shall be covered to avoid dust blowing off. All the dust-generating conveyor material must be covered.	Borrow pits on the alignment are protected from the wind by barriers formed of topsoil stockpiles and by topography when the pit develops below ground level. Some attention to dust generated during crushing could be considered.	Performance satisfactory.

Area	Potential impact	Mitigation measures	Observed on-site 22/23 October 2013	Overall Evaluation
	Dust from unpaved roads, open soil and stockpiles.	• Contractor ensures measures of dust control: The beds of the trucks hauling material shall be covered either by tarp or other material (fixed) to prevent dust blowing off the trucks; • Waste collection sites must be tamped to avoid formation of dust. • In the places of regular vehicles movement the roads shall have hard surface, and • Contractor ensures water sprinkling (on the roads, construction sites and unpaved road sections) at least twice per day, or more, as Engineer may deem necessary)	Critical source of dust is from vehicles running on dry surface. Coverage of loads during transport not generally followed. Waste generally collected and handled to avoid dust blow. Good attention to providing hard vehicle running surfaces. Regular watering of access between borrow and active working zones. More attention needed on completed sections of alignment.	Some attention needed on load coverage and watering of completed alignment base.
Topography	Cuts and fills	Contractor ensures: • Any excess of dump soil may not be used; its utilization in rivers/tributaries or water courses may not be allowed. • In case of accumulation of the excess material (if not provided for by the project design), this shall be reported to Engineer to identify designated place for its storage/utilization. • Temporary and permanent material storage areas shall be on state-owned lands, and by no means can be dumped on to agricultural, fertile lands or lands of protected areas, or other water courses. • In case construction wastes dumped on to designated place, or the silt is washed out then such a pollutant or wastes shall be removed and the land and storage area to be restored to its initial state as Engineer may deem expedient.	No dumping observed. Excess unsuitable material stored in borrow pits. No remote temporary or permanent material storage observed on non-defined areas. Not applicable	Performance satisfactory.
	Slopes stabilization	Contractor will ensure: • Final shaping-up of slopes will be done in the locations identified by Engineer and as soon as	No final slope stabilization and shaping is being carried out currently. Topsoil has been carefully removed and	Performance satisfactory.

Area	Potential impact	Mitigation measures	Observed on-site 22/23 October 2013	Overall Evaluation
		possible after their filling up with soil. • Where necessary, Contractor will make ditches on slopes for re-vegetation of aboriginal plants. • Construction works in the areas prone to erosion or flooding shall be done only in dry season.	stockpiled at the removal site for recolonisation.	
	Borrow pits	Before opening any borrow pit of crusher site Contractor shall obtain proper permits. Borrow pits to be located in environmentally safe locations: • Not closer than 500 meters to water courses; • Outside agricultural lands, and On state-owned lands.	Permits and approvals obtained for the borrow pits and crusher site.	Performance satisfactory. Site release by MOTC / ADB for borrow pits in KJSR (Km 500 to Km539) outstanding
		Alluvial material taken upstream from the blocked culverts can be used as base material. • This material shall be checked by Contractor and Engineer for its use as base material. Such material shall be used first before the uses of the other material from borrow pits or material reserve.	Available material used in previous months.	Performance satisfactory.
		Development and recultivation of borrow pits, located in Chatyr Kul lake area, and should be carried out in accordance with Borrow pit management plan specially developed for this section (km501-km531). Monitoring of these borrow pits is carried out on daily basis and summary information is provided once a month.	No borrow pits currently operating within Chatyr Kul lake area. A Borrow Pit Action Plan (BPAP) has been prepared and forms part of the BPMP (Appendix 9 of EIA)	Performance satisfactory. But action required in 2014
Soils	Loss of fertile soil	Engineer will ensure adequate measures in place to prevent irreplaceable loss of fertile soil cover or its deterioration by construction equipment in the course of construction works. Protection of fertile soil layer is the priority task.	At borrow areas between Km479 and Km500 fertile toposoil has been selectivlely removed and stored separately for reuse.	Good Contractor performance
	Erosion	Contractor ensures:		

Area	Potential impact	Mitigation measures	Observed on-site 22/23 October 2013	Overall Evaluation
		• Material that is less prone to erosion can be used around bridges and culverts • Restoration of vegetation on the stripped slopes includes; (i) selection of the fast-growing local types of flora; (ii) immediate re-vegetation of all slopes and banks, if not covered with gabions, (iii) placement of fiber material to allow for seeds to sprout with account to local climate.	Works have focused on development of the alignment between Km479 and Km512 rather than bridges and culverts. No erosion incidents identified.	Performance satisfactory. Attention needed in 2014 construction season.
	Pollution due to oil spills or hazardous materials	Contractor will ensure: • All petroleum and chemical materials kept of the impermeable base, and fenced. Such storage areas to be arranged outside from any water courses or water-logged areas. The base and the walls of such banks shall be capable of 110% weight of the fuel/lubricant tanks. • Areas for repairs in construction camps organized on the impermeable base with drainage to collect oil spills. Vehicle repairs on the open ground will not be allowed. • Fuelling of equipment shall be under strict control and regulated by the formal procedures. In all such areas oil/fuel pans shall be used. The used oil is collected and utilized by the licensed subcontractor. • All the valves and filling nozzles must be protected from unauthorized access or vandalism and locked up, when not in use. • Tanks and drums have clear marking about their content. It is necessary to avoid any pollutants getting into water sources. • Tanks and drums with bitumen shall not be kept on the open ground, - only in the impermeable pallets/base. • Locations for the use of bitumen shall be arranged on the impermeable surface.	At the Camp (Km500) main refueling area has hardstanding, and spill control. Within the crushing / asphalt plant area it was noted that some small fueling areas for specific processes did not have hardstanding or bunding. Repair area in good condition. Improved use of oil / fuel pans could be considered. Fueling controlled but requires ongoing attention. Fueling generally within the controlled confines of the camp. Markings and location needs to be formalized in crushing, precast and asphalt plant area. Asphalt plant not currently active – next construction season.	Generally satisfactory. Some minor departures from correct practice have been noted at Km500 – crushing , grading and pre-casting areas where formalized refueling areas with hardstanding and bunding are needed.
Hydrol	Drainage	Contractor will ensure:		

Area	Potential impact	Mitigation measures	Observed on-site 22/23 October 2013	Overall Evaluation
ogy		• At the construction site Contractor builds, maintains, removes and replaces, as needed, temporary drainage structures and undertakes safety measures to avoid damage from flooding or wash-out of silt from construction sites.	Dry conditions, no silty runoff observed. Temporary drainage structures in place. Contractor to ensure existing culvert crossings maintained over winter closedown.	Performance satisfactory.

	Construction camps and storage areas	Contractor will ensure:
		• Waste water shall be collected and diverted from the territory by a sewage system and located in the manner and in places preventing environmental pollution.
		• Direct discharge of sanitary and waste water on the ground shall not be allowed. Utilization of such materials in the open ground or open water sources is prohibited.
		• Places for liquid wastes collection shall not allow any seepage into the ground.
		• Any oil spills must be immediately removed, and means for their removal and soil clean-up shall be kept in construction camps.
		• Construction and work sites shall be equipped with toilets, without liquid seepage into surface waters.
		• Utilization of pumped and waste water in surface water courses is not allowed. It should be collected in settling ponds, or tanks for further removal.
		• The following rules to prevent oil spills and reagents storage must be observed:
		  • Equipment fuelling shall be done only in designated places.
		  • All petroleum and chemical materials kept of the impermeable base, and fenced. Such storage areas to be arranged outside from any water courses or water-logged areas. The base and the walls of such banks shall be capable of 110% weight of the fuel/lubricant tanks.
			A concrete septic tank system has been installed at the Km500 construction camp to collect waste water generated by the construction team.
			Seepage – Generally within structures on hardstanding within camp.
			Oil spills have not been observed. Local oil spotting has been addressed on a case by case basis.
			Toilets – Portable toilets need to be mobilsied for remote sites.
			Surface water courses – No unauthorized discharges identified.
			
			See earlier comments on “Pollution due to oil spills or hazardous materials”
			
			Oil spill precautions taken at the site. Bunded fuel storage, dedicated refueling area at camp and dedicated refueling trucks with auto stop nozzles, etc., were observed.
				Performance satisfactory. The issues have been addressed in the final versions of the Site Specific EMP (SSEMP) and Borrow Pit Action Plan (BPAP) prepared by the Contractor and approved by Engineer, Client and others.

Area	Potential impact	Mitigation measures	Observed on-site 22/23 October 2013	Overall Evaluation
		• Fuelling of equipment shall be under strict control and regulated by the formal procedures and done in the locations protected by earth banks to prevent oil spills or potentially hazardous liquids. • All the valves and filling nozzles must be protected from unauthorized access or vandalism and locked up, when not in use. • Tanks and drums have clear marking about their content. It is necessary to avoid any pollutants getting into water sources. • In case of occasional oil spills they must be immediately removed; such materials shall be kept in safe areas as designated for hazardous materials. • As Engineer may deem necessary, Contractor will arrange a vehicle washing ditch, or site at the exit from construction sites and ensures that vehicles are clean from sand and dirt (body and wheels) before they leave. Dirty water or dirt travelling from the construction sites will not be allowed.	Fueling is carried out at the camp in a dedicated refueling area. The refueling facility is at the camp which is in an isolated location. Drums, where used, are observed to be marked. No major spills have been observed. Isolated spotting has been cleared where appropriate. Vehicles were observed to be well maintained at the start of each working day.	
	Construction of bridges	Contractor will ensure: • Flow diversion from abutments • Cofferdams, silt traps or other structures for silt capturing. • Cofferdams drainage or clean-up shall be made to prevent siltation.	Currently only one diversion has been developed (Km491 +861). This has been observed to be operating satisfactorily.	Performance satisfactory.

Area	Potential impact	Mitigation measures	Observed on-site 22/23 October 2013	Overall Evaluation
	Borrow pits	Contractor will ensure: • Reclaim borrow pits upon completion of works in full compliance with applied standards and requirements. • The terms of contract shall include terms for borrow pits opening and the use of material. • Material excavation and borrow pit restoration and the adjoining area shall be done according to the terms of the contract. • Additional borrow pits will not be opened until the previous sites are restored.	Fragile topsoil carefully removed and stored for recolonisation. Official approval obtained for current borrow pits. The Borrow Pit Action Plan will be followed. Permission has been obtained to operate multiple pits due to specific material requirements	Performance satisfactory.
Flora and fauna	Loss of flora	Contractor will ensure: • Ensure over-grassing, where necessary. • Provide construction camps with adequate fuel to prevent fuel stocking from unauthorized sources.	Currently not applicable. Construction camp supplied with centralized heating no fuel burning will be allowed within the camps.	Performance satisfactory.
	Protected areas	Opening of new borrow pits and excavation areas will require approval by SAEPF. Engineer ensures safety of the protected areas. Fencing around nestling places and identified areas of rare spcies. Limiting construction work during breeding and nestling time	No new borrow areas currently identified. Current borrow and excavation areas are outside the Chatyr Kul lake area.	Performance satisfactory. Attention needed in 2014 when work enters KJSR
Land use	Construction camps & other temporary structures	Contractor is responsible for good order in the territory of construction camps. The used land shall be restored to acceptable level within the due time.	The temporary construction camp at Km495 has been cleared and closed for the winter. The main camp at Km500 is in good order.	Performance satisfactory.
Transport and Infrastructure	Road closure and by-pass roads	Contractor will ensure: • Installation of road signs and pointers for the by-pass roads. Such roads shall not impact the boundaries of the protected area of Chatyr-Kul Lake (except for the area of the Smaller Lake). • At the KM 501 and KM 532 there will be installed a roadside information stand with the following text in Kyrgyz, Russian, English and Chinese	The installation of signage needs some attention in particular (i) warnings in advance of diversions at works areas (100m and 30m) and the size of signs must be to National Road Safety standards.	Attention needed on signage. Signage for the “Specially Protected

Area	Potential impact	Mitigation measures	Observed on-site 22/23 October 2013	Overall Evaluation
		languages:"Specially Protected Area of Karatal-Zhapyryk State Reserve. KM 501 – KM 532 No Stopping!" except at designated parking areas. Put additional roadsigns along the road, at every 2 km. • All by-pass roads to be coordinated with Engineer. • Contractorisresponsibletokeeptheroadopenduringconstructionworksatleastto 50% in daytime, and 100% at the end of the working day.	No signage for the "Specially Protected Area of Karatal-Zhapyryk State Reserve" installed due to the absence of significant work in this zone. Bypass roads and road opening satisfactory.	Area of KJSR" will be required for the next construction period.
	Electric systems	For the period of construction all power transmission lines shall not be disconnected except during the period of relocation of electric poles. Contractor will coordinate with local electric power authority.	No incidents in the reporting period.	Performance satisfactory.
Wastes and pollutants	Pollution	Under no circumstances the excess material can be utilized without prior permission of Engineer. No dumping of such material shall be done in rivers or watercourses. Coordination with Engineer and Environmental Expert is required.	There have been no identified incidents in the reporting period.	Performance satisfactory.
	Inert and liquid wastes	Contractor will ensure: • Installation of garbage cans on working sites; • Maintain construction sites in good order, and provide all necessary means required for all wastes storage for their final utilization/removal; • Train personnel in waste management practices and procedures as part of ecological process • Collect and remove hazardous and hazard-free materials separately in the locations approved by Engineer and Environmental Expert. For this purpose (if required) a specialized company can be contracted to collect wastes from camps and temporary storage areas for their further disposal.	Generally followed, clearer marking of waste disposal areas could be considered. Sites observed to be maintained in good condition. More formalized training should be considered in the next works season for work in the KJSR A specialized waste collection and disposal company has been identified.	Generally good waste management procedures followed. Rigorous training to be considered next year for work within KJSR
	Hazardous wastes	The rules of handling and utilization of hazardous wastes shall be integrated in the WMP. Locations for utilization of hazardous wastes shall be coordinated with SAEPF. Contractor will collect the carbon-containing wastes, including used oil, for their safe removal for processing or	The WMP forms a supporting document of the Site Specific EMP (SSEMP) and prepared by the Contractor. The Contractor has identified a sub-contractor to collect	Performance satisfactory.

Area	Potential impact	Mitigation measures	Observed on-site 22/23 October 2013	Overall Evaluation
		utilization at temporary storage areas or hand over to a licensed operator.	and dispose of waste at Naryn.	
Health and safety	Health and safety of workers	Contractor will ensure: • Occupational safety training for personnel. All the Contractor staff shall attend the safety training with account to the duration of works, and levels of management. • Safety meetings shall be held on the monthly basis, which will be attended by safety officials, unless otherwise stated by Engineer. • Inspections. Contractor will, on the regular basis, check, test and maintain all the safety equipment, working platforms, fixtures, step-ladders and other means; hoisting, lighting, signaling and safety equipment. The lighting and marking for such equipment shall not be obstructed and must be readable. Dirty or broken equipment, or misplaced equipment must be immediately fixed and replaced properly. • Protection gear and clothes must be available on site at any working time; effective measures must be taken for their due use and replacement. All construction equipment must be equipped with safety means. • First aid means. Contractor ensures a fully equipped first aid premises with climate-control inside the building/room at the level of +20oC. The terms of first aid to be coordinated with Engineer. • Contractor will cooperate with local health protection authorities and will conclude a contract for probable use of hospitals and other means.	On arrival at camp operatives are given occupational safety training. Safety issues are reported and discussed on a monthly basis as part of the progress meeting. Safety equipment was observed to be in satisfactory condition. Protective equipment is available and staff on site are observed wearing appropriate equipment. Like all working sites this aspect needs constant attention. First Aid – The contractor has a full time Chinese Doctor resident at the camp and a local Doctor on call and attending on a regular basis. There is a fully equipped first aid facility (medical room) at the Camp (Km500).	Performance satisfactory but it is noted that Health and Safety requires constant vigilance and attention.

Area	Potential impact	Mitigation measures	Observed on-site 22/23 October 2013	Overall Evaluation
	Health and safety of subcontractors	All subcontractors will receive copies of the SSEMP. All sub-contracts will contain clauses to ensure the observance of the SSEMP at all stages of works. All the subcontractors will appoint a safety representative for the entire period of works, unless otherwise stated by Engineer in written form.	A Site Specific EMP (SSEMP) has been prepared by the contractor. The Contractor is following environmental mitigation in line with the EIA and its associated EMP.	Action needed before the 2014 season and for work within KJSR.
	HIV /AIDS	Contractor with the support of relevant offices will hold an HIV / AIDS training for workers, as required, according to the terms of the Contract.	Initial training has been initiated. Refresher should be carried out at the start of each construction season.	Performance satisfactory. Refresh 2014.
Protected areas	Impact on the protected area	In order to avoid potential negative impacts Contractor will: • Stick to the adopted international practice and requirements to ensure environmental safety as regards to the protected area, and the specific requirements as stated in the EIA. • In case of finding any archeological or historical artifacts (movable or immovable) in the course of works, Contractor will undertake all the necessary measures for their protection and report to Engineers and local authorities of such findings. Provided the continuation of works will expose threat to such artifacts, the works must be suspended until proper measures are taken for their due protection.	The Contractor has been observed to be taking steps to avoid impact on protected areas. There was an isolated incident where members of the Contractor's workforce may have been operating close to Lake Chatyr Kul. This was noted and the Contractor has been advised that any work remote from the alignment and within the State Reserve must be referred to the relevant Authority for approval.	Performance satisfactory on this aspect.
Noise	Construction noise and vibration	Contractor will ensure: • Control of the sources, such as exhaust systems, noise reducers at the air intakes and regular equipment maintenance; • Requirements for allocation of stationary equipment close to ecologically sensitive receptors or sites, optimization of the noise load and the use of protection mechanisms/tools, where necessary, shall be done in line with the standard procedures.	The contractor has adopted a policy of using new plant and machinery on the Project and observation suggests good levels of maintenance. The current working season has had limited interaction with noise sensitive receptors.	Good performance in this aspect.

Part IV Conclusions and Recommendations

Conclusions

62. The 2013 construction season has seen the development of a construction camp at Km 500, including comprehensive facilities for staff welfare and environmental protection – liquid and solid waste management. An area adjacent to the camp has been developed for materials processing (crushing, grading, pre-casting and asphalt production). Seven borrow pits have been developed on the alignment outside of the KJSR and the foundations of the road have been developed from Km 479 to 507.

63. The Contractor has generally brought new plan to site and a comprehensive workshop at the Km500 construction camp ensures vehicles are well maintained, reducing potential for adverse environmental impact.

64. Generally the Contractor has carried out work in an environmentally friendly and compliant manner. There have been minor incidents where dust has been generated on dry surfaces, isolated and infrequent oil spotting, and containment of oil drums at a limited number of locations. The Contractor has been responsive to the requests for corrective actions.

65. On Borrow Pit operation the Contractor has carefully removed and stored fragile topsoil for re-use in the restoration programmes.

66. Monitoring of air quality has been carried out at active borrow pits and noise and water quality monitoring has been carried out within the KJSR. There have been only isolated excedence of the Maximum Permitted Levels, and these appear to be due to abnormbal conditions and not reflective of the general condition. The monitoring programme is under review by the IPIG as part of the production of an Ecological Response Plan (EcolRP).

67. The Contractor has prepared a Site Specific Environmental Management Plan (SSEMP) and a Borrow Pit Action Plan (BPAP) covering environmental performance required for borrow pit operation with special focus on works to be carried out in the four borrow pits proposed within the KJSR.

68. Contractor performance in the 2013 construction season is therefor considered satisfactory.

Recommendations

69. The coming construction season will see construction work entering the sensitive KJSR. Construction Impact on the ecologically sensitive KJSR and the RAMSAR site of Chatyr Kul must be managed to avoid impact.

70. The Contractor has prepared a Site Specific Environmental Management Plan (SSEMP) which includes a Borrow Pit Action Plan (BPAP) and in order to manage and control impact these plans must be adhered to in order to comply with the environmental requirements of the Project EIA and its Environmental Management Plan. For work in the KJSR a dedicated Borrow Pit Monitoring and Response Team (BPMRT) has been identified in the BPAP. This team will require site specific training and specific reporting processes. A training workshop is proposed prior to any work on borrow pits within the KJSR and a provisional Agenda for this workshop is included in Annex 5.

71. Monitoring programmes shall be reviewed as part of a development process to ensure that the information collected is relevant and directly applicable to monitoring the conditions within the KJSR for the purposes of construction activity and operation activity, The monitoring programme is under review by the IPIG as part of the production of an Ecological Response Plan (EcolRP).

72. Good record keeping has been observed at site (In Chinese language) and it is considered that more translated material would be beneficial to document environmental performance. This will be reviewed by the Consultant and reported at Monthly Progress Meetings.

73. The Contractor shall be reminded in advance of works in the 2014 construction season that all interactions on environmental issues with the public, either verbal or written, should be recorded and reported to the Engineer for inclusion in the site log.

Annex 1: Monitoring Results – Air, Noise & Vibration and Water Quality

MONITORING TEST RESULTS

Annex 1.1: Noise and Vibration Analysis

Noise results presented in this Annex have been summarised to present the average sound level. In the original report prepared by the contractor, the sound pressure levels are broken down into octave bands. However, noise is only assessed against the average sound level. In addition Noise level data is collected for two operating situations at each monitoring location: (1) At the level of the culvert, below road level: and (2) when there are Heavy Duty Diesel Vehicles (HDDV) passing . Only the situation with vehicles present are presented here (considered to be the worst case)

Table 3: Noise and Vibration Analysis - Noise Levels with lorries passing [dB(A)]

	CRBC Camp	Long Straight	Police Barracks	Narzyn Spring	Trailers	Border Holding Area	Maximum Permisible Level	Maximum Recorded	Minimum Recorded
22-Oct-13	60	61	66	63	64		**75**	66	60
30-Sep-13	58	57	**99**	61	64	67	**75**	99	57
28-Aug-13	62	61	69	61	69		**75**	69	61
29-Jun-13	60	60	60	60	75	75	**75**	75	60

Figure 8: Noise and Vibration Analysis – Noise Levels

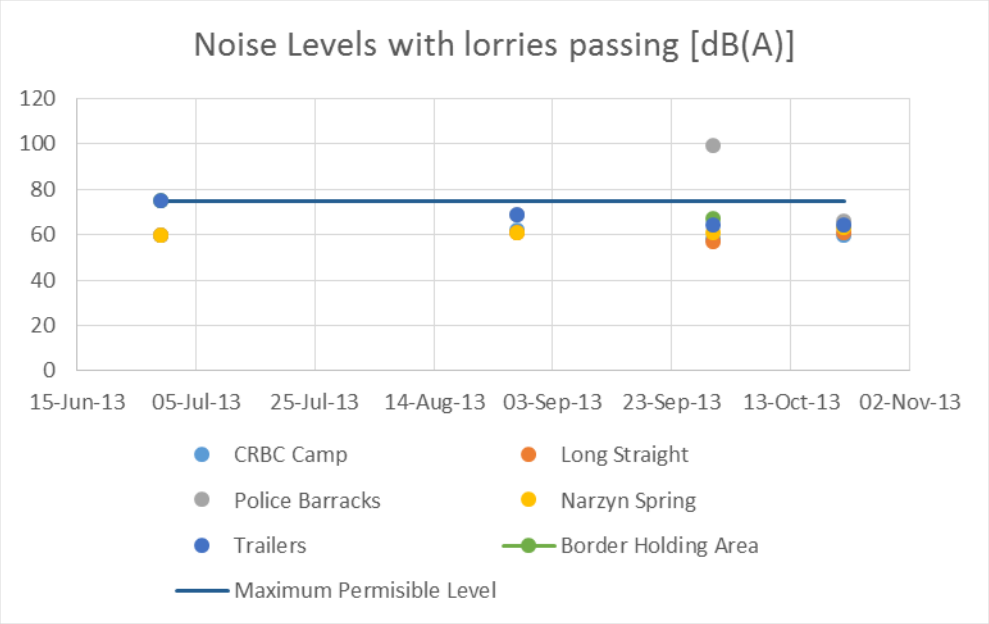
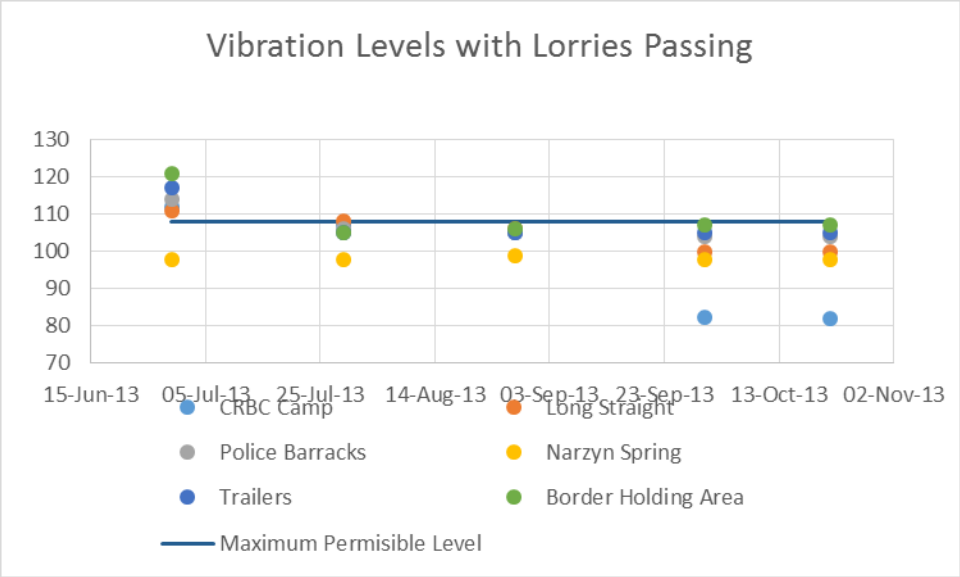


Table 4: Noise and Vibration Analysis - Vibration Levels with lorries passing

	CRBC Camp	Long Straight	Police Barracks	Narzyn Spring	Trailers	Border Holding Area	Maximum Permisible Level	Maximum Recorded	Minimum Recorded
22-Oct-13	82	100	104	97.8	105	107	**108**	107	82
30-Sep-13	82.5	100	104	97.8	105	107	**108**	107	82.5
28-Aug-13	*105*	106	105	99	105	106	**108**	106	99
29-Jul-13	107	108	106	97.8	105	105	**108**	108	97.8
29-Jun-13	**112**	**111**	**114**	97.8	**117**	**121**	**108**	121	97.8

Figure 9: Noise and Vibration Analysis – Vibration Levels



Annex 1.2: Water Analysis

Analysis of samples was carried out by Department of Environmental Monitoring of State Agency on Environment Protection and Forestry: the sampling points are:(1) - Muz Tor River; (2) -The Smaller Lake; (3) Narzan Spring; (4) Small River.

Figure 10: Water Analysis - Ph Levels

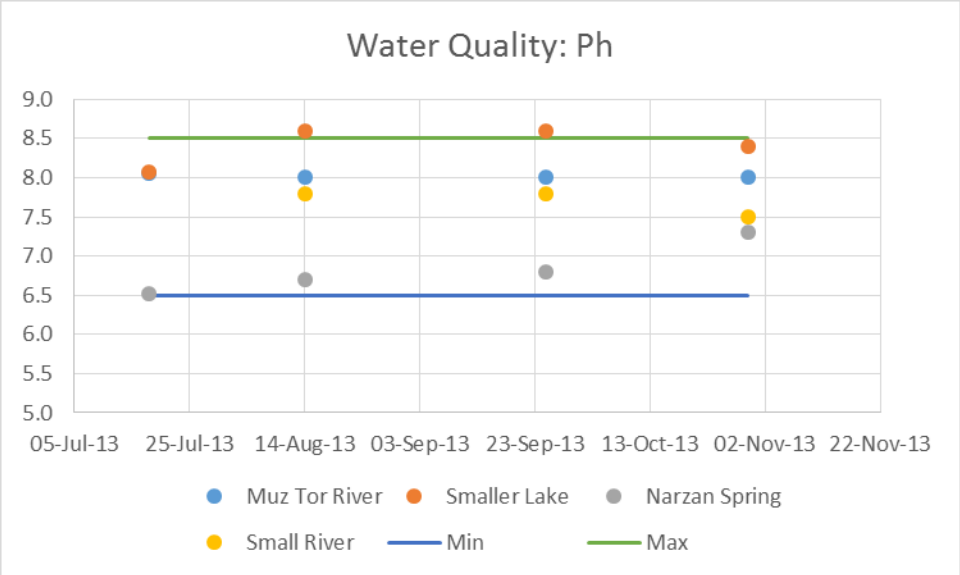


Table 5: Water Analysis - Ph Levels

Ph	Muz Tor River	Smaller Lake	Narzan Spring	Small River	Min	Max
18-Jul-13	8.1	8.07	6.52	-	6.5	8.5
14-Aug-13	8.0	**8.6**	6.7	7.8	6.5	8.5
25-Sep-13	8.0	**8.6**	6.8	7.8	6.5	8.5
30-Oct-13	8.0	8.4	7.3	7.5	6.5	8.5

Table 6: Water Analysis - Nitrate Levels

Nitrates (Mg/l)	Muz Tor River	Smaller Lake	Narzan Spring	Small River	Min	Max
18-Jul-13	>0.01	>0.01	>0.01	-	-	0.1
14-Aug-13	>0.01	>0.01	>0.01	>0.01	-	0.1
25-Sep-13	>0.01	>0.01	>0.01	>0.01	-	0.1
30-Oct-13	>0.01	>0.01	>0.01	>0.01	-	0.1

All levels were below 0.01mg/l

Figure 11: Water Analysis - Sulfate Levels

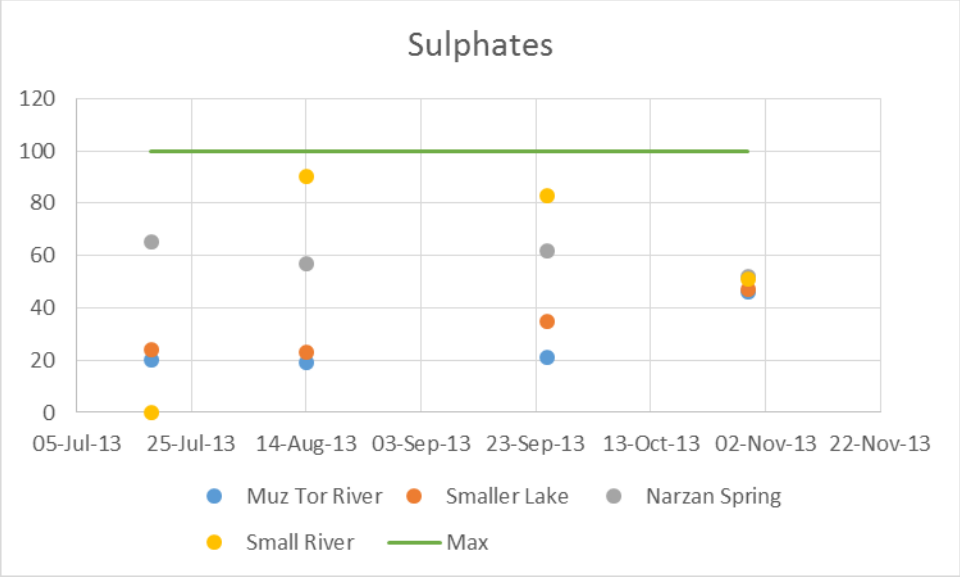


Table 7: Water Analysis - Sulphate Levels

Sulfates (mg/l)	Muz Tor River	Smaller Lake	Narzan Spring	Small River	Max
18-Jul-13	20	24	65	-	100
14-Aug-13	19	23	57	90	100
25-Sep-13	21	35	62	83	100
30-Oct-13	46	47	52	51	100

Table 8: Water Analysis - Levels of Oil Products

Oil Products (mg/l)	Muz Tor River	Smaller Lake	Narzan Spring	Small River	Max
18-Jul-13	>0.02	>0.02	>0.02	-	0.5
14-Aug-13	>0.02	>0.02	>0.02	>0.02	0.5
25-Sep-13	>0.02	>0.02	>0.02	>0.02	0.5
30-Oct-13	>0.02	>0.02	>0.02	>0.02	0.5

All less than 0.02mg/l

Annex 1.3: AIR ANALYSIS

Locations of samples: Borrow Pit 1, 2, 3, 4, 5 and 6, the Construction Camp and the Asphalt Plant & Crusher

Table 9: Air Analysis - Levels of Suspended Particulates

Suspended Particulates (mg/m3)	Borrow Pit 1	Borrow Pit 2	Borrow Pit 3	Borrow Pit 4	Borrow Pit 5	Borrow Pit 6	Construction Camp	Asphalt Plant & Crusher	Max Permissible
18-Jul-13	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	-	0.5
14-Aug-13	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	0.5
25-Sep-13	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	0.5
04-Nov-13	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	>0.1	0.5

All readings were below 0.1 mg/m3

Figure 12: Air Analysis – Levels of Carbon Oxide

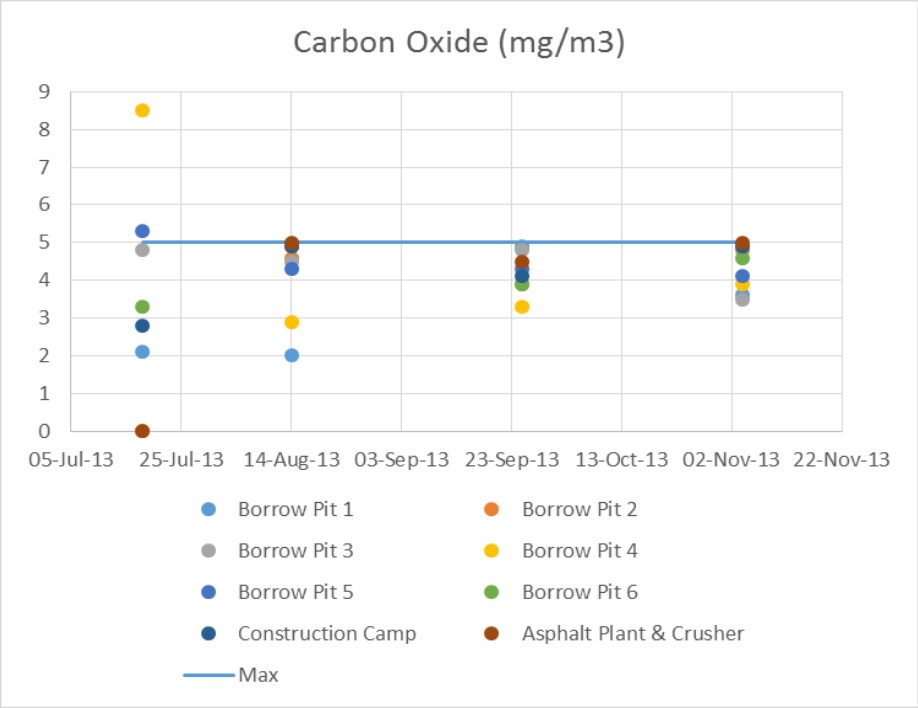


Table 10: Air Analysis – Levels of Carbon Oxide

Carbon Oxide (mg/m3)	Borrow Pit 1	Borrow Pit 2	Borrow Pit 3	Borrow Pit 4	Borrow Pit 5	Borrow Pit 6	Construction Camp	Asphalt Plant & Crusher	Max
18-Jul-13	2.1	2.7	4.8	**8.5**	**5.3**	3.3	2.8	-	5.0
14-Aug-13	2.0	4.6	4.5	2.9	4.3	4.9	4.9	**5.0**	5.0
25-Sep-13	4.9	3.9	4.8	3.3	4.3	3.9	4.1	4.5	5.0
04-Nov-13	3.6	4.8	3.5	3.9	4.1	4.6	4.9	**5.0**	5.0

Annex 2: Photographs

PHOTOGRAPHS

Figure 13: Looking from Camp at Km500 into the KJSR (October 2013)

Figure 14: Looking from Camp at Km500 into the KJSR after first snow (October 31st 2013

Figure 15: Trailers at Border Holding Area (Km 530)

Figure 16: Precast Concrete production, asphalt plant, crushing and grading areas

Figure 17: Borrow Pit #8 on Muz Tor River – Note Asphalt and Crushing Plant in distance

Figure 18: Truck refuelling at dedicated camp facility

Figure 19: Onsite refuelling of plant by dedicated refuelling truck

Figure 20: Dedicated On-site Medical Clinic at the Camp

Figure 21: Septic Tank installed behind Camp – Emptied to facility at Naryn

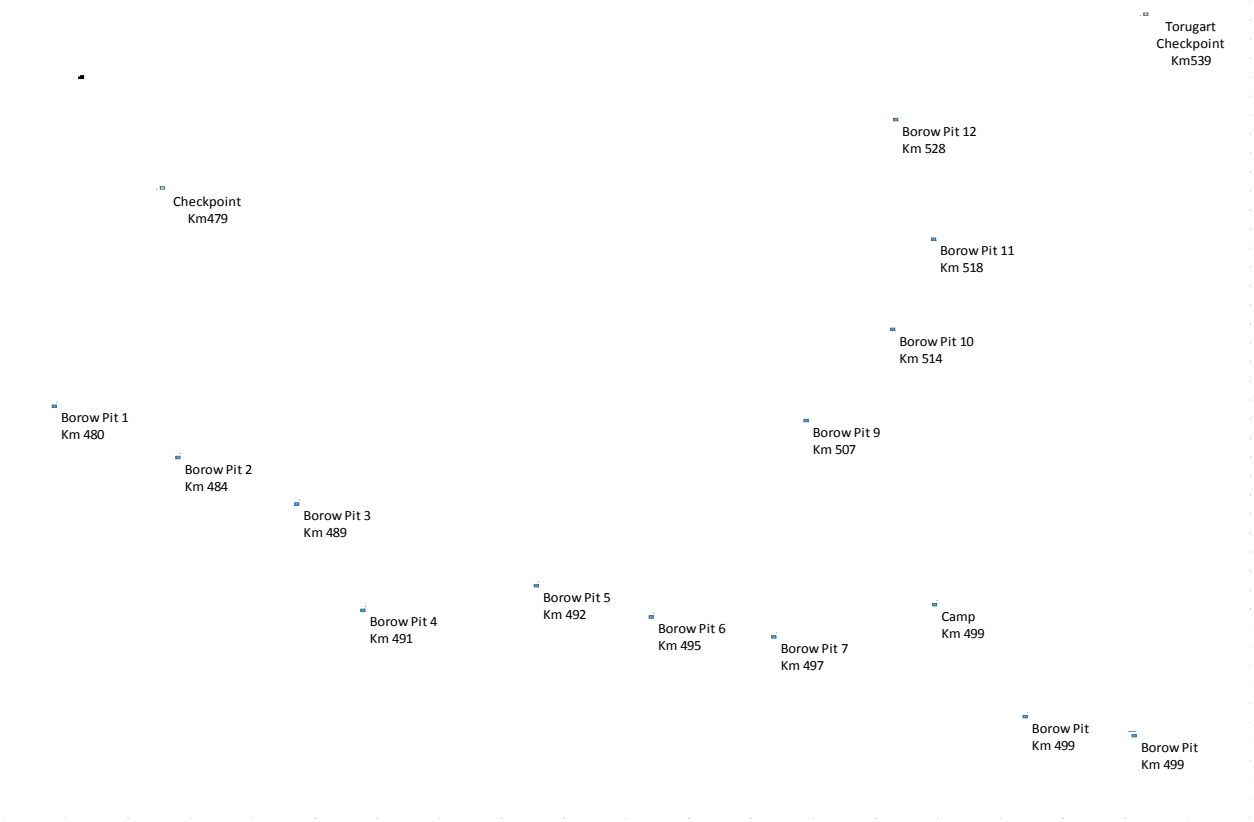
Figure 22: Overnight vehicle parking on rolled hardstanding

Figure 23: Fenced solid waste transfer point – Waste is collected and disposed to At-Bashy

Figure 24: Waste bins and fire extinguishers provided at Camp

Annex 3: Status of Borrow Pits

Figure 25: Location of Borrow Pits



Borrow Pit # / Location	***Date***	***Status***	***Photo – Current Status***
Section – 1			
#1 480+750 RHS **Volume** 150,000m^3 100 x 600 m 200m from road		Not started ☐ In progress ☐ Extraction complete ☑ Restoration phase ☐	
#2 484+400 RHS **Volume** 240,000 m^3 **Area** 600 x 200m 150m from road	Oct 2013	Not started ☐ In progress ☐ Extraction complete ☑ Restoration phase ☐	 **Figure 26: Borrow Pit #2 – Topsoil stored on edge of pit and imported spoil material placed**

Borrow Pit # / Location	***Date***	***Status***	***Photo – Current Status***
#3 480+750 RHS **Volume** 120,000m^3 **3**00 x 200 m 200m from road	Oct 2013	Not started ☐ In progress ☐ Extraction complete ☑ Restoration phase ☐	 **Figure 27: Borrow Pit #3 – Extraction for season complete**
#4 491+100 RHS **Volume** 480,000m^3 **8**00 x 300 m 200m from road	Oct 2013	Not started ☐ In progress ☐ Extraction complete ☑ Restoration phase ☐	 **Figure 28: Borrow Pit #4 – Extraction for season complete**

Borrow Pit # / Location	***Date***	***Status***	***Photo – Current Status***
#5 493+000 RHS **Volume** 120,000m^3 **3**00 x 200 m 100m from road	Oct 2013	Not started ☐ In progress ☐ Extraction complete ☑ Restoration phase ☐	 **Figure 29: Borrow Pit #5 – Extraction for season complete**
#6 495+500 RHS **Volume** 120,000m^3 **3**00 x 200 m 100m from road	Oct 2013	Not started ☐ In progress ☑ Extraction complete ☐ Restoration phase ☐	 **Figure 30: Borrow Pit #6 – Note that dampness of extracted material reduces dust**

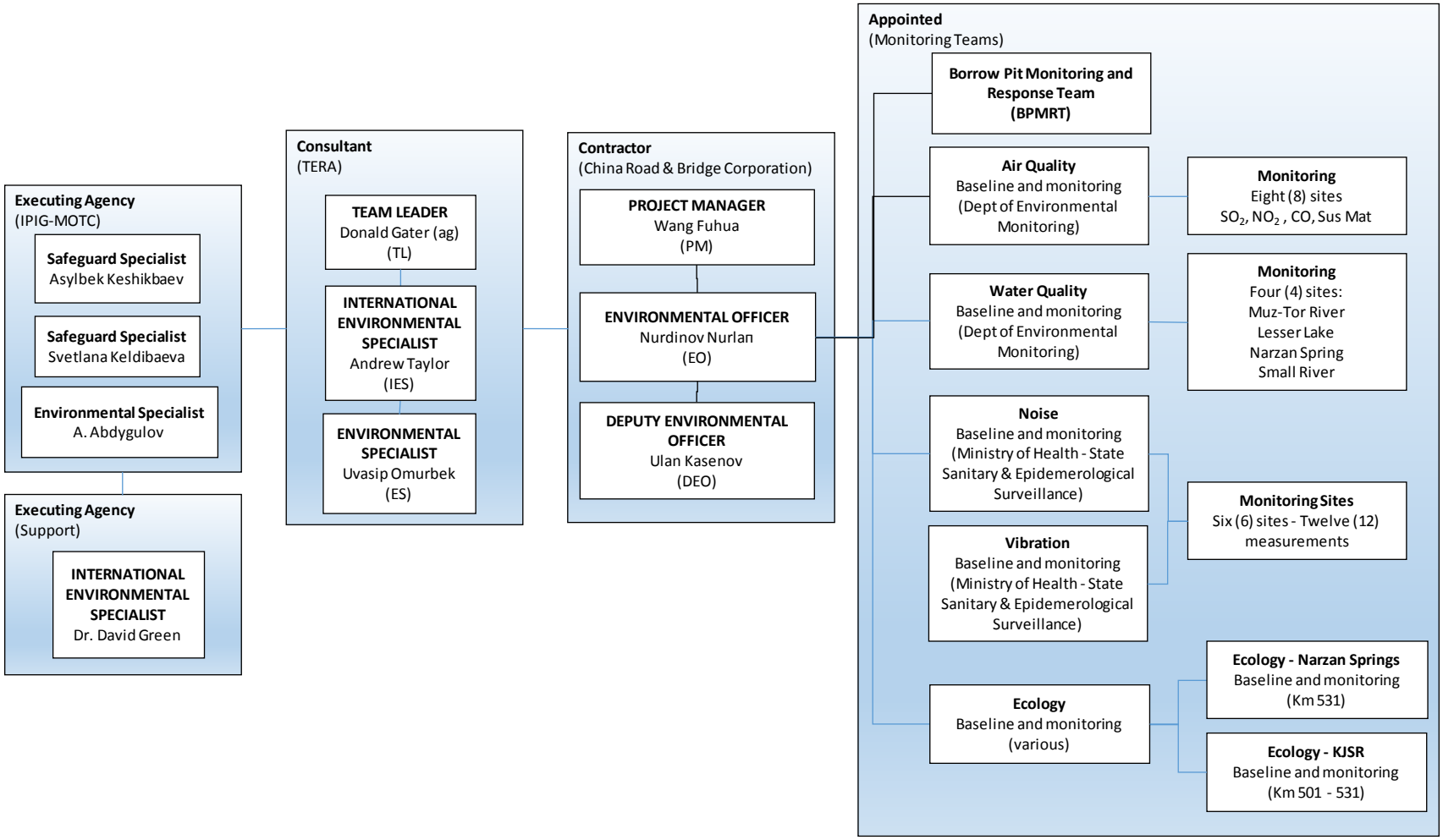
Borrow Pit # / Location	***Date***	***Status***	***Photo – Current Status***
#7 497+500 RHS **Volume** 160,000m^3 **4**00 x 200 m 100m from road	Oct 2013	Not started ☐ In progress ☐ Extraction complete ☑ Restoration phase ☐	 **Figure 31: Borrow Pit #7- Extraction for season complete**
#8 **Muz Tor River** 499+000 RHS **Volume** 3,000,000m^3 **75**0 x 2000 m 6000m from road	Oct 2013	Not started ☐ In progress ☑ Extraction complete ☐ Restoration phase ☐	 **Figure 32: Borrow Area #8: Muz Tor River – Note maintained channel on LHS of photo**

Borrow Pit # / Location	***Date***	***Status***	***Photo – Current Status***
#9 Within KJSR 507+600 RHS **Volume** 225,000m^3 **450** x 250 m 200m from road	Oct 2013	Not started ☑ In progress ☐ Extraction complete ☐ Restoration phase ☐	 **Figure 33: Borrow Pit #9 – Before any work**
#10 Within KJSR 514+600 RHS **Volume** 250,000m^3 **5**00 x 250 m 150m from road	Oct 2013	Not started ☑ In progress ☐ Extraction complete ☐ Restoration phase ☐	 **Figure 34: Borrow Pit #10 – Before any work**

Borrow Pit # / Location	***Date***	***Status***	***Photo – Current Status***
#11 Within KJSR 518+000 RHS **Volume** 325,000m^3 **65**0 x 250 m 100m from road	Oct 2013	Not started ☑ In progress ☐ Extraction complete ☐ Restoration phase ☐	 **Figure 35: Borrow Pit 11 – Before any Work**
#12 Within KJSR 528+200 RHS **Volume** 325,000m^3 **65**0 x 250 m 160m from road	Oct 2013	Not started ☑ In progress ☐ Extraction complete ☐ Restoration phase ☐	 **Figure 36: Borrow Pit #12 – Before any Work**

Borrow Pit # / Location	***Date***	***Status***	***Photo – Current Status***
#12 Within KJSR 508+200 LHS **Volume** n/a	Oct 2013	Will not be used due to presence of a rare insect species	 **Figure 37: Borrow Pit at Km508 – Not used due to presence of rare insect species**

Annex 4: Organisation Chart for Environmental Management (2013 Season)



Annex 5: Training Workshop for Borrow Pit Monitoring & Response Team

BORROW PIT MONITORING AND RESPONSE TEAM (BPMRT) TRAINING WORKSHOP

(PROVISIONAL FOR DISCUSSION)

Date – To be confirmed (Early May 2014) **before <u>any</u> pits in KJSR are opened**
Venue – CRBC Construction Camp, Km 500
Language – Workshop will be conducted in English, Russian and Chinese

Attending.

- TERA International (The Engineer) [**Chair / Facilitator**]
- Borrow Pit Monitoring and Response Team - China Road and Bridge Corporation (CRBC)
- Karatal-Japaryk State Reserve (KJSR)
- Ecologists appointed under the BNT3 project
- IPIG – MOTC (in observation, IES & NES one representative Env. & Soc. Unit)

Morning Session: **Current conditions and resources**
(Each 30 minute unit allows for a 20 minutes presentation and 10 minute discussion)

09:00 – 09:15	Welcome and Introductions - by TERA
09:15 – 09:45	Why is Karatal-Japaryk State Reserve is so important? – by KJSR
09:45 – 10:15	Introduction of the Borrow Pit Action Plan - by CRBC
10:15 – 10:30	**Break**
10:30 - 11:00	Job Description and activities of the BPMRT – by CRBC
11:00 - 11:30	Lines of Responsibility and Reporting - by CRBC / TERA
11:30 – 12:00	Ecological resources that could be encountered – by Project ecologists
12:00 – 12:30	Checklists to be used on site – by CRBC / TERA.
12:30 – 13:30	**Lunch**:

Afternoon Session: **On-site practical training**
The afternoon session comprises two onsite training exercises

13:30 – 13:45	Travel to site
13:45 – 15:00	**Practical 1 – Identification of animal activity / disturbance**. The training exercise will be led by the project appointed ecologists and representatives of KJSR who will show the BPMRT how to identify evidence of animal activity (calls, tracks, droppings, burrows, nests) within KJSR. Identification of marmot relocation sites.
15:00 – 15:15	**Break**
15:15 – 16:30	**Practical 2** – Practical Demonstrations – An exercise at and an operating site outside the KJSR on the use of checklists and a potential borrow pit site within the KJSR. Exercises will include the steps to be taken on the identification of an incident on site – reporting lines, “stop work” notice, etc.
16:30 - 16:45	Return to camp
16:45 – 17:00	Conclusion and round up on training activity at camp

A summary of the outcomes of the Workshop will be prepared by the Consultant TERA and distributed to attendees. CRBC will also prepare a report on any changes to checklists as an

outcome of the workshop and any changes to reporting and training. Outcomes will be reported at the next monthly progress meeting on site.