Environmental Monitoring Report

Project Number: 42399-02
Grant Number: ADB Loan No. 2755-KGZ (SF)
Reporting Period: July to December 2014

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

Reviewed by: Name	*Designation in IPIG*	*Responsibilities*	*Signature / Date*
Abdygulov Asylbek	Environmental Specialist		

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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.

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Abbreviations

ADB	Asian Development Bank	
AQP	Air Quality Plan	
BPAP	Borrow Pit Action Plan	Prepared by Contractor
BPMP	Borrow Pit Management Plan	Appendix 9 of the EIA
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
KJSNR	Karatal-Japaryk State Nature 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	Prepared by CRBC
TAEPF	Territorial Agency for Environmental Protection and Forestry	
TERA	TERA International Inc.	The Engineer
WMP	Waste Management Plan	

Part I Overview

The Project and Function of this Document

1. The Bishkek – Naryn – Torugart Road - Project 3 (BNT3) is an Asian Development Bank funded Project to improve the alignment from Km479 up to the People's Republic of China (PRC) border at Km539. The alignment passes through the Karatal-Japaryk State Nature Reserve (KJSNR)[1] from Km501 to the border control holding area at Km531. The KJSNR contains Lake Chater Kul; a recognized RAMSAR site.

2. This document is the third six monthly Environmental Monitoring Report for the Project, covering the second half of the 2014 construction season. It reports on environmental monitoring and performance of the Project[2].

Physical Characteristics of the Project

3. The starting point of the road is located beyond the Ak Beit Pass in the Arpa Valley at Km479, just past a border control point at Km478. From this point the road runs across a plain until around Km500 at the existing road maintenance facility where it rises to the Tuz Bel Pass where the Construction Camp is located (Km501). At this point the road enters the KJSNR 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 Km531. 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 Km539, the end of the Project.

Overview of Activities

4. At the end of the 2014 construction season the alignment was surfaced with asphalt from Km479 to Km500, subgrade and sub base were in place up to trailers at the border control holding area (Km531) and earthworks were in progress up to the border with PRC (Km539). Construction activity commenced on 5th May 2014 and major site activity was completed by early November 2014. There was still snow on the ground at the site in May and intermittent snowfall in June but the Contractor was able to mobilize and the works program is broadly on schedule. The situation at the end of November 2014 was that:

5.

- The alignment was asphalt surfaced from Km479 to Km500 (except for the bridge crossing at Km491).
- Sub grade and sub base had been laid from Km500 to the border control holding area (Km531);
- Earthworks were in progress from border holding area up to the PRC border (Km539);
- Culverts and bridges were constructed up to the border control holding area (Km531);

[1] The name of the State Reserve was adjusted in April 2014 to Karatal-Japaryk State **Nature** Reserve (KJSNR)

[2] This Report is for July to December 2014, there was no construction activity on site beyond November 2014

- The asphalt plant had been commissioned, had been active and was closed for winter;
- Borrow pits 10 (Km 514), 11 (Km 518) and 12 (Km 528) had been operated within the KJSNR and closed for winter;
- Borrow pit 12 (Km 528) had been partially re-contoured in preparation for re-cultivation in May 2015 and closed for winter;
- .

Figure 1: View from Camp into KJSNR on 8 May 14 – Snow on ground but melting

Figure 2: View from Camp into KJSNR on 27 May 14 – Snow no longer on ground

Figure 3: View from Camp into KJSNR on 21 October (pm) – site clear of snow

Figure 4: View from Camp into KJSNR on 22 October 2014 (am) – overnight snow

Figure 5: View from the camp into KJSNR 29th October 2014 - permanent snow on ground

Construction Camp at Km501 and Manufacturing Area

6. In 2013 the Contractor established a dedicated construction camp at Km501, on the west side of the existing road (Figure 6 and Figure 6) at Tuz Bel Pass. The camp is located outside the border of the Karatal-Japaryk State Nature Reserve (KJSNR). The Camp comprises site offices for Contractor and Consultant and accommodation and canteen for staff working on the Project. There are mobile phone connections available at the camp but 3G broadband is not available. The camp includes a maintenance yard, laboratory and refueling facility.

Figure 6: Construction Camp at Km501 - Looking South across Tuz Bel Pass
(June 2014)

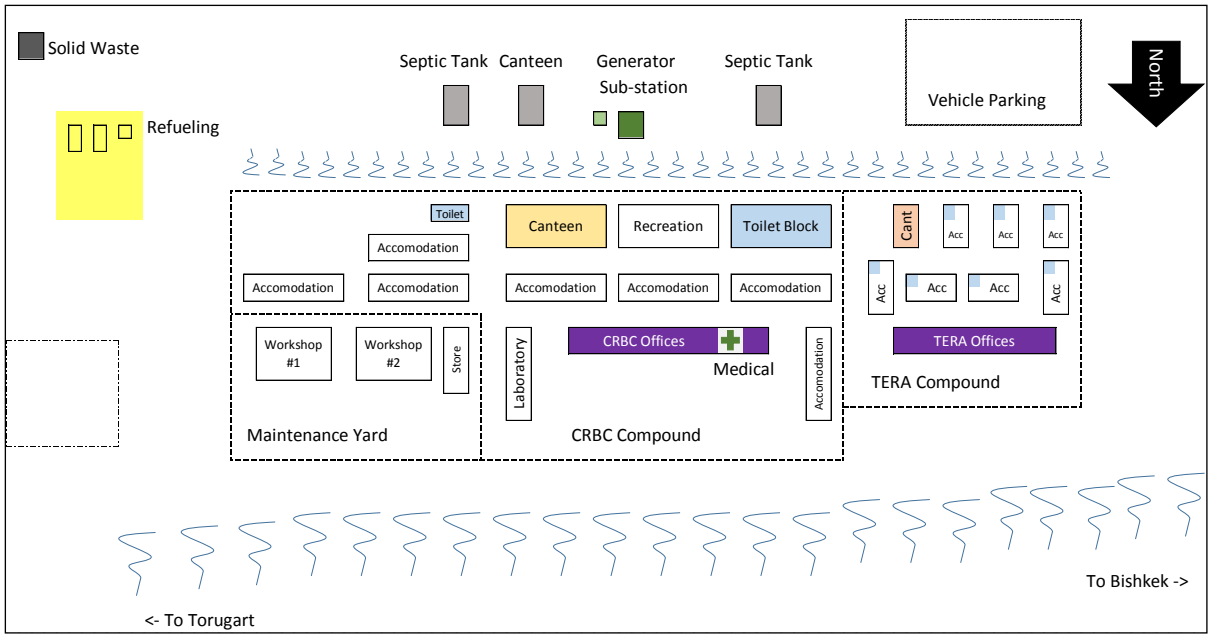

Figure 7: Schematic of Km501 Camp

7. Freshwater is available at the camp and there is a dedicated sewerage system directed to two septic tanks. There is a grey water soak-away with fat trap to collect and treat surplus liquid waste from the canteen (Figure 7). Septic tank and solid waste are regularly collected for disposal at an approved site.

8. A Manufacturing Area comprising crushers, stockpiles, asphalt plant and precast yard is sited around 3km south of the Camp, immediately east of the Muz Tor River.

Figure 8: Manufacturing Area looking south-west from Asphalt Plant across Muz Tor River

Figure 9: Manufacturing Area looking north-east from the asphalt plant

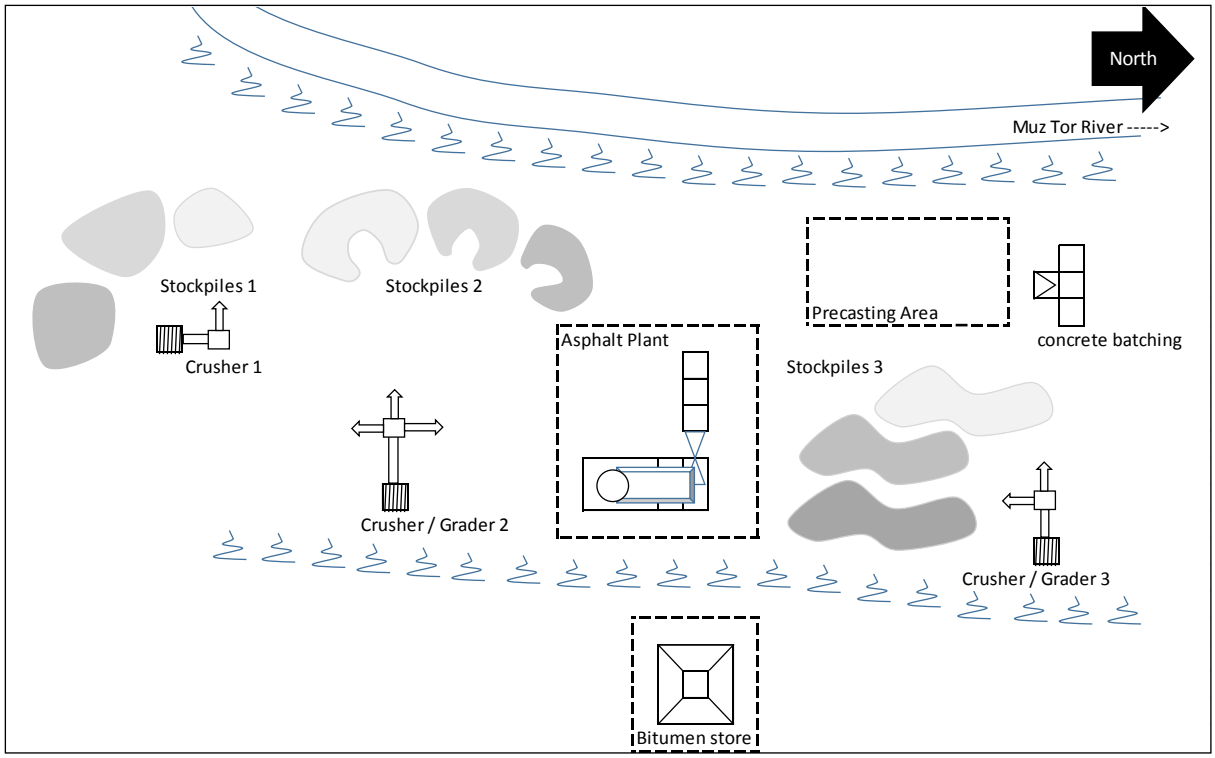

Figure 10: Schematic of Manufacturing Area

Project Activities

9. This section summarizes Project activities during the second half of the 2014 construction season, July to December 2014.

10.

11. Road reconstruction works focused on three main areas: asphalting from Km479 to Km500; preparation up to sub-base up to trailers at the border control holding area (Km531) and from October 2014 earthworks upto the border with PRC (Km539). During these operations material was taken from six borrow pits outside the KJSNR (BP1 to 6 and the Muz Tor River BP8) and inside the KJSNR (BP10, 11 and 12).

Figure 11: Typical Road Alignment after works creating road foundation (around Km 502)

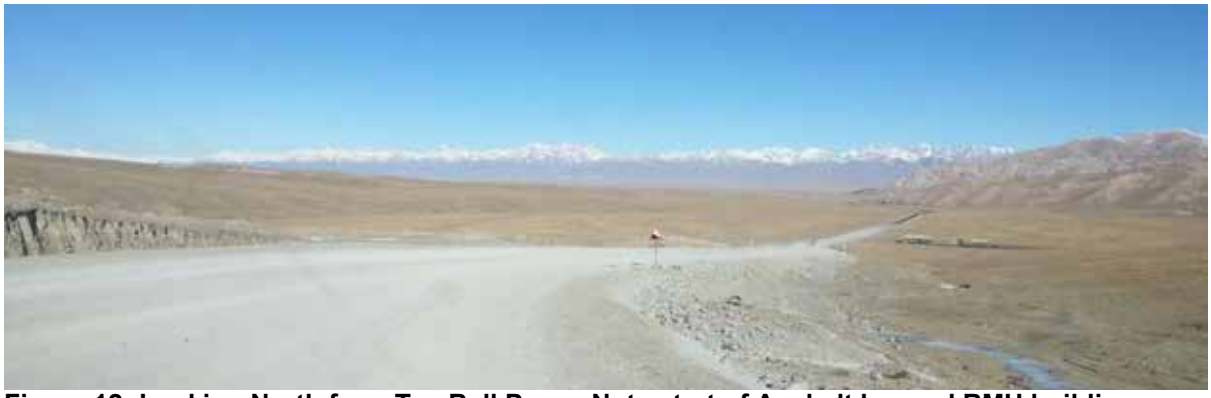

Figure 12: Looking North from Tuz Bell Pass - Note start of Asphalt beyond RMU buildings

12. The crushing and screening of material and the manufacture of precast concrete sections was carried out at the Manufacturing area.

13. The asphalt plant was commissioned and was active though the second half of the 2014 construction season.

14. By mid-November 2014 weather conditions were becoming too cold for regular work and the vehicles, camp and manufacturing area were prepared for winter closedown.

Work within the KJSNR

15. A critical element of the 2014 construction programme was the operation of borrow pits within the KJSNR. The sensitivity of the KJSNR and the potential impact from borrow pit operation is acknowledged.

16. A dedicated Borrow Pit Action Plan (BPAP) has been prepared by CRBC, approved by ADB and the BPAP has been incorporated into the Borrow Pit Management Plan in the endorsed Environmental Impact Assessment for the project. Approval for the use of borrow pits inside the KJSNR has been approved by the appropriate authorities.

17. A briefing workshop was held in the TERA offices at the Camp and on site on 14 May 2014 attended by the CRBC Borrow Pit Monitoring and Response Team (BPMRT), CRBC engineers, KJSNR and TERA. The BPMRT monitored operations of the borrow pits through the 2014 construction season using project specific checklists.

18. Borrow Pit (BP) 9 was not developed due to discontinuity of useful deposits. Extraction of construction material from BP10 commenced in the first week of June, BP11 on the second week of June and BP12 on the first week of July. Due to changes in the road design additional material is needed for the project and the Contractor has requested that borrow pits within the KJSNR be extended and additional borrow pits are considered, These proposals are under consideration and in principal approval has been sought from the relevant authorities in KGZ. The BPMP will need to be modified and approved by ADB before any extensions can be operated.

19. Regular environmental Site Inspections have been carried out by the CRBC BPMRT and audits have been carried out by TERA with cross checking by IPIG. The audits confirm that environmental protection measures were in place. For work within borrow pits in KJSNR “drip trays and waste bins” were in place on site and “topsoil” was being stored on the edges of borrow pits within the “gravel silt fence” as prescribed in the BPMP.

20. On October 10 Dr. David Green conducted training for the representatives of SNRKJ. They were told about the issues related to environmental monitoring, how the monitoring was carried out and why monitoring is needed. The SNRKJ representatives were told about the necessity and importance of their participation in the environmental monitoring which will help to increase their capacity.

21. TERA together with Dr. David Green is preparing training programme for Road Maintenance Unit (Spill Response Training Workshop). During conducting these trainings issue of involving reserve people to learn how to use equipment for oil and fuel spill containment can be considered.

ADB Visits

22. An ADB mission visited the Project from 12 to 27 September 2014. Ms. Thi Thanh Phuong Tran, Senior Environmental Specialist was part of the mission and visited the site on 15th September 2014. An informal debriefing meeting was held at MOTC, Bishkek on 25th September attended by ADB, MOTC-IPIG and TERA and discussed interaction with KJSNR, equipment for KJSNR, spill response training and proposals for the extension of borrow pits within KJSNR were discussed. The ADB mid-term mission took place between 12th and 17th October 2014. A site visit to BNT3 took place on 13th October 2014.

Contaminated Material

23. 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

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

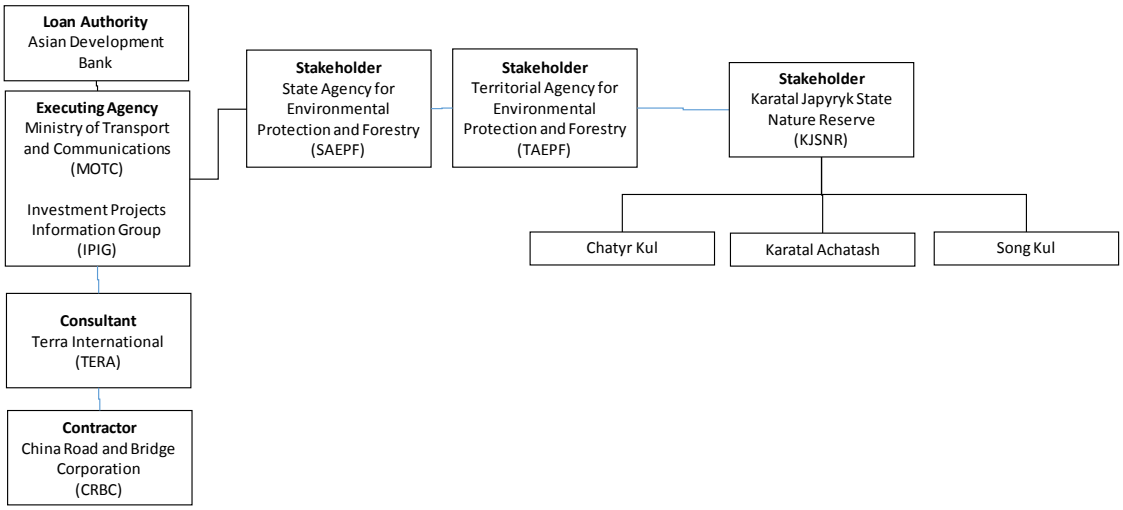

Figure 13: Environmental Stakeholders in the Project

25. There have been no changes in Project organization but there have been changes in the environmental management team. Mr Uvasip Omurbek, the TERA National Environmental Specialist, resigned his post due to health issues (working at altitude). With the assistance of IPIG, TERA identified Mr. Eric Shukurov as a replacement and following the approval process he commenced work at site on 18 August 2014.

26. Dr David Green the International Environmental Specialist of MOTC-IPIG was based on project in the Kyrgyz Republic for three missions from 11th to 24th July 2014 and 30th September to 16th October.

27. Mr Andrew Taylor, the International Environmental Specialist of TERA, was based on project in the Kyrgyz Republic from 23rd September to 6th November 2014.

Stakeholder Relationships

28. Relations between the Executing Agency (EA), the Consultant (TERA) and the Contractor (CRBC) have been satisfactory, and a good working relationship has developed. Representatives of the KJSNR have become engaged with the Project after strong effort on the part of TERA and IPIG; through workshops and participation in project environmental and ecological monitoring.

Other Environmental Reporting

29. Monthly reports are prepared that include environmental test results for air quality, water quality, noise and vibration. In addition, camp and road safety audits are performed.

30. The preparation, by CRBC, of a Site Specific Environmental Management Plan (SSEMP) is a requirement of the Project EIA. A draft SSEMP has been prepared by CRBC and was submitted to IPIG in November 2013. A revised version was submitted in February 2014 and ADB offered comments in March 2014. A revised draft SSEMP has been discussed between CRBC, TERA and MOTC-IPIG and environmental checklists, in English and Russian, designed to check and audit environmental performance based on the SSEMP have been prepared and tested on site (See Appendix 6 for examples of the checklists). The latest version of the draft SSEMP is being used on site and the finalized SSEMP will be submitted by CRBC to TERA / MOTC-IPIG for formal approval prior to the 2015 construction season.

31. The site specific Borrow Pit Action Plan (BPAP) prepared by CRBC forms an Appendix to the Borrow Pit Management Plan (BPMP) that forms Appendix 9 of the EIA. A need for extension of borrow pits within the KJSNR has been identified, this may require minor revision of the BPAP if approved but the major changes are to the amended BPMP (ABPMP) which was prepared in the closed season from November 2014., The extensions have been discussed with the Contractor, IPIG, TEAR and KJSNR and the results of the consultations are summarized in the revised ABPMP; completed in January 2015. The EIA was presented on the ADB[3] and MOTC[4] websites in January 2014 and endorsed by SAEPF

[3] http://www.adb.org/projects/documents/carec-transport-corridor-1-bishkek-torugart-road-project-3-km-479-539-eia-jan-2014

[4] http://www.piumotc.kg/ru/safeguard/148/

in May 2014. An update of the EIA with the ABPMP will be disclosed as necessary in due course.

Part II Environmental Monitoring

Affected Persons

32. 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 west of the Construction Camp at Km501; and (ii) Barracks for personnel manning the frontier post the border facility (Km520). In addition there are a number of trailer units providing basic accommodation and refreshment facilities at the border holding area(Km530). Neither of the official facilities require re-provisioning but the trailers are scheduled to be relocated due to road rehabilitation and construction of a vehicle parking area as part of the Project. This is reported elsewhere under the social workstream resettlement activities.

33.

Grievance Redress Mechanism

34. A Grievance Redress Mechanism (GRM) has been formally established on site and training and orientation was provided in July 2013. A 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.

35. 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.

Compensation Claims

36. In the completed 2014 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.

Monthly Environmental Monitoring

37. Monthly monitoring has been carried out in 2014 for:

- noise and vibration at borrow pits within KJSNR, the camp, the manufacturing area and barracks;
- air quality at borrow pits within KJSNR, the camp, the manufacturing area and barracks; and
- water quality at sites within KJSNR and the Muz Tor river.

38. The monitoring sites are indicated in Figure 14 and the monitoring data are included in Annex 1: Monitoring Results – Air, Noise & Vibration and Water Quality. Annex one includes both data and graphical analysis over the two years of monitoring.

39. The monthly environmental monitoring programme has been reviewed to focus on operations within KJSNR and on “upwind and downwind” (upstream/downstream) monitoring to assess impact of construction work on air quality, noise and water quality.

Table 1: Noise & vibration, water and air quality monitoring points – 2013 and 2014

2013 Monitoring Season					**2014 Monitoring Season**			
No.	***Location***	***Chainage from Bishkek***	***R/L road***	***From c/l (metres)***	**No.**	**Location**	**Comment**	
								Noise and Vibration
NV 1/2	*Construction camp*	*500km +000*	*R*	*100*	NV 1/2	Construction camp	Target impact of BPs	
NV 3/4	*"Small Stream"*	*Km511 +tbc*	*R*	*50*	NV 3/4	"Small Stream"		**a**
NV 5/6	*Barracks*	*Km518 +tbc*	*R*	*400 tbc*	NV 5/6	Barracks		
NV 7/8	*Narzyn Spring*	*Km525 +tbc*	*L*	*200 tbc*	NV 7/8	Active Borrow Pits inside the KJSNR		
NV 9/10	*Trailers*	*Km531 +000*	*L*	*100 tbc*	NV 9/10			
NV 11/12	*Border Area*	*Km532 +000*	*L*	*100 tbc*	NV 11/12			
								Water Quality
WQ1	*Muz Tor River*	*499km +000*	*R*	*6000*	WQ1	Muz Tor River	Chatyr Kul, infrequent	
					WQ1a	Chatyr Kul (int)		
WQ2	*Kosh Kor Lake*	*Km520 +tbc*	*L*	*600tbc*	WQ2	Kosh Kor		
WQ3	*Narzyn Spring*	*Km525 +tbc*	*L*	*400*	WQ3	Narzyn Spring		
WQ4	*"Small Stream"*	*Km511 +tbc*	*L*	*100*	WQ4	"Small Stream"		**a**
								Air Quality
AQ1	*Borrow Pit 1*	*480km +750*	*R*	*200*	Borrow pits outside the KJSR will not be routinely monitored on a monthly basis in 2014			
AQ2	*Borrow Pit 2*	*484km +400*	*R*	*150*				
AQ3	*Borrow Pit 3*	*489km +750*	*R*	*200*				
AQ4	*Borrow Pit 4*	*491km +100*	*R*	*200*				
AQ5	*Borrow Pit 5*	*493km +000*	*R*	*100*				
AQ6	*Borrow Pit 6*	*495km +500*	*R*	*100*				
AQ7	*Construction camp*	*500km +000*	*R*	*200*	AQ3	Crusher / asphalt	Upwind & downwind	
AQ8	*Crusher / Asphalt*	*499km +000*	*R*	*6000*	AQ4			
	Borrow Pit 9	*507km +160*	*L*	*200*	AQ1 /AQ2 & AQ5 / AQ6	Active Borrow Pits inside the KJSNR	Upwind and downwind station	
	Borrow Pit 10	*514km +600*	*L*	*150*				
	Borrow Pit 11	*518km +600*	*L*	*100*				
	Borrow Pit 12	*528km +200*	*L*	*160*				
		Km511 +tbc	*L*	*50*	AQ7	Roadside	Each side of the road	**a**
			R	*50*	AQ8	Roadside		**a**

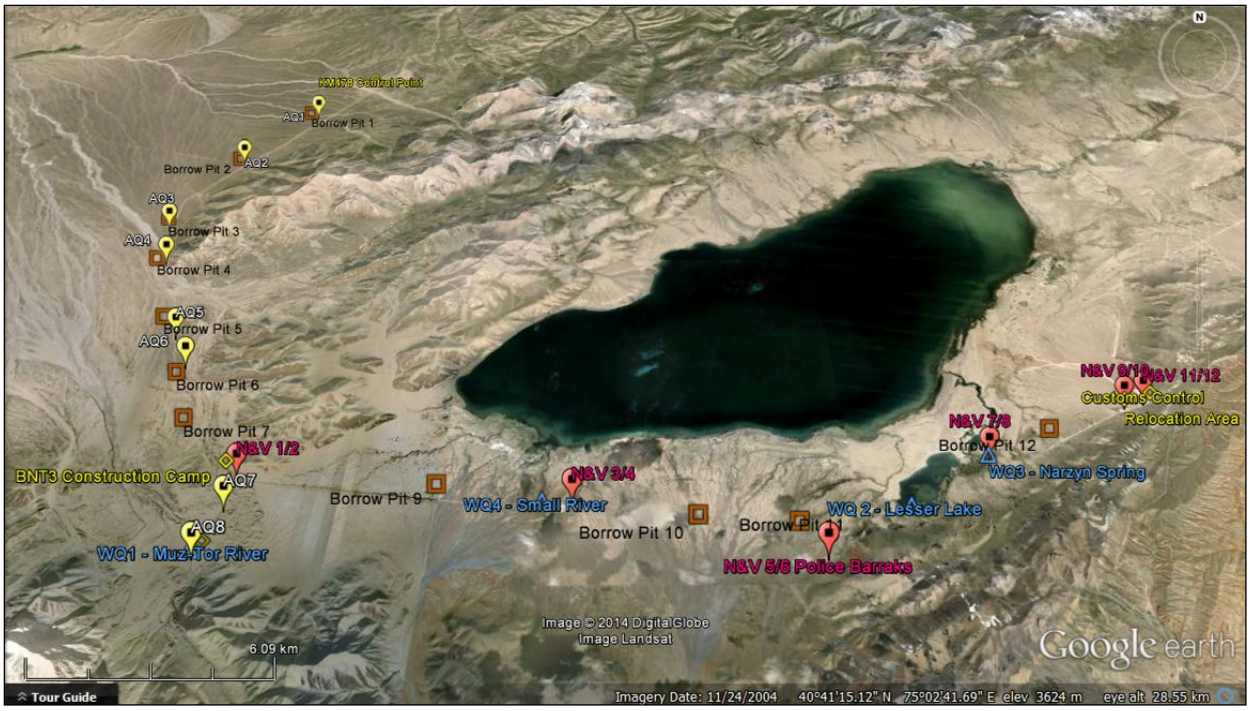

Figure 14: Location of the noise & vibration, air quality and water quality monitoring stations

Noise and Vibration

40. **Noise** (Annex 1, Table 4, page 32) and **vibration** (Table 4, page 32) testing has been carried out at the camp, at the manufacturing area, borrow pits within KJSNR, the barracks housing personnel manning the frontier post (Km518); and the border holding area. Review indicates that the maximum permissible level (MPL) have not been exceeded.

1. For vibration, results indicate that the maximum permissible level (MPL) have not been exceeded .

Water Quality

2. **Water quality,** in terms of pH, chlorides, nitrates sufates and oil products, is tested at four locations to detect impact on sensitive water bodies within the KJSNR and at the Mus Tor river close to the Construction camp. The locations are:

- Muz Tor River, outside KJSNR and close to the asphalt and crushing plant and camp;
- Chatyr Kul, inside KJSNR – a sample is collected from Chatyr Kul at a point closest to an operating borrow pit when considered appropriate – infrequent monitoring;
- Kosh Kul (Lesser Lake) – representing the closest open water to the alignment;
- Narzan Spring; and
- Unnamed Stream (around Km511) – on south side of Lake Chatyr Kul.

3. The results for pH (Table 8, pg37), sulfates (Table 9, pg38), suspended substances (Table 10, pg40), chlorides (Table 11, pg41) and dissolved oxygen (Table 12, pg43) are all within permissible levels. The current works are unlikely to be having any impact on water quality in the lakes due to the distance from works areas. It is 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

4. For **air quality**, suspended particulates, carbon monoxide and sulfur dioxide are sampled and tested at operating borrow pits. Test results for Sulphur di-oxide (Table 6, Pg35) and Carbon monoxide (Table 7, Pg36) were below the MPL. Monitoring has been amended to test upwind and downwind of the manufacturing area and active borrow pits in KJSNR.

Site Monitoring and Audit

5. To assist in the monitoring of environmental performance on site TERA has prepared site inspection checklists for CRBC, TERA and others to guide environmental inspections and audit (See Annex 6). The checklists are based on environmental documentation including the EIA, EMP, SSEMP and the BPAP. Checklists have been prepared and are being tested on site for:

- KJSNR - Borrow Pit Setup;
- KJSNR - Borrow Pit Operation;
- Camp – Manufacturing Area (Asphalt Plant, Crushers, Stockpiles and Precast yard);
- Camp - Fenced compound (including offices, living areas and canteens);
- Camp – Maintenance area (including compound, workshops and parking);
- Camp – Management & Community (affected persons, workforce and documentation);
- Worksites – General checklist for Road foundations, Asphalting and Culverts.

6. The checklists are included in Appendix __.

Ecology - Flora and Fauna

7. Monitoring of ecological indicators (birds, insects, mammals, vegetation, etc.) in KJSNR has been carried out in the second week of June, fourth week of August and third week of September within the KJSNR during the 2014 construction season. The methodology and approaches are identified in the Ecological Response Plan prepared by MOTC-IPIG. Results will be reported in the Ecological Monitoring Report for 2014.

Monitoring of ecosystems outside the KJSNR using birds as indicators has also been carried out independently in June, August and September during the 2014. The methodology and results are presented in the BNT 123 bird Survey Report for 2014 (Final Report Jan 2015) prepared by IPIG with support from an independent ornithologist.

8. The local pastureland authorities permit grazing (mainly cattle and goats) and considerable numbers of livestock are allowed to graze both in the KJSNR and indeed all along the alignment. Grazing has been identified by botanists as a major impact on the botanical ecology of the area; but this is outside control of the project. Likewise solid waste and debris from herders left around casual and temporary accommodation in the summertime is an eyesore and a significant detraction from the natural habitat. Waste disposal relies on the goodwill of the herders concerned who in many cases do not take their waste garbage with them when they leave the area.

Road Safety

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

10. Similarly, accidents concerning worker safety are monitored and none have been reported during the reporting period.

Road Signage

11. **Temporary road signage** has been noted as a potential issue. In the 2014 construction season signage was considered satisfactory.

12. **State reserve signage** has been erected to warn road users that they are entering the KJSNR has been agreed between MOTC-IPIG and KJSNR and two sets of information boards have been located at Muz Tor Pass (Km501) and the customs area, advising entry into: (i) Karatal-Japaryk State Nature Reserve; and (ii) Chtyr-Kul Reserve Wetlands of International Significance". In addition five signs have been placed along the road alignment and five will be placed on the north side of the lake advising "Reserved Land Chatyr-Kul, Entry Denied!"

Traffic Surveys

13. A traffic survey was conducted in 2011, which indicated that traffic, especially of heavily-loaded large trucks is increasing. A supplementary Traffic Survey was carried out in 2014.

Part III Environmental Management

Introduction

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

15. The main concern of the ADB in relation to the project is that it should not "result in any net loss of ecological function or 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).

16. 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.

17. 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

18. 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 as updated from time to time. In carrying out the work in line with the EMP the Contractor has prepareed a draft Site Specific Environmental Management Plan (SSEMP) that identifies how environmental controls will be implemented. The contractor has produced and is working to the draft SSEMP that is awaiting formal approval.

19. 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.

20. 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 KJSNR a dedicated Borrow Pit Monitoring and Response Team (BPMRT) has been formed and trained for the 2014 construction season.

21. 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.

22. The **Executing 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. IPIG including a team of Environmental and Social Safeguard Specialists is responsible for the delivery of safeguard activities on a day to day basis.

23. 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 65.

Health, Safety and Environmental Monitoring Progress Reports

24. 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. Bubonic plague has been linked to marmot colonies, though

not in the Project Area. However CRBC have taken a precautionary approach and provided inoculation for bubonic plague in May 2014.

25. 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

26. 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 drafted 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[5] and indicated in the following figure.

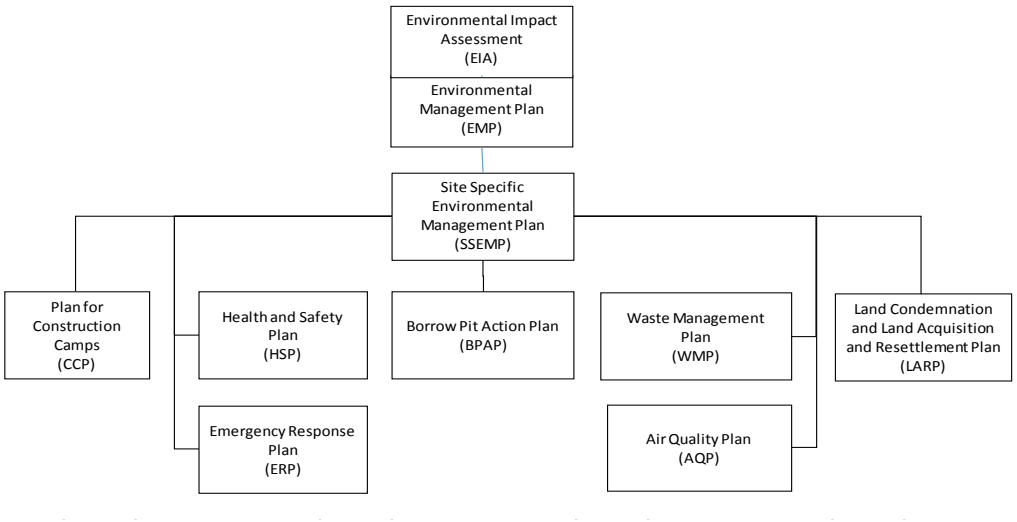

Figure 15: The SSEMP and its supporting documents

27. The supporting plans are:

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

28. **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. Towards the end of the 2014 season the Contractor requested and

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

received statutory approvals for extension of three borrow pits and also to open two new borrow pits. This activity is reported in the ABPMP.

29. Borrow pits from Km501 to Km532 in the Karatal-Japaryk State Reserve (KJSNR) are environmentally sensitive and the Contractor has prepared a Borrow Pit Action Plan (BPAP) for borrow pit operations. The BPAP specifically identifies the requirements for a dedicated Borrow Pit Monitoring and Response Team (BPMRT) for borrow pit operations inside KJSNR. The BPMRT is 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.

30. 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 2: 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	In use in 2014
B2	484+400 R	240,000	600 X 200	12	150		In use in 2014
B3	489+750 R	120,000	300 x 200	6	200		In use in 2014
B4	491+100 R	480,000	800 x 300	24	200		In use in 2014
B5	493+000 R	120,000	300 x 200	6	100		In use in 2014
B6	495+500 R	120,000	300 x 200	6	100		In use in 2014
B7	497+500 R	160,000	400 x 200	8	100		Not used in 2013 / 4
Q8#	499+000 R	3,000,000	750 x 2,000	150	6,000		Streambed. In use 2014
B9	507+600 L	225,000	450 x 250	11.25	200	3.1km	Will not be used
B10	514+600 L	250,000	500 x 250	12.5	150	2.3km	In use in 2014
B11	518+000 L	325,000	650 x 250	16.25	100	3.0km	In use in 2014e 2014
B12	528+200 L	325,000	650 x 250	16.25	160	3.4km##	In use in 2014

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

31. Periodic audits of the work camps and construction sites have been conducted during the construction period using checklists that are included in the Site Specific Environmental Management Plan and have resulted in improved conditions at the camps and sites. Camps and sites have been monitored throughout the construction season and particular focus was given to works within KJSNR.

32. 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

33. In terms of consultations and complaints, there have been no formal complaints received and recorded during the reporting period.

Performance measured against Environmental Management Plan

34. 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 3, below together with a review of the contractor performance in the reporting period.

Table 3: Project Adherence to the Environmental Management Plan in the EIA

Area	Potential impact	Mitigation measures	Observed on-site October 2014	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.	Equipment subject to Engineer approval – Asphalt plant operational in 2014.	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 October 2014	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. Vehicles have metal sieve grilles installed that limits dust blow.
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 October 2014	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. MOTC – IPIG / ADB formally approved borrow pits in KJSNR (Km 500 to 539) subject to conditions (a) approved design (b) workshop for monitoring team (c) baseline monitoring.	Conditions (a), (b) and (c) have been met and MOTC - IPIG informed.
		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.	A Borrow Pit Action Plan (BPAP) has been prepared and approved, it forms part of the BPMP (Appendix 9 of EIA)	Performance satisfactory. Daily monitoring carried out by CRBC Borrow Pit Monitoring and Response Team (BPMRT) and audited by TERA.
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 fertile toposoil has been selectivlely removed and stored separately for reuse.	Good Contractor performance

Area	Potential impact	Mitigation measures	Observed on-site October 2014	Overall Evaluation
	Erosion	Contractor ensures: • 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.	No erosion incidents identified.	No action required on this item
	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.	Generally satisfactory. Some minor departures from correct practice have been noted.

Area	Potential impact	Mitigation measures	Observed on-site October 2014	Overall Evaluation
Hydrology	Drainage	Contractor will ensure: • AAt 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.	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 TERA, MOTC and ADB.

Area	Potential impact	Mitigation measures	Observed on-site October 2014	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 October 2014	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	Approval obtained from SAEPF. KJSNR officials attended briefing of the BPMRT, who will monitor activities of borrow pits within Chatyr Kul catchment, and provided information on acceptable practises.	Performance satisfactory. Briefing workshop carried out for KJSNR work.
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 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 languages:"Specially Protected Area of Karatal-	Installation of signage needs constant vigilance, 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. Signage for the "Specially Protected	Attention needed on signage. Signage for the "Specially Protected Area of

Area	Potential impact	Mitigation measures	Observed on-site October 2014	Overall Evaluation
		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.	Area of Karatal-Zhapyryk State Nature Reserve" installed following. Bypass roads and road opening satisfactory.	KJSNR" installed
	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 has been conducted for work in the KJSNR A specialized waste collection and disposal company has been identified.	Generally good waste management procedures followed. Training for work within KJSNR conducted
	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 utilization at temporary storage areas or hand over to a	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 and dispose of waste at Naryn.	Performance satisfactory.

Area	Potential impact	Mitigation measures	Observed on-site October 2014	Overall Evaluation
		licensed operator.		
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) including oxygen.	Performance satisfactory but it is noted that Health and Safety requires constant vigilance and attention.

Area	Potential impact	Mitigation measures	Observed on-site October 2014	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.	SSEMP is under final revision. Checklists prepared for audit.
	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.
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. KJSNR have attended and briefed the CRBC BPMRT.	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

35. There are comprehensive facilities for staff welfare and environmental protection – liquid and solid waste management in the construction camp at Km 500. An area adjacent to the camp has been developed for materials processing (crushing, grading, pre-casting and asphalt production).

36. The Contractor has generally brought new heavy plant to site and a comprehensive workshop at the Km500 construction camp ensures vehicles are well maintained, reducing potential for adverse environmental impact from air and noise and petroleum based emissions.

37. Generally, the Contractor has carried out work in an environmentally acceptable and compliant manner. The Contractor has been responsive to the requests for corrective actions.

38. On Borrow Pit operation, the Contractor has carefully removed and stored fragile topsoil for re-use in the restoration/recultivation programme. In particular good practice at all borrow pits within KJSNR has been recorded and audited satisfactorily.

39. Monitoring of air quality has been carried out at active borrow pits and noise and water quality monitoring has been carried out within the KJSNR. The Maximum Permitted Levels (MPL) have not been exceeded and good environmental condition is being maintained. An ecological monitoring programme based on the Ecological Response Plan (EcolRP) is in place alongside monthly monitoring of noise and vibration, air and water quality.

40. 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 carried out in the borrow pits within the KJSNR.

41. Contractor performance during the July to December 2014 construction season is therefore considered satisfactory.

Recommendations

42. The 2014 season saw construction work entering the sensitive KJSNR. Construction Impact on the ecologically sensitive KJSNR and the RAMSAR site of Chatyr Kul was managed to avoid impact but the mitigation measures, standards and activities established in 2014 Including the SSEMP and BPMP needs to be maintained and executed just as thoroughly in 2015 and future construction seasons including regular monitoring in order to control environmental impacts to acceptable levels.

Now covered in the amemded previous paragraph

43. 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.

44. The Contractor has been reminded at progress meetings 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

Environmental Monitoring of Noise & Vibration, Air and Water Quality (NVAW) - Upto and including October 2014 monitoring

1) Noise and Vibration

Table 4: Noise Monitoring

	Camp		Manufacturing Area (crushers, asphalt & pre-cast yard)		BP9 Km507		BP10 Km514		BP11 Km518		Barracks		BP12 Km528		Border Holding Area		Maximum Permisible Level	Max Recorded	Min Recorded
	Immediate area	Lorries passing	Manufacturing 200m (S)	Manufacuring 200m (N)	Immediate area	Lorries passing	Bp10 Km 514 200m (N)	BP10 Km514 200m (S)	BP11 Km518 200m (N)	BP11 Km518 200m (S)	Immediate area	Barracks 50m from Highway	BP12 Km528 50m (W)	BP12 Km528 50m (N)	Immediate area	Lorries passing			
																	75	0	0
22-Oct-14		47	67	63			57	53	53	46		46	46	45			**75**	67	45
19-Sep-14		45	67	63			57	53	74	47		46	48	48			**75**	74	45
26-Aug-14		45	67	65			57	57	74	47		46	48	48			**75**	74	45
17-Jul-14		46	68	58			59	57	73	46		47	47	48			**75**	73	46
18-Jun-14	53	60	45	60			57	68			54	60			44	57	**75**	68	44
21-May-14	66	58	55	60	57	68				44	44	59	68	57	60	55	**75**	68	44
22-Oct-13	56	60									55	66					**75**	66	55
30-Sep-13	53	58									53				67	67	**75**	67	53
28-Aug-13	59	*62*									57	69			69	68	**75**	69	57
29-Jul-13	*57*	*60*									*57*	*60*			*75*	*68*	**75**	75	57
29-Jun-13	57	60									57	60			75	68	**75**	75	57
Max Recorded	66	62	55	60	57	68	57	68	64	44	57	69	68	57	75	68			
Min Recorded	53	58	45	60	57	68	57	60	64	44	44	59	68	57	44	55			

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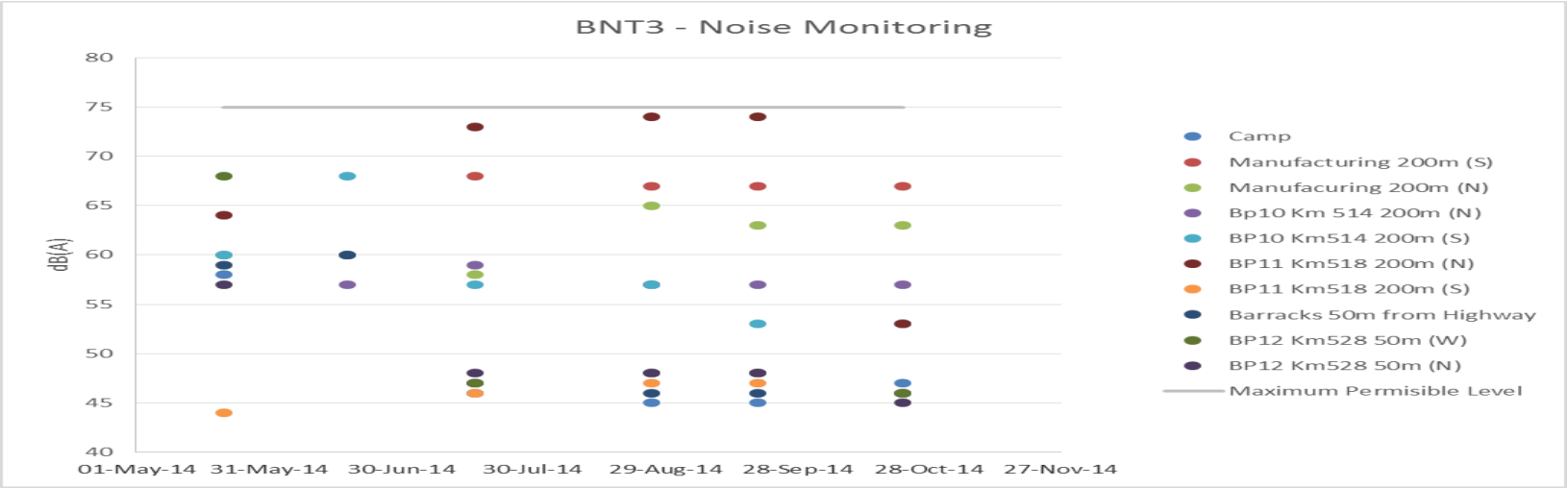


Figure 16: Noise Monitoring plots

Table 5: Vibration Monitoring

	Camp		Manufacturing Area (crushers, asphalt & pre-cast yard)		BP9 Km507		BP10 Km514		BP11 Km518		Barracks		BP12 Km528		Border Holding Area		Maximum Permisible Level
	Immediate area	Lorries passing	Manufacturing 200m (S)	Manufacuring 200m (N)	Immediate area	Lorries passing	Bp10 Km 514 200m (N)	BP10 Km514 200m (S)	BP11 Km518 200m (N)	BP11 Km518 200m (S)	Immediate area	Barracks 50m from Highway	BP12 Km528 50m (W)	BP12 Km528 50m (N)	Immediate area	Lorries passing	
																	108
22-Oct-14		74	73	74			75	75	73	77		73	76	74			**108**
19-Sep-14		76	74	74			76	76	73	77		73	76	71			**108**
26-Aug-14		78	74	75			57	57	74	47		73	76	76			**108**
17-Jul-14		46		75			73	57	72	76		74	76	76			**108**
18-Jun-14	99	105	97	104			100	107			98	98			97	106	**108**
21-May-14	82.5	107	100	**108**	104	106	**106**	98.4	97.8	105	105	107	105	106	**110**	**110**	**108**
22-Oct-13	107	82									106	104			105	107	**108**
30-Sep-13	107	82.5									106	104			105	107	**108**
28-Aug-13	83	*105*									107	105			103	106	**108**
29-Jul-13																	**108**
29-Jun-13																	**108**

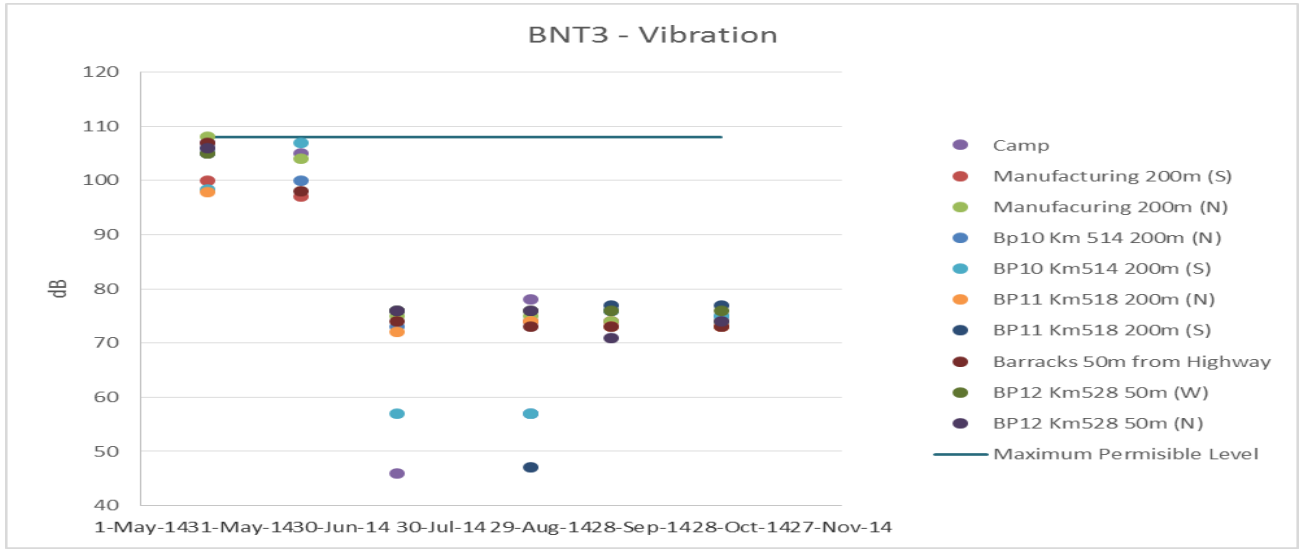


Figure 17: Vibration Monitoring plots

2) Air Quality

Table 6: Air Quality – Sulphur Dioxide

Sulphur Dioxide (mg/m3)	Borrow Pit 1	Borrow Pit 2	Borrow Pit 3	Borrow Pit 4	Borrow Pit 5	Borrow Pit 6	Construction Camp	Manufacturing Area	Borrow Pit 9	Borrow Pit 10		Borrow Pit 11		Borrow Pit 12		Barracks	Border Holding Area	MPL	Range Max	Range Min
										Km514		Km518		Km528						
					Reading of 1.4 removed (error)					BP10 Km 514 u/w	BP10 Km 514 d/w	BP11 Km 518 u/w	BP11 Km 518 d/w	BP12 Km 528 u/w	BP12 Km 528 d/w	Barracks				
18-Jul-13	**0.8**	**1**	**1.6**	**1.4**	**0.8**	**1.6**												0.5	1.6	0.8
14-Aug-13	**0.5**	0.3	0.3	0.4	**0.5**	**0.5**	**0.5**	**0.5**										0.5	0.5	0.3
25-Sep-13	0.3	0.4	**0.5**	0.4	**0.5**	0.3	0.4	0.4										0.5	0.5	0.3
04-Nov-13	**0.5**	0.4	0.3	**0.5**	0.3	**0.5**	0.4	**0.5**										0.5	0.5	0.3
21-May-14							0.4	0.4										0.5	0.4	0.4
17-Jun-14							**0.5**	0.4		**0.5**						0.4	0.3	0.5	0.5	0.3
17-Jul-14							0.3	0.4		0.4	0.3	0.4	0.3	0.3	0.3	0.4		0.5	0.4	0.3
19-Aug-14							0.4	0.2		0.4	0.3	**0.5**	0.4	0.3	0.5	0.2		0.5	0.5	0.2
23-Sep-14							0.4	0.2		0.3	0.2	0.4	0.4	**0.5**	0.4	0.3		0.5	0.5	0.2
25-Oct-14							0.4	0.3		**0.5**	0.3	0.4	**0.5**	0.3	0.3	**0.5**		0.5	0.5	0.3

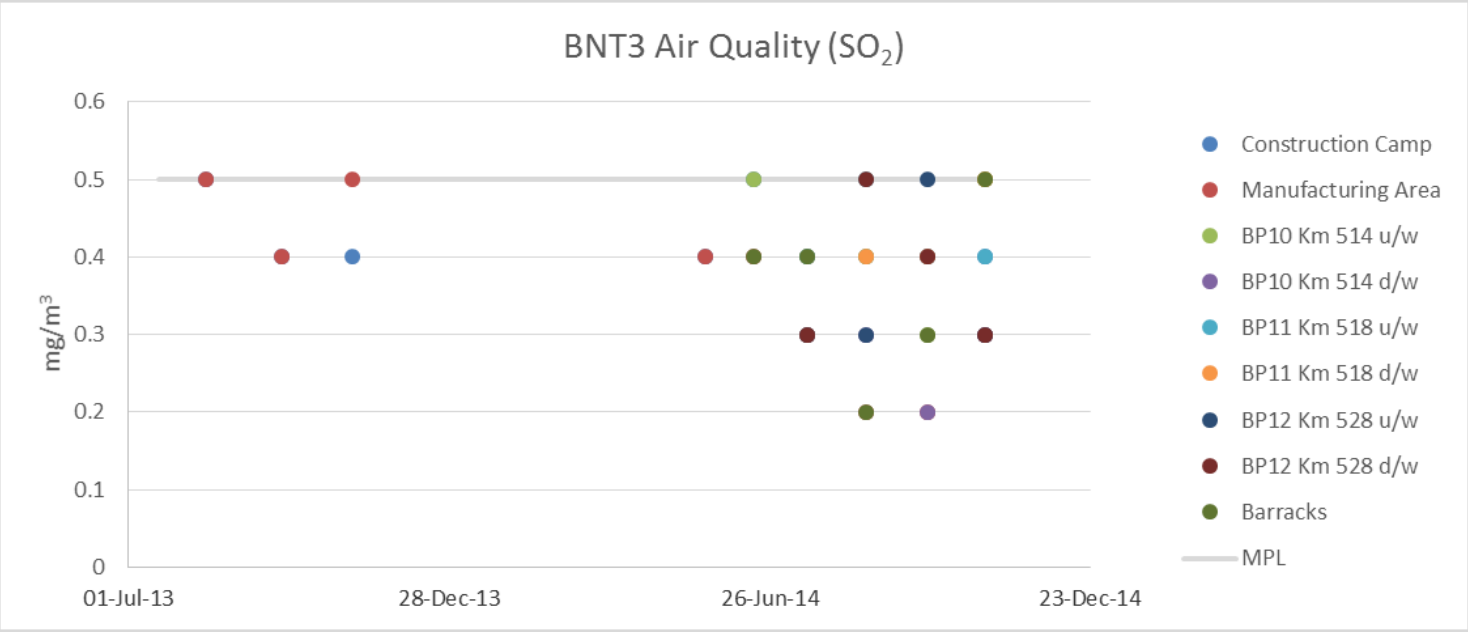


Figure 18: Air Quality Monitoring plots - Sulphur Di-oxide

Table 7: Air Quality –Carbon Monoxide

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	Borrow Pit 9	Borrow Pit 10		Borrow Pit 11		Borrow Pit 12		Barracks	Border Holding Area	MPL	Range Max	Range Min
										Km514		Km518		Km528						
										BP10 Km 514 u/w	BP10 Km 514 d/w	BP11 Km 518 u/w	BP11 Km 518 d/w	BP12 Km 528 u/w	BP12 Km 528 d/w					
18-Jul-13	2.1	2.7	4.8	**8.5**	**5.3**	3.3	2.8											5	8.5	2.1
14-Aug-13	2	4.6	4.5	2.9	4.3	4.9	4.9	5										5	5	2
25-Sep-13	4.9	3.9	4.8	3.3	4.3	3.9	4.1	4.5										5	4.9	3.3
04-Nov-13	3.6	4.8	3.5	3.9	4.1	4.6	4.9	5										5	5	3.5
21-May-14							3.8	4.2										5	4.2	3.8
17-Jun-14							3.6	4.7		4.1						3.9	3.3	5	4.7	3.3
17-Jul-14							3.3	3.7		4.5	4	3.3	3.5	4.5	4.3	4.6		5	4.6	3.3
19-Aug-14							3.6	4.7		3.9	4.2	3.9	3.7	4.8	4.1	4.2		5	4.8	3.6
23-Sep-14							3.9	4.2		4.9	3.2	3.6	3.3	3.7	4.1	4.2		5	4.9	3.2
25-Oct-14							4.6	4.8		4.4	3.8	3.9	4.2	3.4	4.3	5			5	3.4

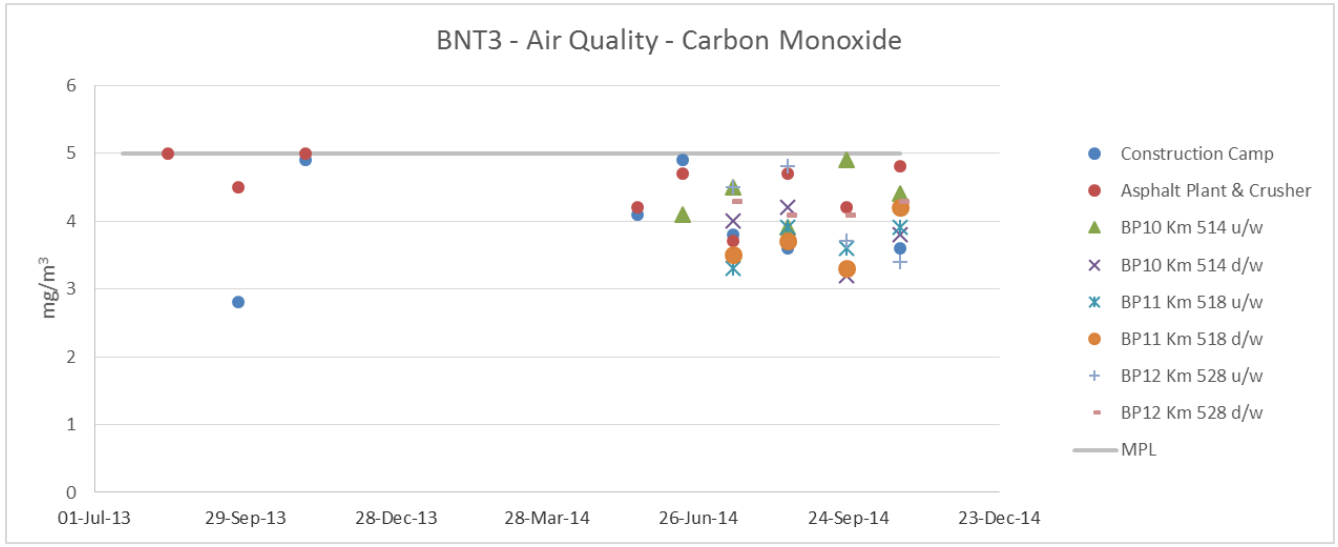


Figure 19: Air Quality Monitoring plots - Carbon Monoxide

Suspended Particulates and Nitrogen Dioxide are both below the MPL and detection limit of the meters.

3) Water Quality

Table 8: Water Quality - Ph

	Muz Tor River		Small River							
Ph	Muz Tor (u/s)	Muz Tor (d/s)	Km511 (25m u/s)	Km511 (50m d/s)	Chatyr Kul	Kosh Kul	Narzan Spring	Min	Max	
18-Jul-13	8.1				*9*	8.07	6.52	6.5	8.5	Small River Dry
14-Aug-13	8.0		7.8			8.6	6.7	6.5	8.5	CK not sampled
25-Sep-13	8.0		7.8			8.6	6.8	6.5	8.5	CK not sampled
30-Oct-13	8.0		7.5			8.4	7.3	6.5	8.5	CK not sampled
21-May-14	8.1				8.1	8.01	6.5	6.5	8.5	Small River Dry
17-Jun-14	8.1				8.1	8.04	7.5	6.5	8.5	Small River Dry
17-Jul-14								6.5	8.5	Small River Dry
19-Aug-14								6.5	8.5	
23-Sep-14								6.5	8.5	
21-Oct-14	8.1	8.11	8.2	8.3		8.5	7.6	6.5	8.5	

21/ 22 June 13 - Average of 4

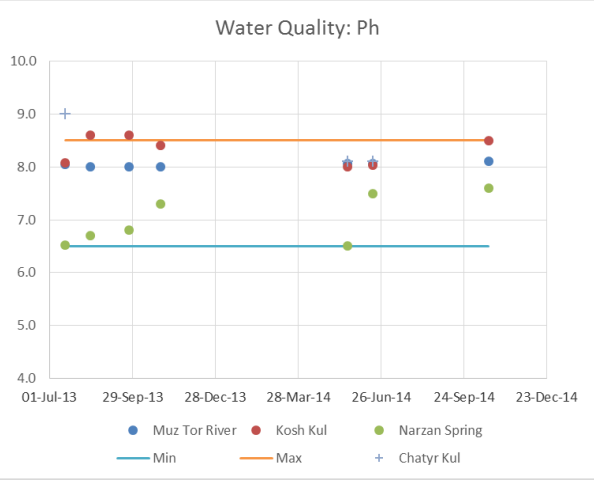


Figure 20: Air Quality Monitoring plots - Ph

Table 9: Water Quality - Sulfates

Sulfates (mg/l)	Muz Tor River		Small River							
	Muz Tor (u/s)	Muz Tor (d/s)	Km511 (25m u/s)	Km511 (50m d/s)	Chatyr Kul	Kosh Kul	Narzan Spring	Min	Max	
18-Jul-13	20				*163*	24	65	100	500	Small River Dry
14-Aug-13	19		90			23	57	100	500	CK not sampled
25-Sep-13	21		83			35	62	100	500	CK not sampled
30-Oct-13	46		51			47	52	100	500	CK not sampled
21-May-14	20				145	100	65	100	500	Small River Dry
17-Jun-14	14				63	52	39	100	500	Small River Dry
17-Jul-14	27	28	69	68		50	38	100	500	
19-Aug-14	27	26	59	63		46	36	100	500	
23-Sep-14	29	27	24	51	33	24	29	100	500	
23-Oct-14	28	26	50	55		44	22	100	500	

21/ 22 June 13 - Average of 4

Average of 3

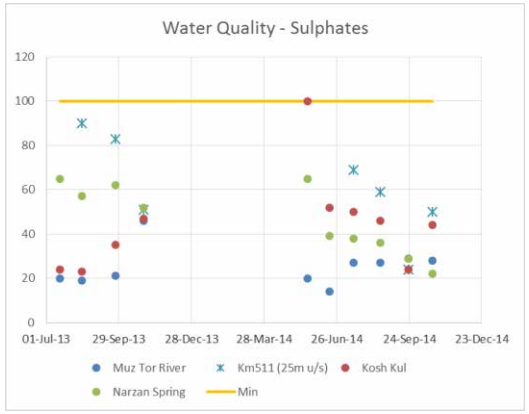


Figure 21: Air Quality Monitoring plots - Sulfates

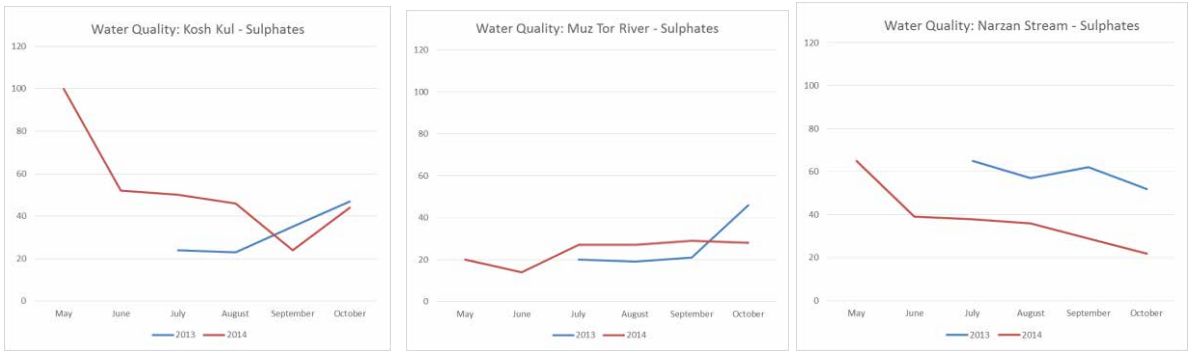


Figure 22: Air Quality Monitoring plots - Sulfates (Annual variation)

Table 10: Water Quality - Suspended Substances

Suspended Substances (mg/l)	Muz Tor River		Small River						
	Muz Tor (u/s)	Muz Tor (d/s)	Km511 (25m u/s)	Km511 (50m d/s)	Chatyr Kul	Kosh Kul	Narzan Spring	Min	Max
18-Jul-13									
14-Aug-13									
25-Sep-13									
30-Oct-13									
21-May-14	22.8				9.8	61.2	5.2		
17-Jun-14	23.6				12.6	8.4	44		
17-Jul-14	12.4	59.8	2.8	1.8		4	8.6		
19-Aug-14	12.8	60	2.8	1.8			8.9		
23-Sep-14	12.6	63.4	5.6	2.2	8	4.2	7.8		
23-Oct-14	16.8	24.2	3.6	0.6		2.2	0.4		

Average of 3

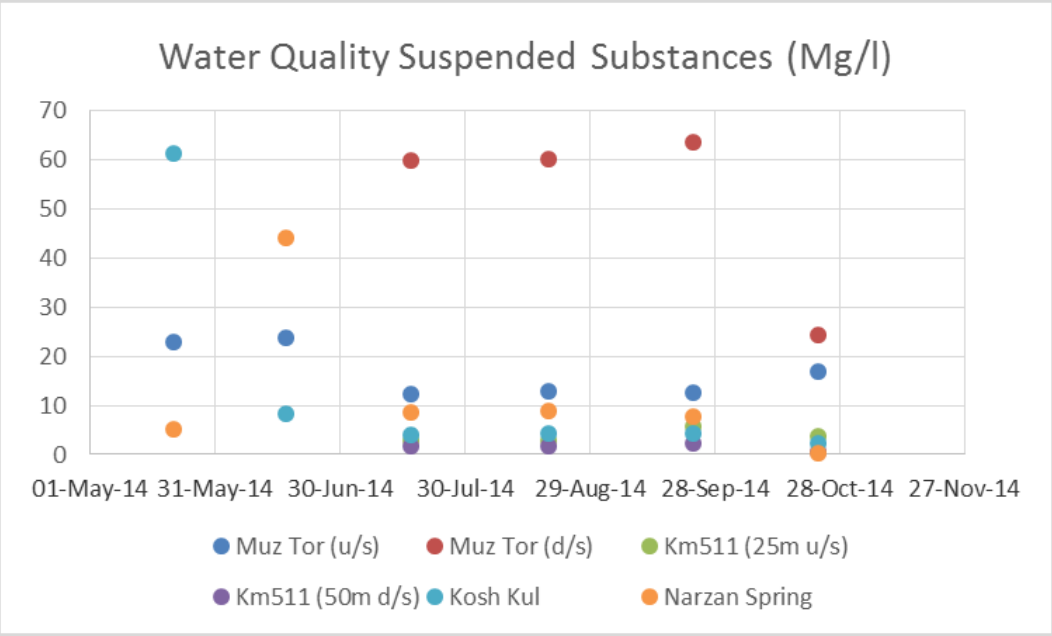


Figure 23: Air Quality Monitoring plots - Suspended Substances

Table 11: Water Quality - Chlorides

Chlorides (mg/l)	Muz Tor River		Small River							
	Muz Tor (u/s)	Muz Tor (d/s)	Km511 (25m u/s)	Km511 (50m d/s)	Chatyr Kul	Kosh Kul	Narzan Spring	Min	Max	
18-Jul-13	6.1				*444*	32	234	-	300	Small River Dry
14-Aug-13	5		16			40	224	-	300	CK not sampled
25-Sep-13	6.1		15			9	234	-	300	CK not sampled
30-Oct-13	17		16			15	11	-	300	CK not sampled
21-May-14	6.1				409	224	234	-	300	Small River Dry
17-Jun-14	8.51				63.8	95.7	99.26	-	300	Small River Dry
17-Jul-14	7.1	7.1	32	30		92	96	-	300	
19-Aug-14	9.22	9.93	26	27			86	-	300	
23-Sep-14	11	9.2	25	26	8	76	82	-	300	
23-Oct-14	8.7	9.4	17	16		67	14	-	300	

21/ 22 June 13 - Average of 4

Average of 3

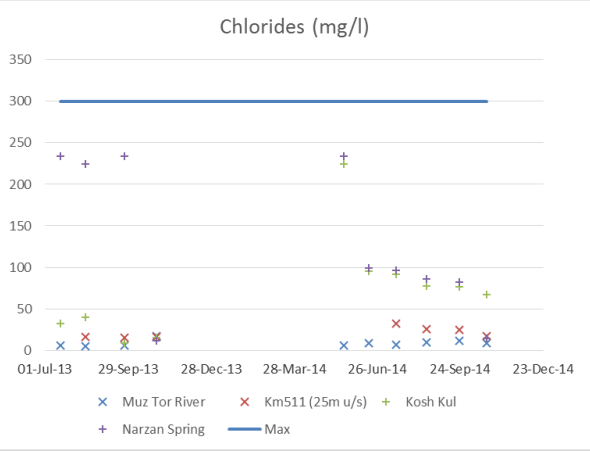


Figure 24: Air Quality Monitoring plots - Chlorides

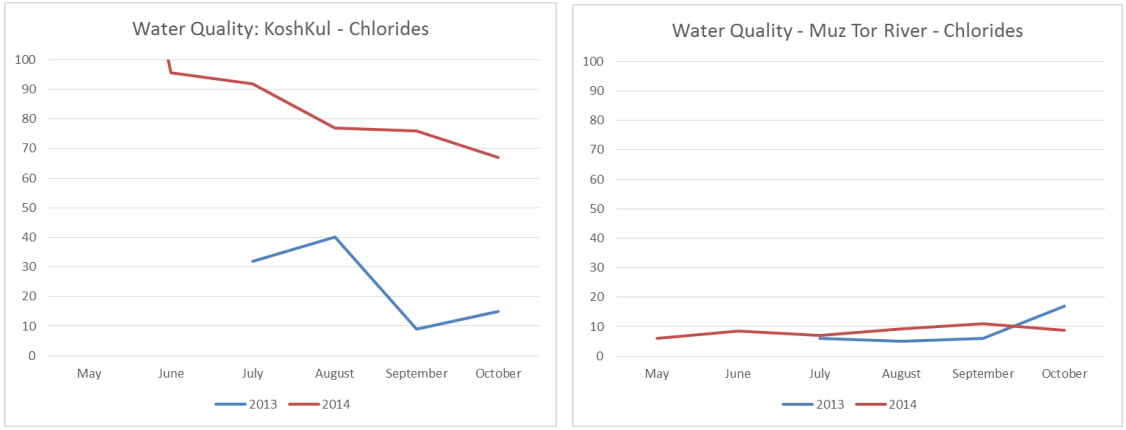


Figure 25: Air Quality Monitoring plots - Chlorides (Annual variation)

Table 12: Water Quality –Dissolved Oxygen

Dissolved Oxygen	Muz Tor River		Small River					
	Muz Tor (u/s)	Muz Tor (d/s)	Km511 (25m u/s)	Km511 (50m d/s)	Chatyr Kul	Kosh Kul	Narzan Spring	Min
17-Jun-14	9.18				9.83	9.68	10.74	4
17-Jul-14	8.38	8.31	5.51	4.31		9.76	10.01	4
19-Aug-14	8.16	8.2	5.32	4.23			8.97	4
23-Sep-14	7.53	7.5	6.43	7.03	8	7.33	7.09	
23-Oct-14	7.33	7.44	5.24	4.81		7.15	6.54	

Average of 3

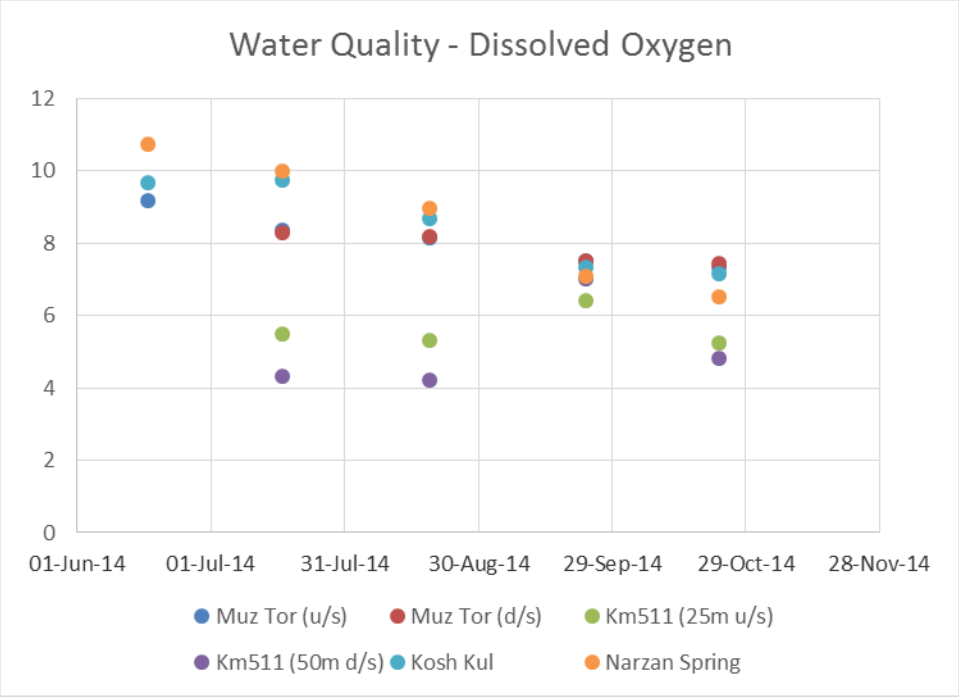


Figure 26: Air Quality Monitoring plots - Dissolved Oxygen

Nitrates, Oil Products Copper, Zinc, Cadmium and Lead are all below the MPL and detection limit of the meters.

Annex 2: Photographs

PHOTOGRAPHS

Figure 27: Looking from Camp into the KJSNR (October 2013)

Figure 28: Looking from Camp into the KJSNR after first snow (October 31st 2013)

Figure 29: Looking from Camp into the KJSNR after first snow (October 22nd 2014)

Figure 30: Trailers at Border Holding Area (Km 530)

Figure 31: Precast Concrete production, asphalt plant, crushing and grading areas

Figure 32: Borrow Pit #8 on Muz Tor River – Note Asphalt and Crushing Plant in distance

Figure 33: Truck refuelling at dedicated camp facility

Figure 34: Onsite refuelling of plant by dedicated refuelling truck

Figure 35: Dedicated On-site Medical Clinic at the Camp

Figure 36: Septic Tank installed behind Camp – Emptied to facility at Naryn

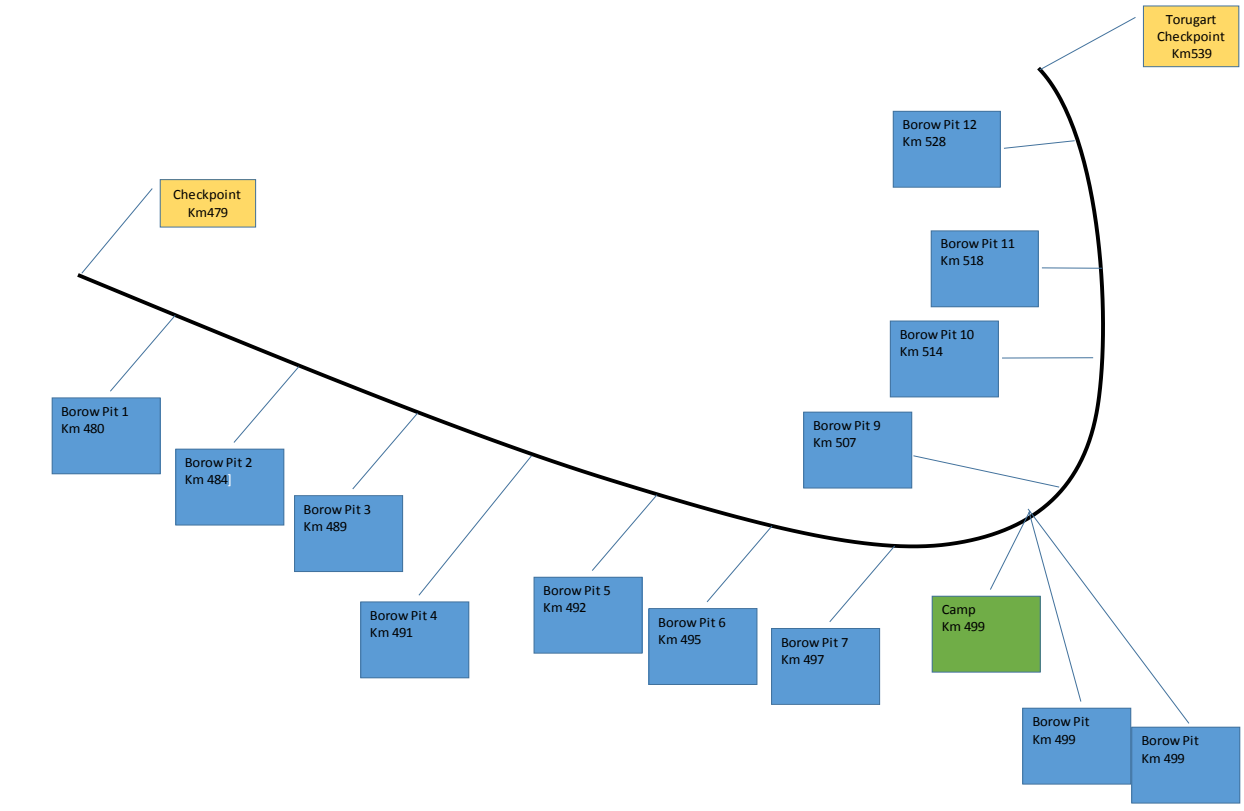
Figure 37: Overnight vehicle parking on rolled hardstanding

Figure 38: Waste bins in camp compound– Solid waste collected and disposed to At-Bashy

Figure 39: Oxygen equipment available at Camp medical centre

Annex 3: Status of Borrow Pits

Figure 40: Location of Borrow Pits



Borrow Pit # / Location	*Date*	*Status*	*Photo – Status*

Section – 1

#1 480+750 RHS **Volume** 150,000m^3 100 x 600 m 200m from road	June 2014	Not started ☐ In progress ☐ Extraction complete ☑ Restoration phase ☐	 **Figure 41: Borrow Pit #1 – Extraction now completed**
#2 484+400 RHS **Volume** 240,000 m^3 **Area** 600 x 200m 150m from road	June 2014	Not started ☐ In progress ☐ Extraction complete ☑ Restoration phase ☐	 **Figure 42: Borrow Pit #2 – Note active, topsoil stored on edge of pit for recontouring**

Borrow Pit # / Location	*Date*	*Status*	*Photo – Status*
#3 480+750 RHS **Volume** 120,000m^3 **3**00 x 200 m 200m from road	June 2014	Not started ☐ In progress ☑ Extraction complete ☐ Restoration phase ☐	 **Figure 43: Borrow Pit #3 – Material extraction continued - Note stockpiles of topsoil**
#4 491+100 RHS **Volume** 480,000m^3 **8**00 x 300 m 200m from road	June 2014	Not started ☐ In progress ☐ Extraction complete ☑ Restoration phase ☐	 **Figure 44: Borrow Pit #4 – Material extracted in 2014 but now complete - access road cut**

Borrow Pit # / Location	*Date*	*Status*	*Photo – Status*
#5 493+000 RHS **Volume** 120,000m^3 **3**00 x 200 m 100m from road	June 2014	Not started ☐ In progress ☐ Extraction complete ☑ Restoration phase ☐	 **Figure 45: Borrow Pit #5 – Extraction in progress - Note stockpiles of topsoil**
#6 495+500 RHS **Volume** 120,000m^3 **3**00 x 200 m 100m from road	June 2014	Not started ☐ In progress ☑ Extraction complete ☐ Restoration phase ☐	 **Figure 46: Borrow Pit #6 – Extraction in progress – Note stockpiles of topsoil**
#7 497+500 RHS	Not Used		

Borrow Pit # / Location	*Date*	*Status*	*Photo – Status*
#8 **Muz Tor River** 499+000 RHS **Volume** 3,000,000m^3 **75**0 x 2000 m 6000m from road	May 2014	Not started ☐ In progress ☑ Extraction complete ☐ Restoration phase ☐	 **Figure 47: Borrow Area #8: Muz Tor River – Looking Downstream**

Borrow Pit # / Location	*Date*	*Status*	*Photo – Status*
#9 In KJSNR 507+600 RHS **Volume** 225,000m^3 **450** x 250 m 200m from road **Decision "not to use" following trial pitting**	May 2014	Not started ☑ In progress ☐ Extraction complete ☐ Restoration phase ☐	 **Figure 48: Borrow Pit #9 – NW corner looking east before work (This pit will not be used)**

Borrow Pit # / Location	Date	Status	Photo – Status
#10 In KJSNR 514+600 RHS **Volume** 250,000m^3 **5**00 x 250 m 150m from road	21 May 2014	Not started ☑ In progress ☐ Extraction complete ☐ Restoration phase ☐	 **Figure 49: Borrow Pit #10 – NW corner looking east (prior to work)**

Borrow Pit # / Location	Date	Status	Photo – Status
#10 In KJSNR 514+600 RHS **Volume** 250,000m^3 **5**00 x 250 m 150m from road	10 June 2014	Not started ☐ In progress ☑ Extraction complete ☐ Restoration phase ☐	

Figure 50: Borrow Pit #10 – Extraction in Progress (10 June 14)

Borrow Pit # / Location	Date	Status	Photo – Status
#11 In KJSNR 518+000 RHS **Volume** 325,000m^3 **65**0 x 250 m 100m from road	21 May 2014	Not started ☑ In progress ☐ Extraction complete ☐ Restoration phase ☐	 **Figure 51: Borrow Pit #11 – NW corner look east (air & noise monitoring - prior to work)**

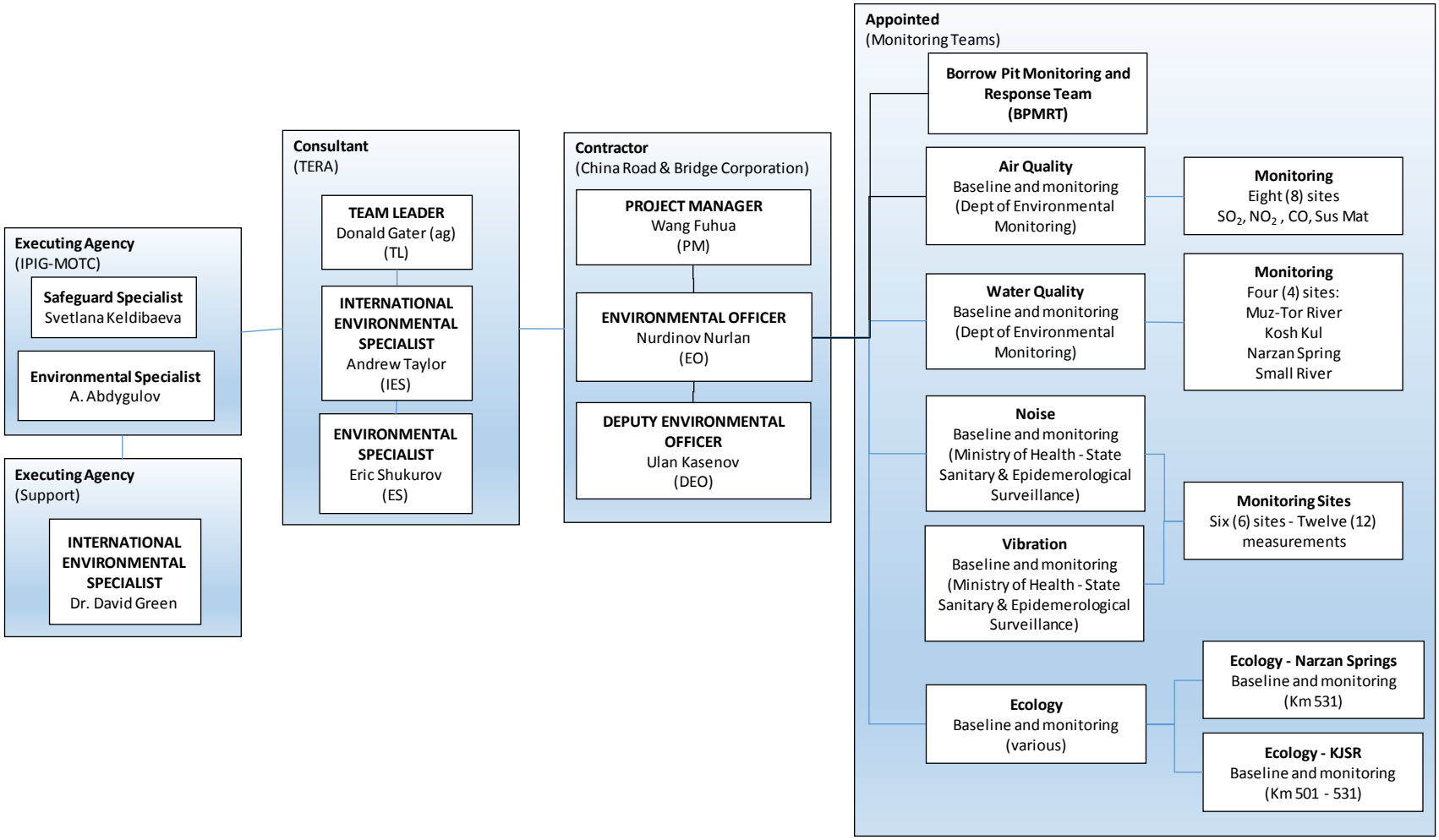
Borrow Pit # / Location	*Date*	*Status*	*Photo – Status*
#11 In KJSNR 518+000 RHS **Volume** 325,000m^3 **65**0 x 250 m 100m from road	Oct 2014	Not started ☐ In progress ☑ Extraction complete ☐ Restoration phase ☐	 **Figure 52: Borrow Pit #11 - Progress in October 2014 – North / West corner**

Borrow Pit # / Location	Date	Status	Photo – Status
#12 In KJSNR 528+200 RHS **Volume** 325,000m^3 **65**0 x 250 m 160m from road	21 May 2014	Not started ☑ In progress ☐ Extraction complete ☐ Restoration phase ☐	 **Figure 53: Borrow Pit #12 – NW corner look east (air & noise monitoring - prior to work)**

Borrow Pit # / Location	Date	Status	Photo – Status
#12 In KJSNR 528+200 RHS **Volume** 325,000m^3 **65**0 x 250 m 160m from road	June 2014	Not started ☐ In progress ☑ Extraction complete ☐ Restoration phase ☐	 **Figure 54: Borrow Pit #12 - Extraction in Progress**

Borrow Pit # / Location	Date	Status	Photo – Status
#12 In KJSNR 528+200 RHS **Volume** 325,000m^3 **65**0 x 250 m 160m from road	Oct 2014	Not started ☐ In progress ☐ Extraction complete ☐ Restoration phase ☑	 **Figure 55: Borrow Pit #12 - Progressive restoration in Progress**

Annex 4: Organisation Chart for Environmental Management (2014 Season)



Annex 5: Environmental Monitoring and Audit Checklists