Bi-annual Environmental Monitoring Report

Project Number: 42399-02
ADB Loan No. 2755-KGZ (SF)
Reporting Period: July to December 2016

Kyrgyz Republic

CAREC Transport Corridor -1

(Bishkek – Torugart road) Project 3

Section Km479 to 539
(Financed by the Asian Development Bank)

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ABBREVIATIONS

ABPMP	Amended Borrow Pit Management Plan	Appendix 9 of the EIA
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	
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 Implementation Group	Executing Agency Agent
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	
PPE	Personal Protection Equipment	
PRC	People's Republic of China	
RMU	Road Maintenance Unit	RMU 957, based in At Bashy, has responsibility for the project road.
SAEPF	State Agency for Environmental Protection and Forestry	
SCURP	Site Cleanup and Restoration Plan	Supplements the formal restoration plan approved by SAEPF
SSEMP	Site Specific Environmental Management Plan	Prepared by CRBC
TDEP	Territorial Department for Environmental Protection	
TERA	TERA International Inc.	The Engineer
WMP	Waste Management Plan	

I. PART I INTRODUCTION

1.1. Construction activities and project progress during the previous 6 months

1.1.1. General information

1. The Bishkek – Naryn – Torugart Road - Project 3 (BNT3) is an Asian Development Bank financed Project to upgrade the road 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) from Km501 to the border control holding area at Km531. The KJSNR contains Lake Chater Kul; a recognized RAMSAR site. The special importance of Lake Chatyr Kul designates the project as Category A – Environmental, in the ADB project ranking system[1].

Figure 1: Location of the project alignment and key features

2. The starting point of the road is located beyond the Ak Beit Pass in the Arpa Valley at Km479, (elevation 3,150m) just past an official control point at Km478. From this point the road runs across a plain until Km500, when it rises to the Tuz Bel Pass where the project construction camp is located (Km501). At this point the road enters the KJSNR where the alignment skirts Lake Chatyr Kul on its western and southern sides at a distance of at least 2km. At Km 531 the road enters a border control holding area (elevation 3,500m) where there are vehicle parking areas and trailers that provide rudimentary accommodation and catering facilities. Beyond this holding area and checkpoint there is a further 8km to the official border with the People's Republic of China (PRC) at Km539 (elevation 3,725m),

[1] A Category A project is expected to have significant adverse environmental impacts that are irreversible diverse, or unprecedented. A full - scale EIA and report is required including an Environmental Management Plan (EMP).

the end of the Project. The elevation of the project site creates a unique working environment with extreme weather conditions. No work is possible between October and May when the site is snowbound with temperatures falling to -50° in winter[2] (mean temperature of −22 °C in January, and 7.1 °C in July).

3. This six monthly Environmental Monitoring Report is the seventh for the Project, covering the second half of the 2016 construction season. Construction was effectively completed at the end of 2015 with only drainage, minor construction, remedial works and erection of road furniture in the first half of 2016. In the reporting period the camp was demobilized with buildings, plant and equipment removed from the site. There was no site occupation after October 2016. At the request of MoTC one building was left at the Tuz Bel Pass (Km501) to provide accommodation for MoTC staff of the Road Maintenance Unit (RMU) and emergency shelter for drivers trapped on the road during the winter.

1.1.2. Construction activities performed during the reporting period

4. The 2016 working season commenced on 9th May 2016. Major construction work was completed in the 2015 construction season with only remedial works, street furniture, spill control structures and camp demobilization outstanding. However, in May and June weather conditions were still extremely cold, with several snow days and progress was slow, limited to camp maintenance, remedial works and digging edge drains. In the reporting period site activities were:
   - Remedial works needed after the severe winter (cutting out & asphalting or concreting);
   - Central road marking;
   - Erecting spill controls (precast channels and concrete sumps)
   - Erecting signage indicating road hazards and name boards;
   - Preparing for camp and manufacturing areas for demobilization.

5. Project progress at the end of the reporting period from July to December is 100% completion.

1.1.3. Camp and Manufacturing area Demobilisation

6. From early September the Contractor started to demobilize staff from the camp, as staff vacated accommodation units they were stripped out and dismantled. In October all the dismantled units were removed from the camp. A single accommodation unit has been left on site at the request of MoTC to provide accommodation for members of the RMU and to offer emergency accommodation for drivers trapped on the alignment during winter storms.
7. At the **Tuz Bell pass campsite**, in addition to the residential, laboratory and office units, the following elements were removed:
   - Septic tanks drained and broken out;

[2] https://en.wikipedia.org/wiki/Chatyr-Kul

- Electricity substation disconnected, structure and transformer removed from site for reuse;
- Emergency generator and building removed from site for reuse;
- Solid waste collection pit, emptied and broken out;
- Concrete bases to accommodation units and offices broken out. Inert material to BP at Km500 (as identified in SAEPF approved restoration plan);
- Other ancillary buildings dismantled and removed for reuse (e.g. guard houses, container units used for materials storage); and
- Fencing surrounding camp dismantled and removed from site for reuse on another site by the contractor.

8. The following elements were left on, or adjacent to, the site of the camp:
   - Unsurfaced access road from road alignment to camp (shelter house for RMU and emergency use) and manufacturing area;
   - Salvaged culvert units from the original alignment and 20 precast concrete culvert rings (from manufacturing area (at MoTC request for use on other projects).

Figure 2: Accommodation units being dismantled (23rd September 2016)

Figure 3: Camp buildings at Km501 cleared. One accommodation building retained for MoTC use and as emergency refuge

Figure 4: Salvaged culvert units / unused precast for MoTC use. Entrance to old camp Km501

9. At the **manufacturing area** south of the Muz Tor River the following elements were demobilized and removed for use on other projects:
   - Asphalt manufacturing plant;
   - Concrete batching plant;
   - Last crushing and grading plant;
   - Transformer and associated building; and
   - Ancillary container units for materials storage.

Figure 5: Looking across Manufacturing Area on 14th Sept 2016 prior to demobilisation

Figure 6: Manufacturing area demobilized. Looking across former precasting area

10. The following items were left at the manufacturing site:
    - Access road from campsite to former manufacturing area (left at MoTC);
    - Culvert bridge across Muz Tor river (left at MoTC nomadic residents request);
    - Unused stockpiles of unused, graded stone (for use by MoTC for road maintenance and nomadic residents as standard practice in KGZ);
    - Power poles (cables will be removed by the electricity company for reuse elsewhere);
    - Bitumen Pit, drained and secured in July 2016.

11. The former camp and manufacturing area have been demobilized. A final inspection will be made in Q3 2017, after snow cover has melted, to confirm that all elements have been removed and the sites have been left in a similar condition that they were in at the commencement of the project.

1.2. Project organization and environmental management team

1.1.1. Agencies involved in project/or investment program implementation and their responsibilities

12. The following figure sets out the agencies involved in the project

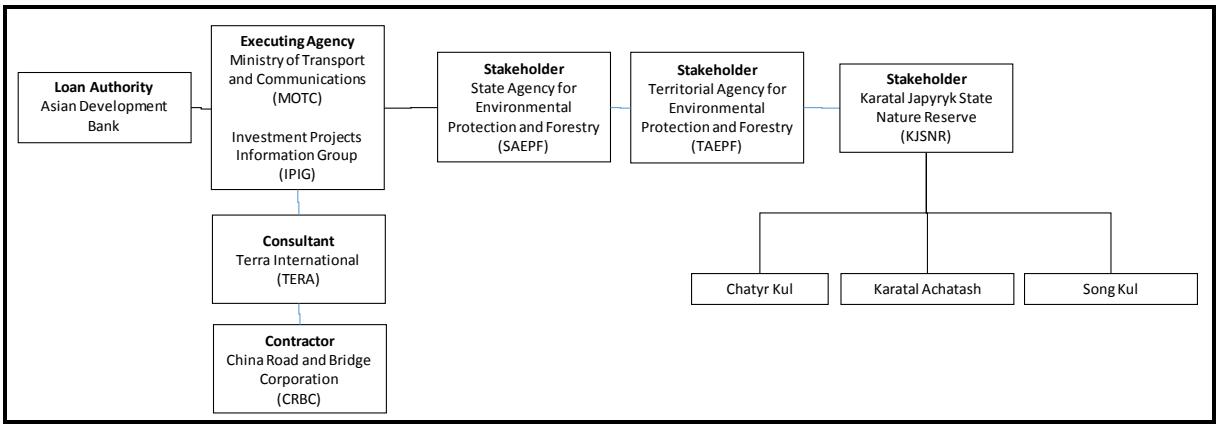


Figure 7: Environmental Agencies in the Project

13. The **Contractor**, CRBC, works under a Design and Build contract to construct 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 prepared a Site Specific Environmental Management Plan (SSEMP) that identifies how environmental controls will be implemented. The contractor is working to the SSEMP.

14. 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.

15. For 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 is monitored through an Environmental Officer and a Deputy Environmental Officer. For development of Borrow Pits the Contractor prepared a Borrow Pit Action Plan (supplementing the EIA Appendix 9 Borrow Pit Management Plan and Amended Borrow Pit Management Plan) For borrow areas within KJSNR a dedicated Borrow Pit Monitoring and Response Team (BPMRT) was formed in 2014 and re-trained for the 2015 construction season. As all borrow pit operation is complete the BPMRT was disbanded at the end of the 2015 construction season.

16. The **Consultant** (TERA) is responsible for monitoring the performance of the Contractor on site, reviewing and approving environmental reports generated by the Contractor and submitting environmental material to the Executing Agency (MOTC). The Consultants working team is under the direction of the Team Leader and comprises an International Environmental

Consultant and a National Environmental Consultant. They are supported on site by the Consultants engineering supervision team.

17. 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. The Investment Projects Implementation Group (IPIG) of MoTC includes a team of Environmental and Social Safeguard Specialists responsible for the delivery of safeguard activities on a day to day basis.

18. Management of the Reserve, that includes Chatyr Kul, is the responsibility of the **KJSNR**, who are based in Naryn, with rangers resident at site. Any entrance to the reserve must be accompanied by KJSNR rangers based at the site. Operation of borrow pits within the reserve required site specific environmental assessments and operational requirements enshrined in a Borrow Pit Management Plan (EIA 2013) and amended Borrow Pit Management Plan (EIA 2015) supplemented with the Contractor's own Borrow Pit Action Plan (Annex 1 in the BPMP of the EIA (2015)).

19. The State Agency for Environment and Forestry and the Territorial Agency for Environment and Forestry are responsible for the protection of the environment in the Kyrgyz Republic. The SAEPF approve borrow pits for projects and restoration plans. The SAEPF is the parent organization of the KJSNR.

20. An organization chart is presented in
21.
22. Annex 4 - organization chart for Environmental Management (2016 Season)

23. There have been no changes in Project organization but there have been changes in the Consultants environmental management team. Mr Uvasip Omurbek, the original TERA National Environmental Specialist, resigned his post due to health issues in 2014 (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. He was based at site for the 2014, 2015 and 2016 construction season.

24. Dr David Green the International Environmental Specialist of MOTC-IPIG was based on the project in KGZ from 20th to 29th September 2016.

25. Mr Andrew Taylor the TERA International Environmental Consultant was based on project in KGZ from 19th August to 29th September 2016.

1.3. Relationships with contractor, owner, lender

26. 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 environmental and ecological monitoring including classroom and site ornithological monitoring exercises. This was strengthened in the 2016 construction season with KJSNR attending training exercises with TERA and IPIG. Attendance is adding data collection and management skills to the KJSNR.

II. PART II - ENVIRONMENTAL MONITORING

27. The main concern of 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 on Wetlands of International Importance, also known as the RAMSAR Convention. The Environmental Management Plan (EMP) contained in the Project EIA (Chapter 8) comprises a: two track strategy of:

- Pollutant source control and monitoring (including proactive mitigation of potential impacts from road construction and operations); and
- Receptor Protection (including upgrading the protected area facilities and management capacity, and restoration of sensitive habitats in the Chatyr Kul ecosystem (in effect, this is an in situ biodiversity offset).

Pollutant Control Monitoring

28. Monitoring of the environmental indictors of noise, vibration, air quality and water quality has been carried out on a monthly basis since June 2013, monitoring is suspended outside the construction season (October to May). The following figure indicates monitoring points used during the project. A full set of monitoring data and graphical representations is included in Annex 1: Monitoring data.

Figure 8: Location of noise, vibration, air and water quality monitoring sites

29. Monthly monitoring of **noise** has been carried out in the 2013, 2014, 2015 and 2016 construction seasons. Since the laying of base course in the latter part of the 2014 construction season there has been a marked reduction in noise generated by road traffic (65dB to 45dB) at the camp monitoring station (Km501) and the barracks monitoring station (Km520). This is partly attributable to vehicles running on a smoother running surface. It is noted that in July 2015 the noise levels recorded at the barracks were elevated due to increased road construction activity in this area. The August 2015 data shows that pre-construction noise levels have returned and this trend continued until the end of the 2015 construction season and into 2016. The figure below illustrates this improvement. Note that there was no data collected in May and June 2016 due to poor weather conditions (wind and rain) on the sampling days.

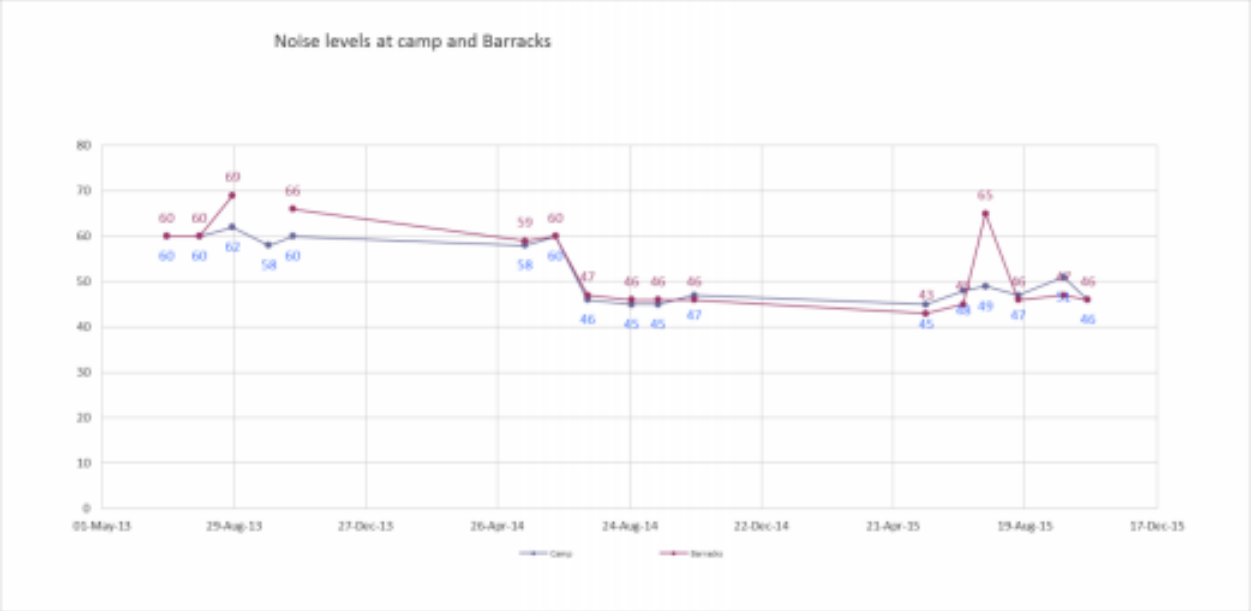


Figure 9: Noise Levels at the Camp and Barracks (May 2013 to December 2015)

30. **Air quality monitoring** has focused on the operation of borrow pits required for construction material and manufacturing areas. Monthly monitoring has been carried out in the 2013, 2014, 2015 and 2016 construction seasons The open aspect of the site allows airborne pollutants to disperse rapidly and there have been no recorded exceedances of air quality standards. The contractor has been diligent in watering access roads and areas where dust could be generated and has been responsive to requests for additional watering where visual inspection suggests that excessive dust was being generated. In the reporting period no borrow pits are operating but the Contractor continues to water access / haul routes where there is potential for dust generation. There has been no crushing and screening of material on site in 2016. Similar to noise observations, visual observation suggests that there has been significant reduction in dust generation along the alignment since the laying of base course in the latter part of the 2014.

31. **Water quality Monitoring** has focused on the Muz Tor river, running immediately west of the Manufacturing area, Kosh Kul (small lake adjacent to the alignment and the Narzan Spring. In terms of construction there has been minimal impact on water quality and in the reporting period, all readings were within allowable parameters.

32. **Monitoring of ecological indicators** (birds, insects, mammals, vegetation and hydro biology) was carried out in June, August and September 2014. In 2015 ecological monitoring focused on training of KJSNR in the collection of ornithological (bird) information, to be used as an indicator of the ecological performance of the KJSNR. In May 2016 two workshops (25th and 26th) were held designed to assist the KJSNR in management of the reserve and it was agreed that monitoring would focus on birds and water quality as indicators. Monitoring of birds (avifauna) has been continued by KJSNR

on a bi-weekly basis through the reporting period, overseen by the TERA NES. Data is forwarded to the MoTC IES for review as required.

33. KJSNR has borrowed camera traps from SAEPF and has used these at key locations around Chatyr Kul. This is regarded as excellent training for the future issue of camera traps to KJSNR under the project.

Receptor Protection

34. This includes upgrading the protected area facilities and management capacity, and restoration of sensitive habitats in the Chatyr Kul ecosystem (in effect, this is an in situ biodiversity offset). This upgrading includes:

- Procurement of equipment for the KJSNR
- Training KJSNR in environmental management techniques;
- Construction of integrated spill controls as part of the road works; and
- Training Road Management Unit of MoTC in spill control techniques.

35. **Equipment procurement**. To facilitate capacity building of the KJSNR, equipment was identified in the EIA and confirmed with KJSNR during a workshop on 4th May 2014 and at subsequent meetings attended by KJSNR, MOTC – IPIG, TERA and ADB. The provision of equipment is identified in the contract under provisional sums and is subject to MOTC / ADB approval. Major capital items include (i) provision of a vehicle to allow KJSNR better access to the Reserve; (ii) a boat to allow water quality monitoring and provide a policing role on Lake Chatyr Kul and Song Kul; (iii) mobile accommodation to provide a secure refuge and storage during monitoring exercises; (iv) water quality monitoring equipment. For the RMU spill control equipment and Personal Protection Equipment (PPE) is needed in addition to training.

36. TERA has handed over field equipment procured for earlier ecological surveys. Outstanding major capital items are provision of: (i) boat (ii) field accommodation unit; and (iii) water quality monitoring equipment. This equipment will be procured and handed over to KJSNR in 2016, together with the appropriate training.

37. **Boat** –This includes provision of a boat with outboard motor, road trailer, basic safety equipment and training in basic boat use and engine maintenance. The boat has been procured and was handed over to KJSNR on 27 November 2016. Due to the adverse weather conditions on water training has been postponed to Q2 2017.

Figure 10: Handover of boat to KJSNR on 27 November 2016 – attending KJSNR, MoTC, TERA and Eurasia Motors (supplier)

38. **Trailer / Field Accommodation Unit** – This includes provision of a mobile accommodation trailer with basic accommodation for two persons including a small kitchen and washing facility. The trailer will provide a secure base on site with the option to carry out basic laboratory work and reporting. A preferred supplier has been identified and approved. The accommodation unit is being fabricated with delivery anticipated in early 2017.

39. **Lab (Water Quality Monitoring Equipment)** A specification for the equipment has been prepared and suppliers contacted to determine willingness to submit proposals. A point of issue is our project requirement for manuals, displays and keypads to be in Russian language and the ability to provide on-site training.

40. **Other (additional) Items**. At a meeting between SAEPF (Naryn), KJSNR, ADB, MoTC and TERA at the SAEPF offices in Naryn on 20th September SAEPF and KJSNR requested additional equipment if budget was available:

    - Camera traps – a remotely activated camera that is equipped with a motion sensor or an infrared sensor, or a light beam as a trigger. It is a method of capturing wild animals on film when staff are not present. It is a recognized method for ecological research and has been used by SAEPF at locations in KGZ.
    - Computer and printer – Both agencies requested provision of a computer (running MS office word processing and Excel spreadsheet software) and printer to assist in the

processing of ecological data and the production of ecological reports (two units requested)

41. Both requests were supported and will be added to the equipment procurement list.

42. The following table sets out the progress on procurement.

Table 1: Status of KJSNR & RMU equipment procurement

Element	Agency	Required characteristic	Status
4WD vehicle	KJSNR	Mobility	Procured and handed over to KJSNR
Boat	KJSNR	On water access	Procured and handed over to KJSNR. On water training in Q2 2017.
Mobile accommodation	KJSNR	Secure and safe field accommodation	Being manufactured. Anticipated delivery to Bishkek not later than 2nd week January 2017
Water quality monitoring equipment	KJSNR	Perform on site monitoring	Retendered to four potential suppliers in December. Anticipated delivery to Bishkek Q1 2017
Spill control equipment and PPE	RMU	Clean up spills in safe environment	Procured and handed over to RMU. Three training exercises carried out.
Spill Controls installed at site	By CRBC for RMU	Concrete channels and chambers to intercept spills	Spill control devices installed on-site and training carried out with RMU on 23rd Sept 2016.
New – Camera traps	KJSNR	Camera with infra red trigger to allow remote (and night-time) surveys of fauna.	Specification prepared and approved. Procurement in progress. Anticipated delivery to Bishkek Q1 2017
New – Laptops and printers	SAEPF (Naryn) and KJSNR	Laptop with MS office software and associated printer for logging of ecological data	Specification prepared and approved. Procurement in progress. Anticipated delivery to Bishkek Q1 2017

43. **KJSNR training**. In May 2016 two workshops (25th and 26th) were held designed to assist the KJSNR in management of the reserve and it was agreed that monitoring would focus on birds and water quality as indicators. ADB, IPIG and SAEPF held a meeting on 1st June in Bishkek to discuss the provision of laboratory space in Naryn and a suitably qualified staff member to operate and calibrate water quality monitoring equipment. On 22 June 2016 ADB, IPIG and TERA met SAEPF, Territorial Department of Environmental Protection (TDEP) and KJSNR in Naryn to view the proposed laboratory space and progress on recruitment. On 20th September ADB, IPIG and TERA met SAEPF, TDEP and KJSNR in Naryn to view the progress on the lab refurbishment and met with the appointed lab officer. A full list of the meetings and training provided for KJSNR are included in Annex 3 – Training and Equipment Procurement For KJSNR and RMU

44. **RMU training**. The Road Maintenance Unit (RMU) have responsibility for attending to accidental spills that occur on the alignment. As part of the project, additional interception drains are being constructed within the KJSNR to intercept spills due to incidents on the road. Provision of equipment and training in its use are also identified. The spill response equipment, including Personal Protection Equipment (PPE) and clean up materials have been specified, procured and handed over to RMU. Initial training for the local RMU, RMU957 was carried out at their depot in At Bashy on 22nd Sept 2015 and also on 24th May 2016 focusing on practical training on the use of spill equipment procured under the Project. A third “on-site” training workshop was held on 23rd September 2016 to introduce RMU to the physical spill controls that have been constructed.

Figure 11: RMU and TERA onsite for spill training 23rd Sept 2016

Figure 12: Spill Controls under construction (June 2016)

Figure 13: Spill control completed (September 2016)

III. PART III - ENVIRONMENTAL MANAGEMENT

3.1. The environmental management system (EMS), site-specific environmental management plan (SSEMP), and work plans

45. . The following figure identifies the Site Specific documents produced for the project and the relationship with EIA

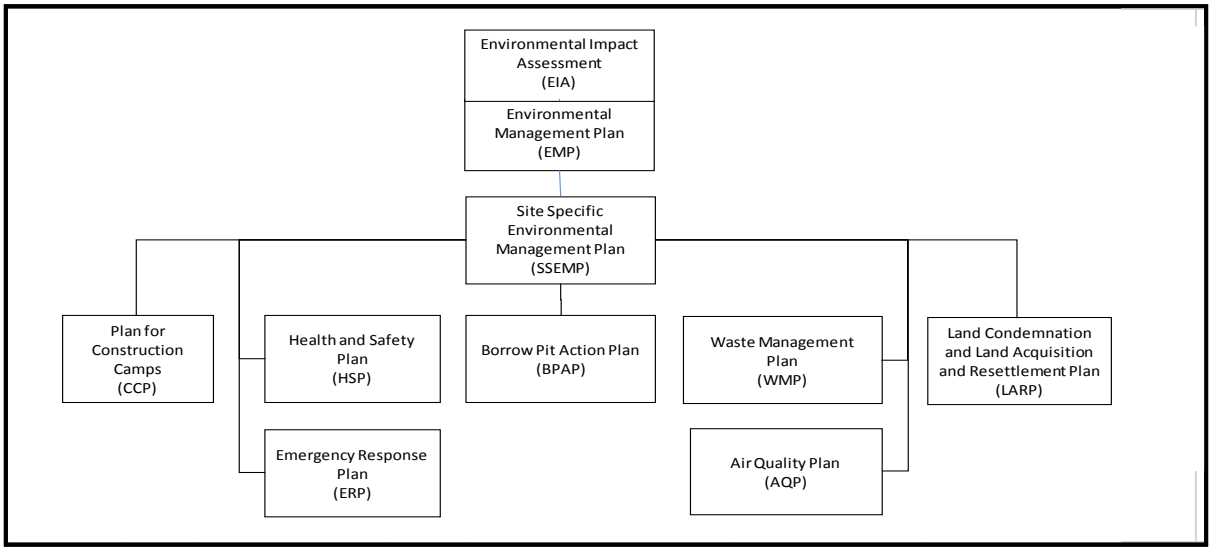


Figure 14: The SSEMP and its supporting documents

46. . The following figure identifies the status of environmental documentation on the project.

Table 2: Status of Environmental management plans

Management Plan	Status
EIA with Environmental Management Plan	Latest issue March 2015
Site-Specific EMP (SSEMP)	Submitted, approved
Environmental Monitoring Program	Monitoring commenced 2013. Confirmed in Ecological Response Plan (March 2015).
Borrow Pit Management Plan	Appendix 9 of EIA (July 2013)
Amended Borrow Pit Management Plan	Appendix 9.1 of EIA (March 2015)
Contractor Borrow Pit Action Plan km501-km531	Forms Annex 1 of Appendix 9 (BPMP)of EIA (March 2015)
Site Cleanup and Restoration Plan	Prepared September 2016. To be used for final Audit of site in Q3 2017

3.2. Site inspections and audits

47. Though construction activity is much reduced, due to poor weather and project wind down, periodic audits of the construction camp, manufacturing area and construction sites have been conducted during the reporting period using checklists that are included in the Site Specific Environmental Management Plan. Audits indicate good environmental performance.

48. Formal monthly meetings and reporting between the Contractor's Project Management Staff and the Consultant consolidate weekly Friday progress meetings held to discuss the Project, including road and other safety issues and camp cleanliness. The Contractor team responds positively 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.

49. The project is checked and audited through a checklist system that clearly identifies the environmental elements "on the ground" that will be targeted as indicators of environmental performance. The checklists are focused on five clearly identifiable site activities of (i) Camp; (ii) camp - maintenance area; (iii) camp – management and community; (iv) manufacturing area; and (v) working areas (including two additional checklists for borrow pits inside the KJSNR), rather than a single checklist covering all environmental aspects. The checklists also allow three levels of incident reporting, to separate minor incidents from major (non-conformity) issues:
    - Observation: No discernible environmental impact on the site.
    - Opportunity for Improvement: Minor impact that is reversible with minor intervention.
    - Non-conformity: An environmental incident has occurred requiring significant resources to rectify.

50. In addition to the audits performed by the Contractor and Consultant resident site staff other formal inspections, audits and meetings have been carried out by staff of MoTC IPIG, ADB and the ADB resident mission. The following table identifies these site activities.

Table 3: Site visits and audits in the reporting period

Organisation	Purpose	Performed by	Date
CRBC (Contractor)	To confirm compliance with project environmental documentation EIA, SEMP, BPAP.	Deputy Environmental Officer	Daily
		Environmental Officer	Generally monthly with TERA

TERA (Consultant)	To confirm compliance with project environmental documentation EIA, SEMP, BPAP.	National Environmental Specialist	Generally monthly with CRBC
		International Environmental Specialist	Generally monthly when in field with CRBC
ADB	Visit to SAEPF provided laboratory in Naryn and site visit	SAEPF-TDEP, KJSNR, ADB, MoTC IPIG, TERA	20 Sept 2016
ADB MoTC	Site visit	ADB, MoTC IPIG, TERA	21 Sept 2016

51. **ADB Project Review**. A Project Review meeting was held on 22nd August in the ADB mission, Bishkek attended by Mirdin Eshenaliev (Senior Project Officer - Kyrgyz Republic Resident Mission) Almaz Asipjanov (ADB - Environmental Safeguards Consultant), Mr Andrew Taylor, Hakan Nemultu, Anton Safronov and Mr Jim Rizer (TERA - Consultants Environmental Specialist) to discuss project progress, including equipment procurement. On 20th September ADB visited SAEPF in Naryn (TDEP, SAEPF, ADB, IPIG and TERA) to view the laboratory space and meet the biochemical specialist. Ms Tran T. Thanh Phuong (ADB - Senior Environment Specialist) met with Dr David Green (IPIG – International Environmental Specialist) at the ADB mission, Bishkek on 25th September 2016 to discuss progress, demobilization and the Site Cleanup and Restoration Plan.

Figure 15: Meeting at SAEPF offices in Naryn on 20th September 2016 (ADB, SAEPF, KJSNR, MoTC and TERA attending)

3.3 Non-compliance notices

52. Five checklists of (i) Camp; (ii) camp - maintenance area; (iii) camp – management and community; (iv) manufacturing area; and (v) working areas (including two additional checklists for borrow pits inside the KJSNR) are used by the consultant and Contractor safeguards staff to check environmental performance. The checklists also allow three levels of incident reporting, to separate minor incidents from major (non-conformity) issues:
    - Observation: No discernible environmental impact on the site.
    - Opportunity for Improvement: Minor impact that is reversible with minor intervention.
    - Non-conformity: An environmental incident has occurred requiring significant resources to rectify.
53. The site had low activity levels during the reporting period due to poor weather. Site audits found no instances of non-compliance.

3.4. Corrective action plans

54. While the project has been implemented in accordance with the ADB Environmental Safeguards Policy, there has been some delays in project level implementation of specific items identified in Section 8.9 of the EIA – Institutional Responsibilities for EMP implementation that were noted in the last EMR. These were (i) installation of spill prevention controls (ii) monitoring equipment procurement and (ii) the ecological monitoring programme. The current status is identified in Table 4 (Status of Actions) and the Corrective Actions in Table 5 (Corrective Action Plan).

Table 4: Status of Actions identified in the EIA

	Environmental Issue Identified	Action taken	Due Date	Status	Responsible Party
1	Implementation of Spill Prevention, control and countermeasures	Orientation and training of RMU in spill control techniques and procurement of equipment	Q3 2016	Orientation and safety training of RMU carried out.	IPIG IEC / TERA
				On site training was conducted on 23rd September. PPE procured and handed over.	TERA
				Practical Training with equipment conducted on 23rd September.	IPIG / TERA
2	Operation phase runoff controls to prevent road spills entering Chatyr Kul.	Design and construction of interceptors and retention ponds	Q3 2016	Contractor design prepared and approved.	TERA /IPIG
				Construction of runoff controls completed with RMU training on 23rd September.	CRBC

3	Pollution source environmental monitoring of NVAW	Monthly monitoring by Contractor and Bi-annual reporting	Q3 2016	Monthly monitoring complied with	CRBC
				Biannual reporting complied with	TERA
4	Post project monitoring of pollution sources	Procurement of monitoring equipment for KJSNR and training	Q3 2016	Equipment identified and specified	TERA
				Procurement of equipment **WQ equipment identified, suppliers identified, procurement in process. Not complied with**.	TERA
				Training of KJSNR **classroom training (done) WQ training not complied with**.	TERA / manufacturers
5	Dissemination of environmental information.	Bi-annual reporting	Q4 2016	Draft bi-annual report for Jan to June 2016 approved June to December 2016 prepared and issued for comment	IPIG
6	Management of the Chatyr Kul ecosytem	Ongoing ecological surveys during project and framework for future monitoring and analysis for management purposes by KJSNR.	Q3 2016	Focus is on ornithological surveys	TERA
				Engagement of KJSNR – two classroom sessions in June. Twelve Field sessions carried out in 2016.	TERA / IPIG / KJSNR

55. In order to comply with the EMP the following corrective actions are being implemented.

Table 5: Corrective Action Plan

	Environmental Issue Identified	**Corrective action**	**Due Date**	**Status**	**Responsible Party**
1	Implementation of Spill Prevention, control and countermeasures	Practical Training with spill control equipment.	Q3 2016	Practical Training conducted on 23rd September	TERA / IPIG

2	Operation phase runoff controls to prevent road spills entering Chatyr Kul	Construction of runoff controls	Q3 2016	Construction completed in August 2016	CRBC
3	Post project monitoring of pollution sources	Procurement of equipment and training of KJSNR	Q3 2016	RFQ prepared issued and quotations received. Procurement Scheduled for Q1 2017.	TERA
4	Management of the Chatyr Kul ecosytem	Engagement of KJSNR – further classroom and field sessions and management plan.	Q3 2016	Ongoing ornithological field work with TERA NES through 2016 construction season. On site session with KJSNR with MoTC IEC (Dr. Green) 22 Sept 2016	TERA NES TERA / IPIG

3.5. Consultation and complaints

56. 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 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.

57. In terms of consultations and complaints, there have been no formal complaints received and recorded during the reporting period. The complaints register is kept in the TERA office at the camp (Km 501)now relocated to the TERA office in Bishkek. A copy of the complaints log is included in the Monthly Progress Report for the project.

IV. PART IV – ACTION PLAN FOR THE NEXT PERIOD

58. .In order to comply with EMP, and recommendations of the senior safeguards specialist of Central and West Asia Department, ADB, the following actions should be implemented in close cooperation with IPIG and Contractor.

Table 6: Action Plan for 2017

#	Activity	Due Date	Responsible for implementation/ supervision	Review Date
1.	Purchase and handover of last	January 2017	DSC/IPIG	Jul 2017

	items of environmental monitoring equipment (water quality, camera traps and 2 x computers)			
2.	Restoration and site cleanup works	Completed Aug / Sept 2016. Review in Q3 2017	Contractor/DSC	
3.	Post-construction audit	Q3 2017	DSC/IPIG	Jul 2017
4	Post Construction ecological Surveys	Q3 2017	TERA/ TERA & IPIG	Jul 2017

59. **Equipment and Training** - In 2016 the priority was to ensure that the boat, lab (water quality monitoring) equipment and mobile accommodation unit is handed over to KJSNR and associated training programmes delivered to assist in management of the Reserve.

60. **Ecology** – Ecological training (bird surveys) continued in the 2016 construction season led by the TERA National Environmental Specialist on-site with KJSNR attending. The appointed ecological team of ornithologists, botanists and entomologists will revisit the site again in July / August 2017 to repeat ornithological, vegetation and insects post project.

61. **Spill Control –** The Contractor has constructed the spill control system designed to intercept any major spill on the highway passing through the State Reserve and prevent spilled material entering the Chatyr Kul lake system. On 23rd September 2016 the TERA and IPIG IES led a practical training session on spill control at the site, the third and final module of RMU spill training.

62. **Site Cleanup and Restoration –** The Contractor has their restoration plan approved by SAEPF. The Asphalt plant, Crushing Plant at the Manufacturing area have been removed and camp restoration decommissioning has been completed. A Site Cleanup and Restoration Plan (SCURP) has been prepared (Sept 2016) and in July / August 2017 the conditions on site will be checked against the SCURP. Restoration of the borrow pits is well advanced with pits outside KJSNR restored and handed back to government and pits in KJSNR recontoured, topsoil respread and seed germination progressing. On 2 June 2016 CRBC and TERA carried out an audit of the restored borrow pits from the starting point of the project upto the camp and inside the KJSNR. The audit report is included in Annex 5 - Status of Borrow Pits - June 2016 Audit.

V. ANNEX 1: MONITORING DATA

Environmental Monitoring of Noise & Vibration, Air and Water Quality (NVAW) - Upto and including June 2015 monitoring

1) Noise and Vibration

Table 7: 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)	Manufacturing 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			
24-Jun-16	No sampling due to excessive wind																		
24-May-16	No sampling due to excessive wind																		
15-Oct-15		46	63	65			59	57	49	47		46	48	47			75	65	46
23-Sep-15		51	69	65			55	52	56	49		47	52	51			75	69	47
13-Aug-15		47	67	63			53	57	46	46		46	46	45			75	67	45
14-Jul-15		49	66	65			59	53	65	49		65	48	49			75	66	48
24-Jun-15		48	65	65			58	53	65	48		45	47	46			75	65	45
21-May-15		45	60	61			55	50	71	45		43	44	43			**75**	71	43
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		**99db Result removed**		44	44	59	68	57	60	55	**75**	68	44
22-Oct-13	56	60									55	66	**99db Result removed**				**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	69	65	57	68	59	68	74	49	57	69	68	57	75	68	75	75	49
Min Recorded	53	45	45	58	57	68	53	50	46	44	44	43	44	43	44	55	75	68	43

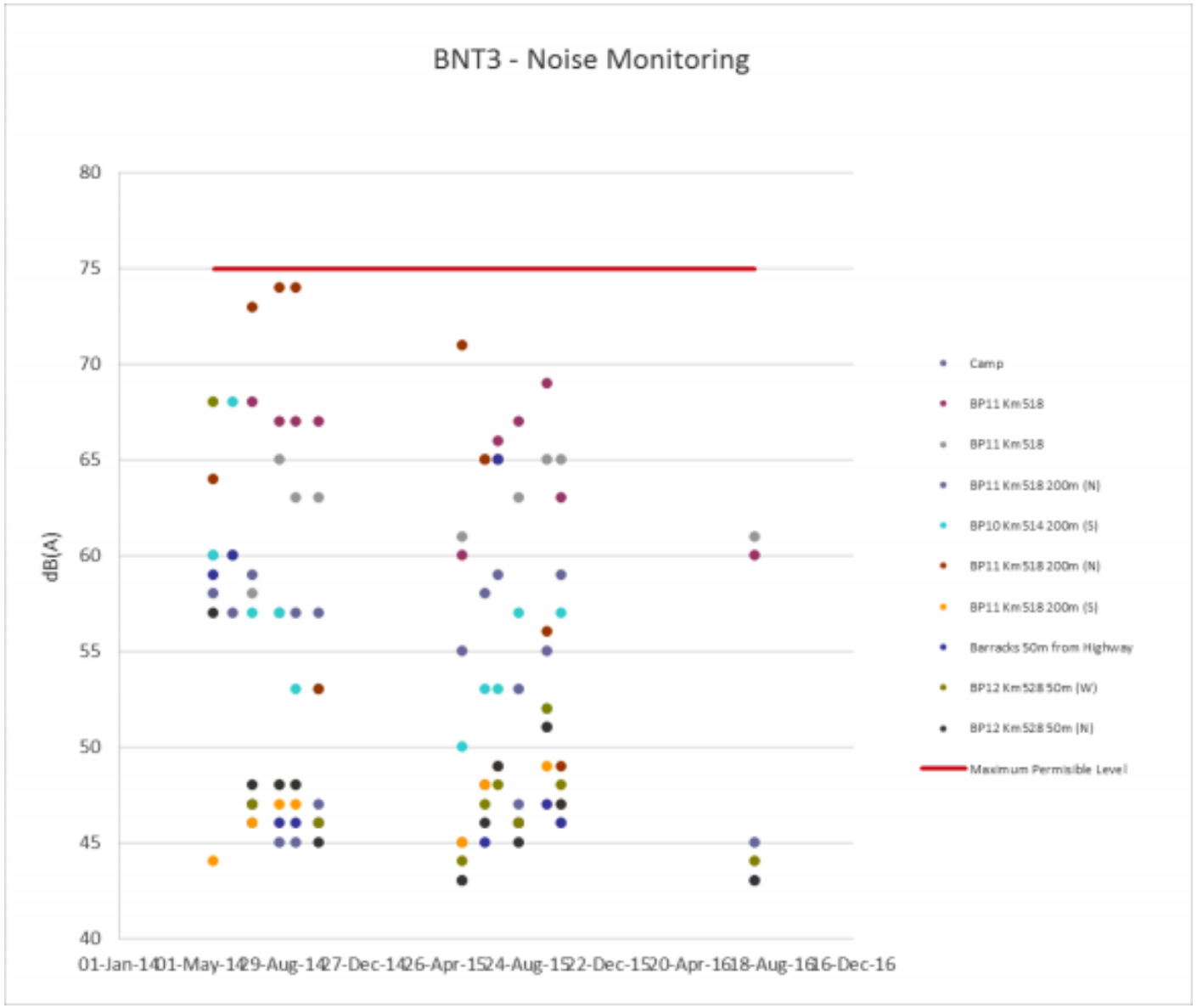


Figure 16: Noise Monitoring plots

Table 8: 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)	Manufacturing 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	
24-Jun-16		46	63	65								59	57	49			**108**
15-Oct-15		75	72	76			75	73	72	75		72	75	73			**108**
23-Sep-15		77	75	74			77	75	74	76		75	76	75			**108**
13-Aug-15		76	74	74			76	76	73	77		73	76	74			**108**
14-Jul-15		75	72	73			74	77	75	75		73	74	75			**108**
24-Jun-15																	**108**
21-May-15		71	73	74			75	75	73	77		73	76	74			**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**

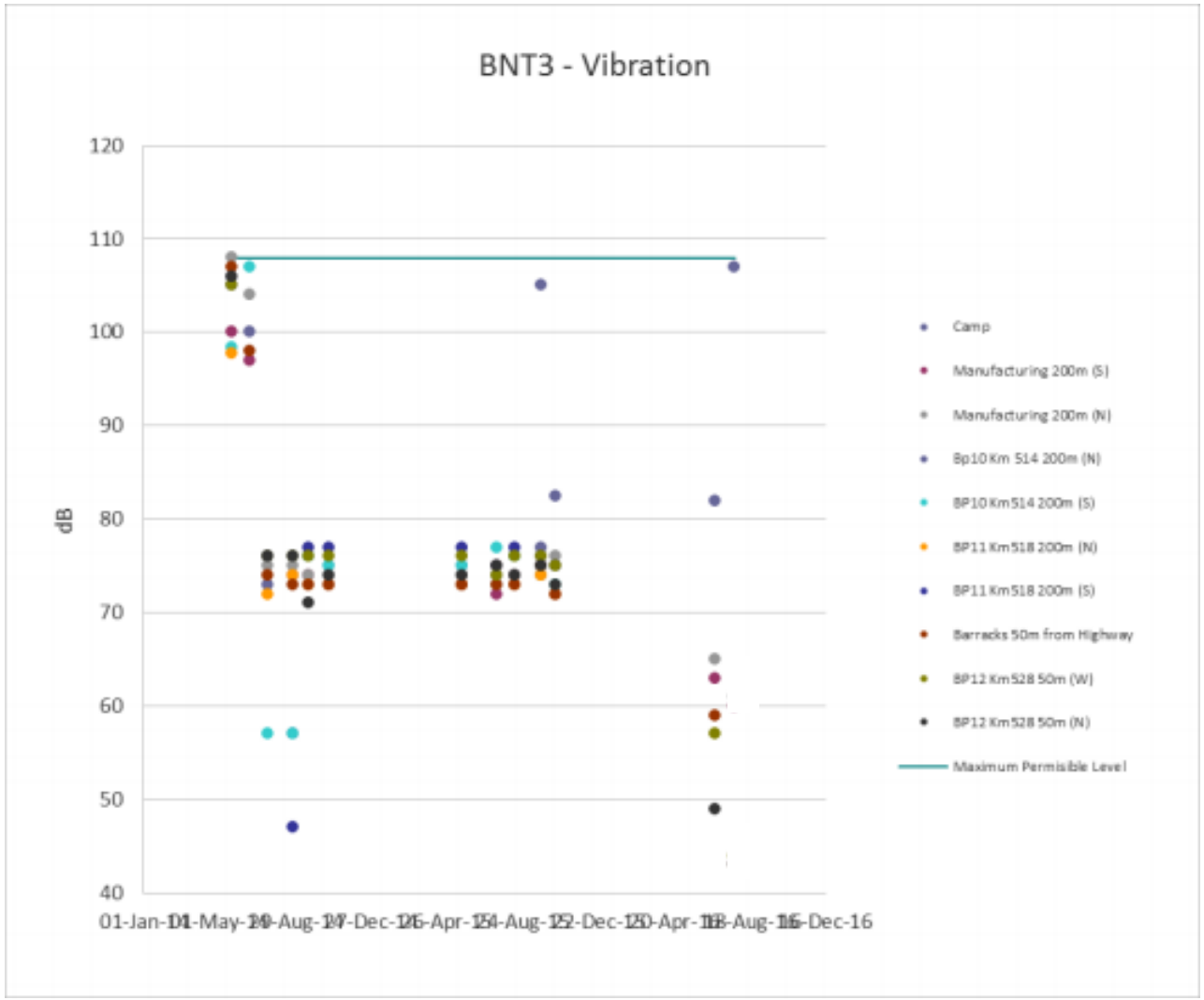


Figure 17: Vibration monitoring plots

2) Air Quality

Table 9: 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
4-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
5-May-15							0.001	0.001			0.001		0.001		0.001	0.001		0.5	0.001	0.001
16-Jun-15							0.001	0.002		0.001	0.002	0.002	0.003	0.002	0.002	0.001		0.5	0.003	0.001
15-Jul-15							0.042	0.036		0.045	0.033	0.039	0.047	0.036	0.036	0.03		0.5	0.047	0.03
13-Aug-15							*0.04*	*0.046*		*0.037*	*0.034*	*0.049*	*0.046*	*0.04*	*0.034*	*0.031*		*0.5*	*0.049*	*0.031*
23-Sep-15							0.04	0.046		0.037	0.034	0.049	0.046	0.04	0.034	0.031		0.5	0.049	0.031
14-Oct-15							0.027	0.038		0.035	0.043	0.04	0.038	0.046	0.035	0.029		0.5	0.046	0.027
19-Jun-16							<0.001	<0.001						<0.001		<0.001		0.5	<0.001	<0.001

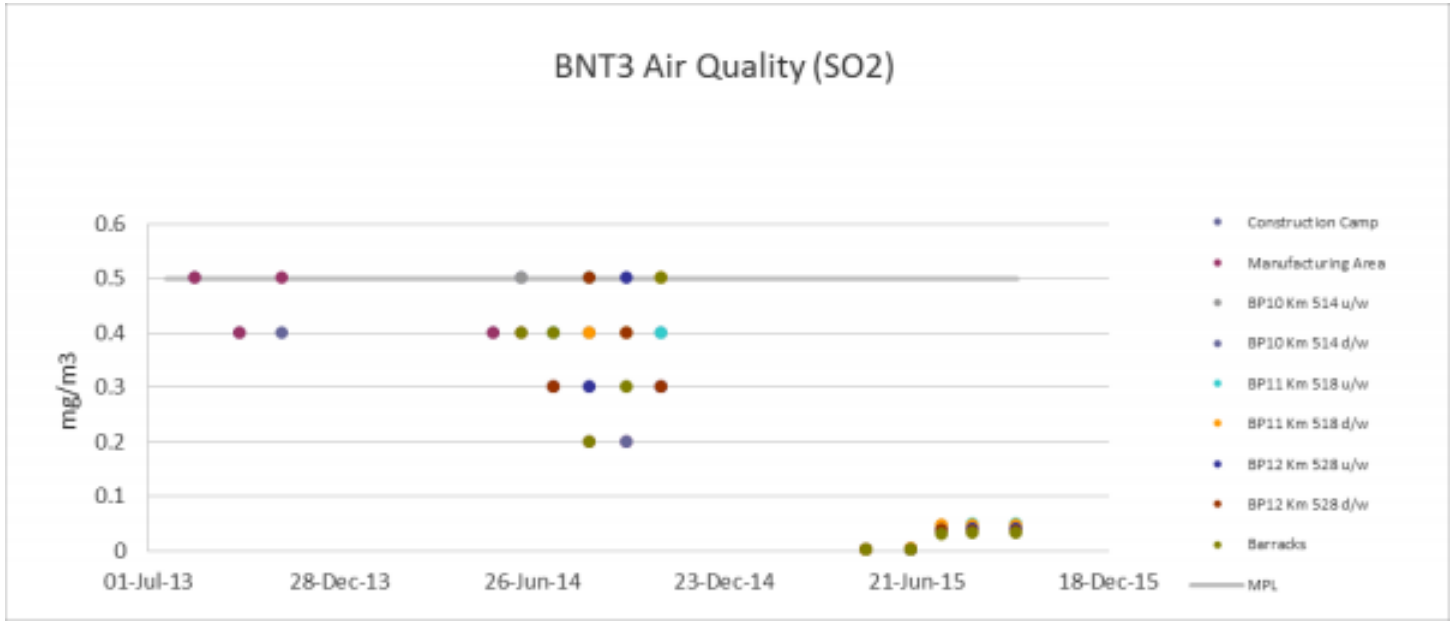


Figure 18: Air Quality Monitoring plots - Sulphur Di-oxide

Table 10: 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	0	0	0	0	0					
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
4-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	5	3.4
5-May-15							0.7	1.2			2.1		2.6		1.7	1.7		5	2.6	0.7
16-Jun-15							2	1.7		2	2.6	1.9	2.1	1.8	2.3	1.4		5	2.6	1.4
17 Jul 15																				
13 Aug 15																		5	0	0
19-Jul-16							0.6	0.3						0.5		0.2		5	0.6	0.2

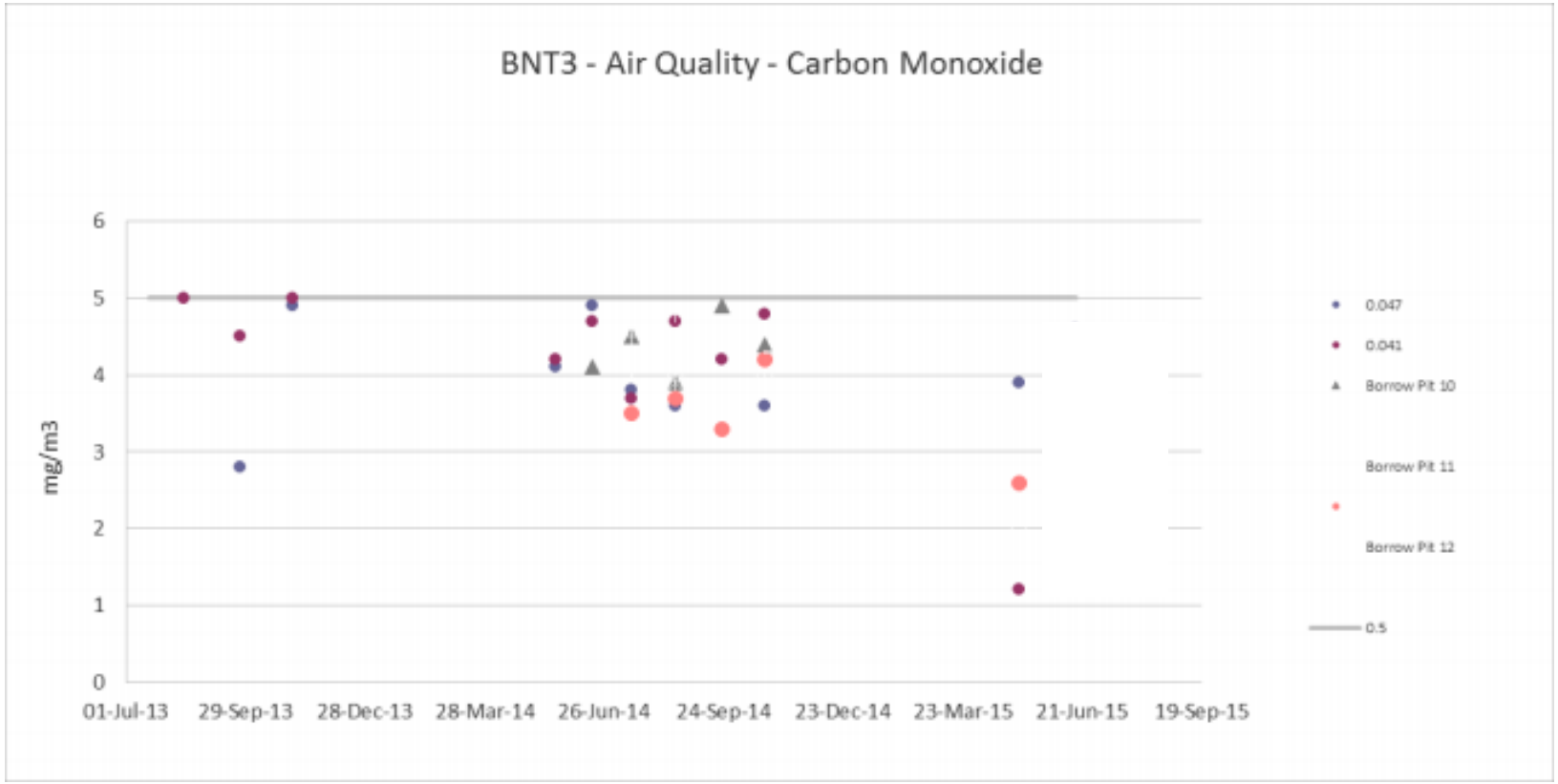


Figure 19: Air Quality Monitoring plots - Carbon Monoxide

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

3) Water Quality

Table 11: 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
						21/ 22 June 13 - Average of 4			
18-Jul-13	8.1				*9*	8.07	6.52	6.5	8.5
14-Aug-13	8.0		7.8			8.6	6.7	6.5	8.5
25-Sep-13	8.0		7.8			8.6	6.8	6.5	8.5
30-Oct-13	8.0		7.5			8.4	7.3	6.5	8.5
21-May-14	8.1				8.1	8.01	6.5	6.5	8.5
17-Jun-14	8.1				8.1	8.04	7.5	6.5	8.5
17-Jul-14								6.5	8.5
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
5-May-15	7.65	7.39	7.77	6.32			6.3	6.5	8.5
16-Jun-15	7.57	7.71				8.29	6.29	6.5	8.5
14-Jul-15	7.5	7.52				7.6	7.8	6.5	8.5
14-Aug-15	6.13	7.68				7.64	7.45	6.5	8.5
16-Sep-15	7.62	7.65				7.68	8.06	6.5	8.5
13-Oct-15						7.61	7.75	6.5	8.5
21-Jun-16	8.21	8.21				8.63	6.38	6.5	8.5

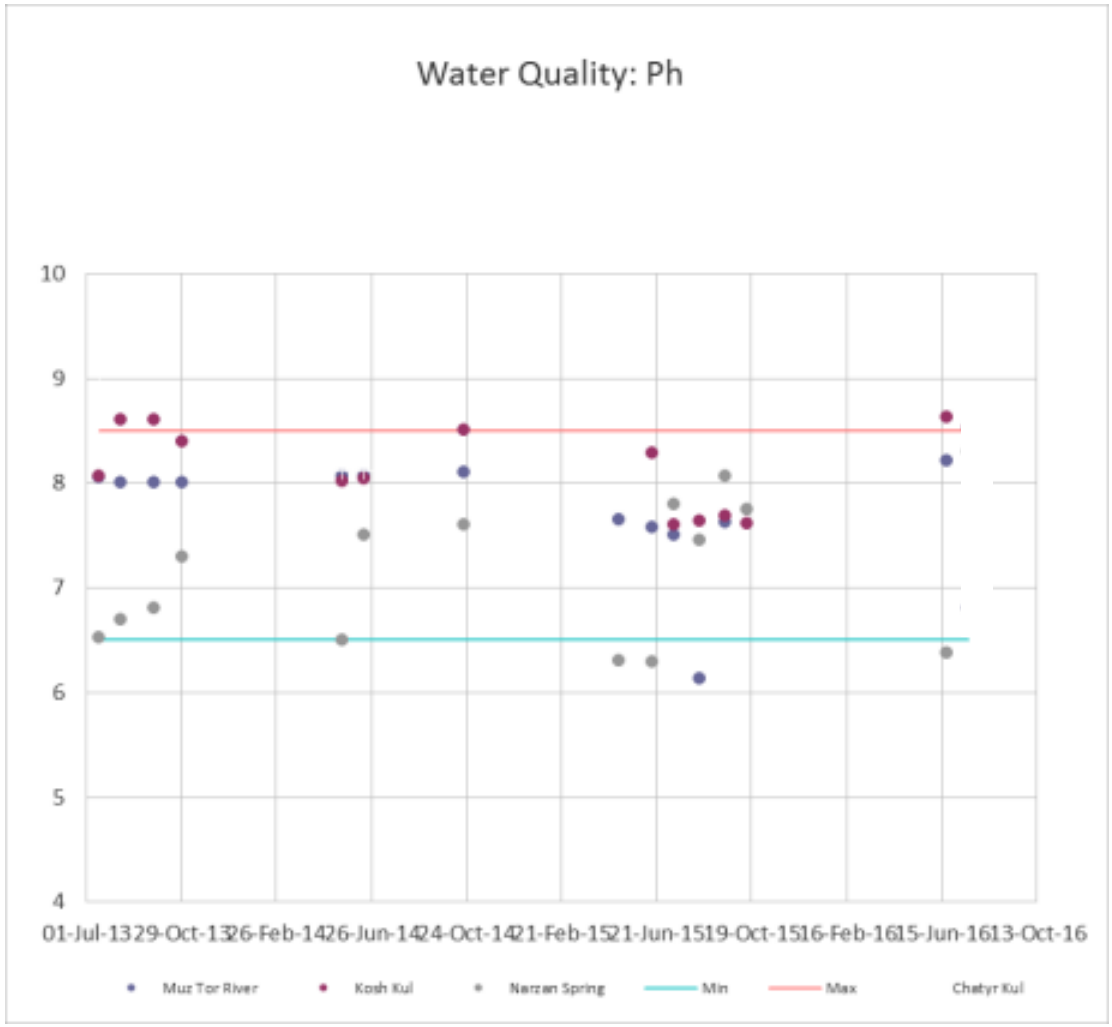


Figure 20: Water Quality Monitoring plots - Ph

Table 12: 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
14-Aug-13	19		90			23	57	100	500
25-Sep-13	21		83			3			
30-Oct-13	46		51			47			
21-May-14	20				145	100	65	100	500
17-Jun-14	14				63	52	39	100	500
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
5-May-15	23	33	42	45			18		
16-Jun-15	9.6	11				34	29	100	500
14-Jul-15	10.7	12				29	31	100	500
14-Aug-15	30	32				45	15	100	500
16-Sep-15	31	33				39	9.9	100	500
13-Oct-15						41	12	100	500
21-Jun-16	12	12				9	8	100	500

21/ 22 June 13 - Average of 4

Average of 3

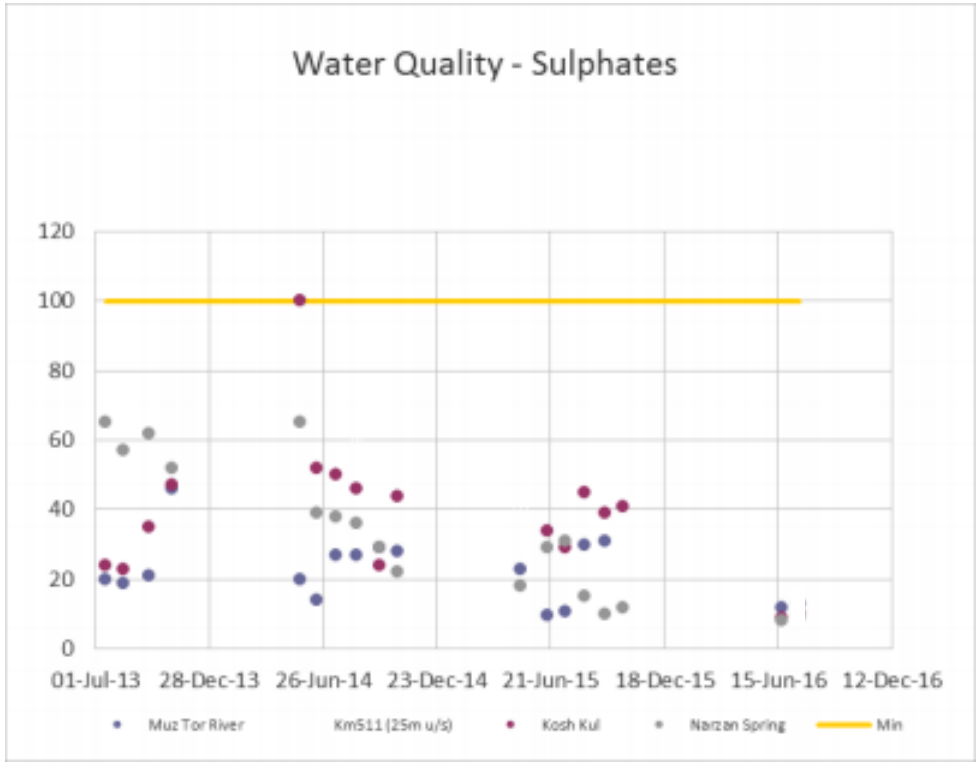


Figure 21: Water Quality Monitoring plots - Sulfates

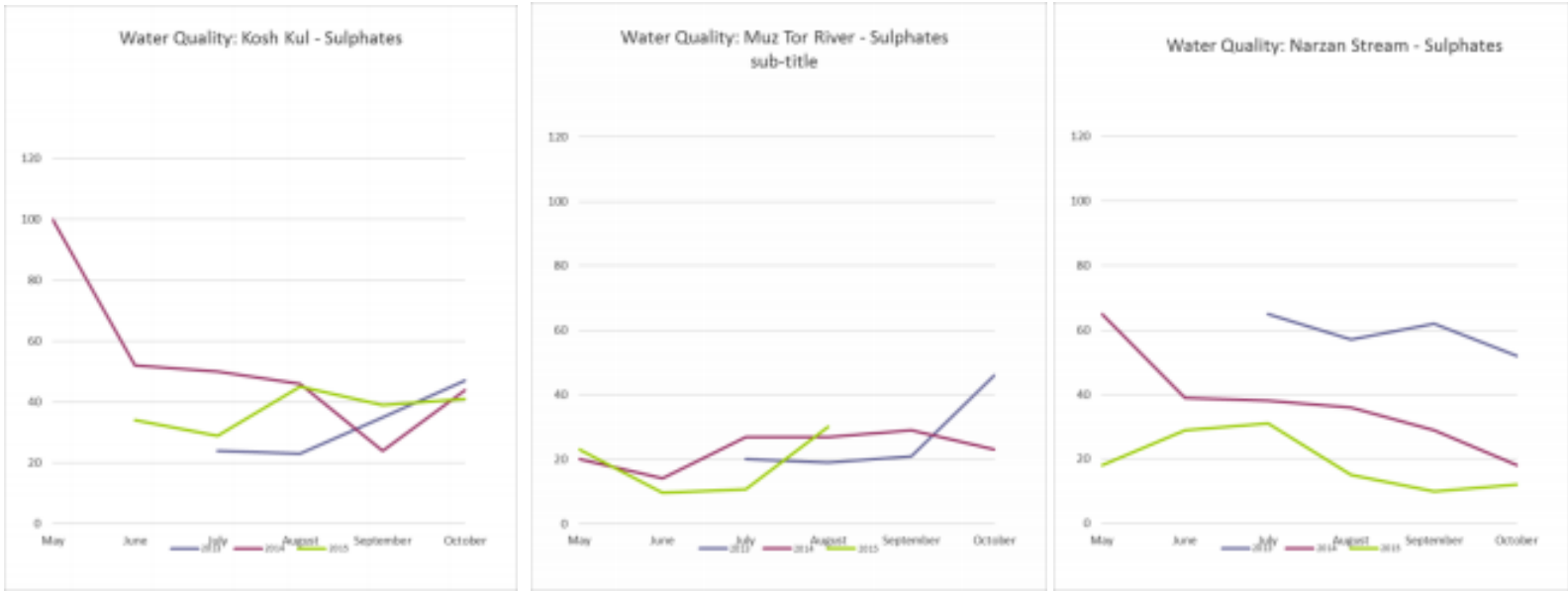


Figure 22: Water Quality Monitoring plots - Sulfates (Annual variation)

Table 13: 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		4.3	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		
5-May-15	20	19.8	13.8	12.2			9		
16-Jun-15	4	5.4				18.4	28		
14-Jul-15	12	2				3	0.8		
14-Aug-15	240.8	299				70.2	2,4		
16-Sep-15	200	291.6				67	3.4		
13-Oct-15						66.2	27		
21-Jun-16	4.4	4.4				11.8	17.6		

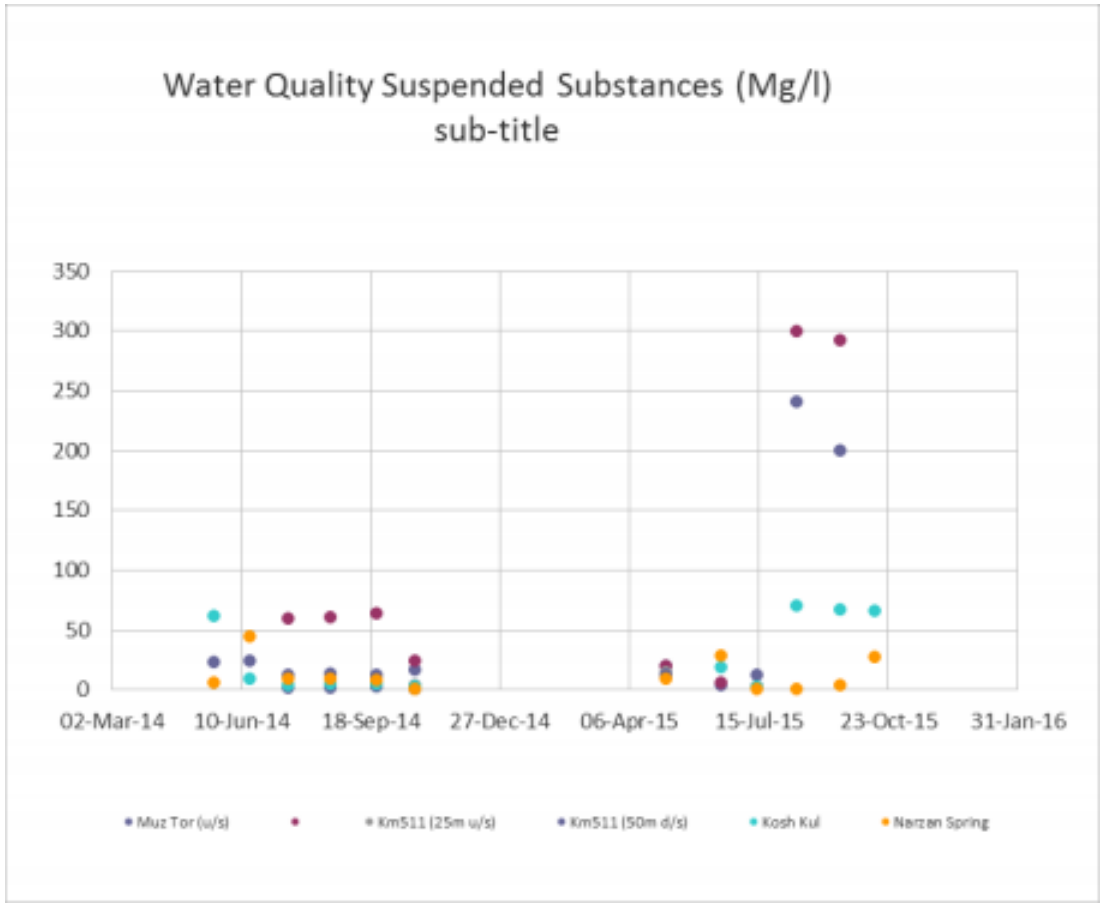


Figure 23: Water Quality Monitoring plots - Suspended Substances

Table 14: 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	Average of 3	zan Spring	Min	Max
18-Jul-13	6.1				*444*	32	234	-	300
14-Aug-13	5		16			40	224	-	300
25-Sep-13	6.1		15			9	234	-	300
30-Oct-13	17		16			15	11	-	300
21-May-14	6.1				409	224	234	-	300
17-Jun-14	8.51				63.8	95.7	99.26	-	300
17-Jul-14	7.1	7.1	32	30		92	96	-	300
19-Aug-14	9.22	9.93	26	27		77	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
5-May-15	11	11	8.5	8.5			7.8	-	300
16-Jun-15	7.1	6.4				8.5	8.5	-	300
14-Jul-15	8.7	10				20	42	-	300
14-Aug-15	8.1	8.1				7.4	13	-	300
16-Sep-15	29	32				55	9.2	-	300
13-Oct-15						53	11	-	300
21-Jun-16	4.2	4.2				2.1	1.4	-	300

21/ 22 June 13 - Average of 4

Average of 3

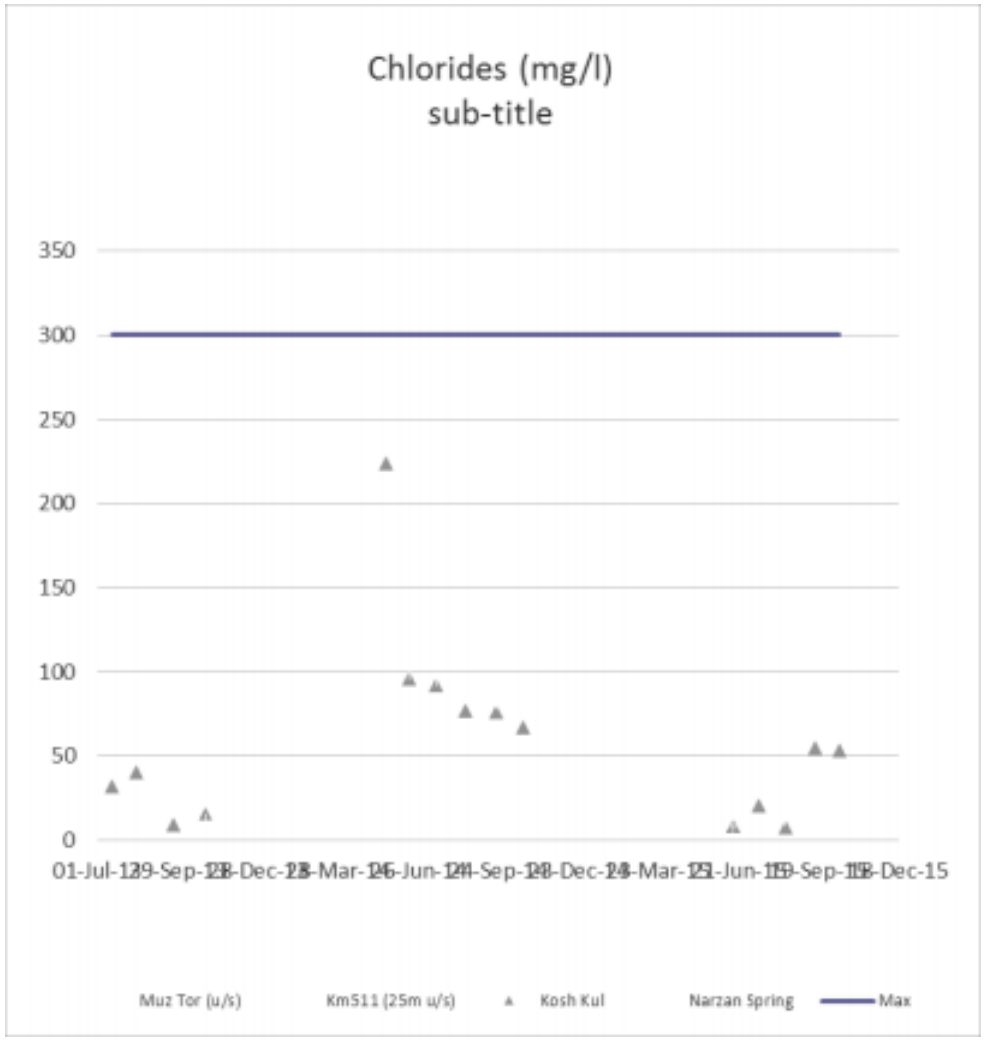


Figure 24: Water Quality Monitoring plots - Chlorides

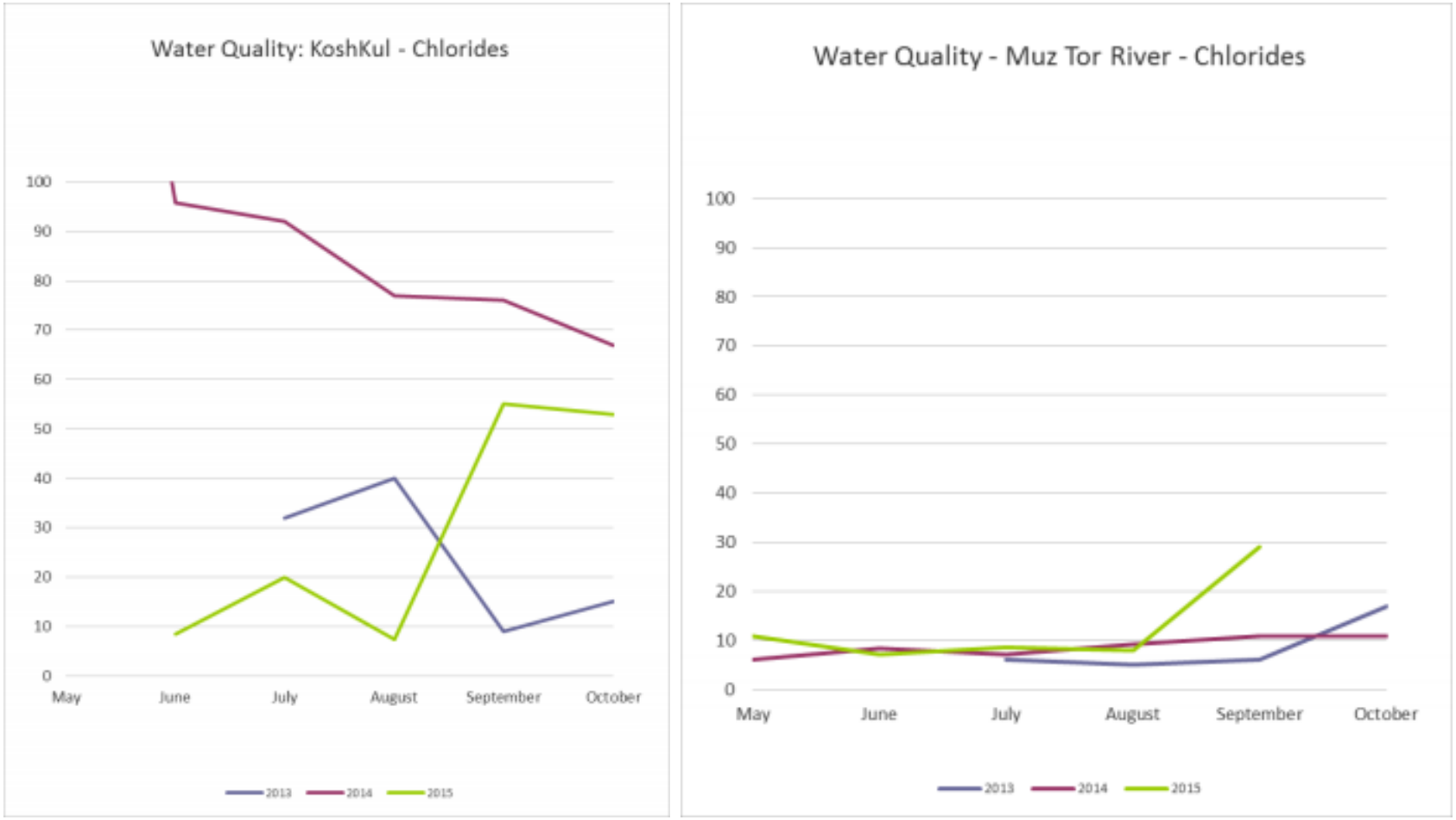


Figure 25: Water Quality Monitoring plots - Chlorides (Annual variation)

Table 15: 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		8.67	8.97	4
23-Sep-14	7.53	7.5	6.43	7.03	8	7.33	7.09	4
23-Oct-14	7.33	7.44	5.24	4.81		7.15	6.54	4
5-May-15	7.93	8.3	7.69	8.61			7.1	4
14-Jul-15	7.05	7.01				6.3	5	4
14-Aug-15								4
16-Sep-15	9.9	9.4				10	7.1	4
13-Oct-15						9.2	7.8	4

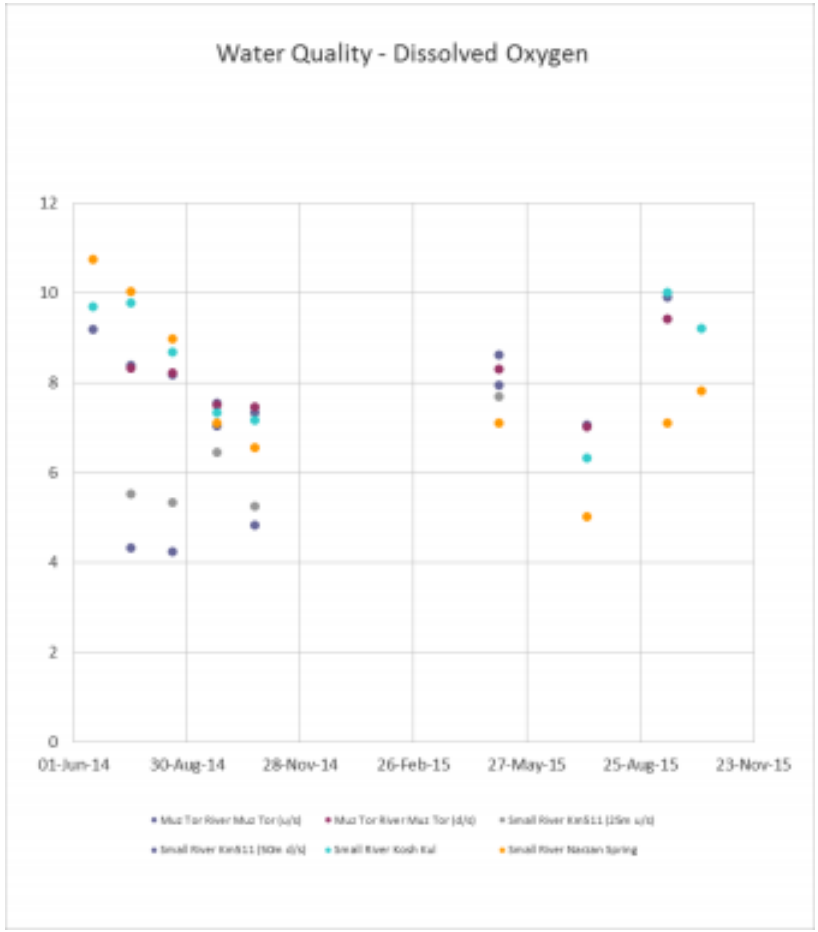


Figure 26: Water Quality Monitoring plots - Dissolved Oxygen

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

VI. ANNEX 2: PHOTOGRAPHS –

Fixed point photography – Camp looking into State reserve

Figure 27: 9 November 2016 – Early snowfalls on surrounding land

Figure 28: 21 June 2016 – Morning 8:00am, snow had cleared by the afternoon

Figure 29: Morning of 12 May 2016 8:00am – After overnight snow (50mm)

Figure 30: Evening of 11 May 2016 – Some snow on the ground

Figure 31: View from Camp on 29 Sept 2015 - note asphalt surface

Figure 32: View from Camp on 10 June 2015

Figure 33 View from Camp on 5 May 2015 – Start of 2015 season – snow thawing out

Figure 34: View from Camp on 29 October 2014 – End of 2014 season, winter snowfall

Figure 35: View from Camp on 22 October 2014 (am) – after overnight snow

Figure 36: View from Camp on 21 October 2014 (pm) – site clear of snow

Figure 37: View from Camp on 27 May 2014 – Site clear of snow

Figure 38: View from Camp on 8 May 2014 – Start of season with snow on ground

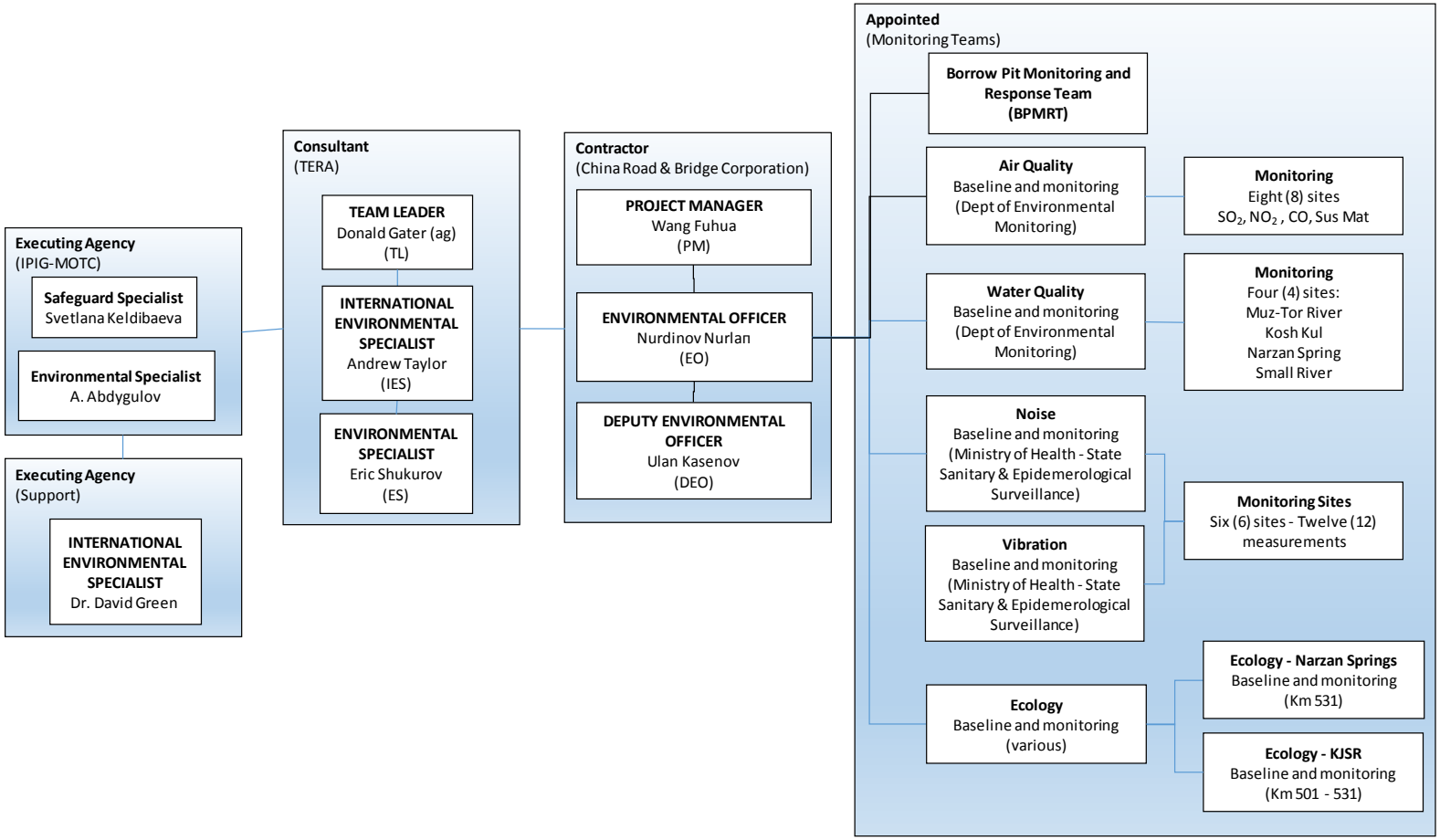
Figure 39: Lorries queuing at Border Holding Area (27 November 2016)

VII. ANNEX 3 – TRAINING AND EQUIPMENT PROCUREMENT FOR KJSNR AND RMU

	Element	Attendees	Training module	Date	Delivery by	Procurement issues identified at meeting	Status at Dec 2016
	Management of KJSNR	KJSNR management	Equipment procurement, including visit to proposed KJSNR laboratory	12 Nov 13	Dr Green (IPIG) assisted by A Taylor (TERA)	Water quality lab and field equipment to be specified, suppliers to be identified	Equipment identified and specified
	Management of KJSNR (vehicle)	KJSNR management	How ecological elements are incorporated into the project and will be used to improve management of the KJSNR	7 May 14	Dr Green (IPIG) assisted by A Taylor (TERA)	4WD to allow access to site for monitoring purposes specification identified suppliers being identified.. Training at site by PIU IES and TERA NES	4WD specified and procured. Training programme initiated
	Management of KJSNR	KJSNR management	On site visit to view progress and classroom session on the operation of borrow pits within KJSNR	8 Oct 2014	Dr Green (IPIG) assisted by A Taylor (TERA)	Nil	N/a
	Management of KJSNR	KJSNR management	Management of the reserve: (i) existing management plan; (ii) Extent of monitoring under the project; and (iii) monitoring requirements beyond the project.	9 Oct 2014	Dr Green (IPIG) assisted by A Taylor (TERA)	4WD vehicle to access the reserve and water quality monitoring equipment. Both include training. Suppliers identified, procurement in progress.	4WD specified and procured. WQ Monitoring equipment specified RFQ issued. Delivery Q1 2017
	Management of KJSNR	KJSNR management	Management of the reserve-procurement of equipment, progress on ecological monitoring	21 May 15	Green MoTC ADB	4WD vehicle to access the reserve under procurement. Mobile accommodation trailer at reserve is being specified and water quality monitoring equipment suppliers being sought..	4WD specified and procured. Mobile trailer and WQ equipment specified and supplier identified, for delivery Q1 2017.
	Management of KJSNR	KJSNR management	On site training in ornithological monitoring	16 Sept 15	Shukerov (Tera NES)	4WD vehicle to access the reserve – handed over 5 Oct 2015.	n/a

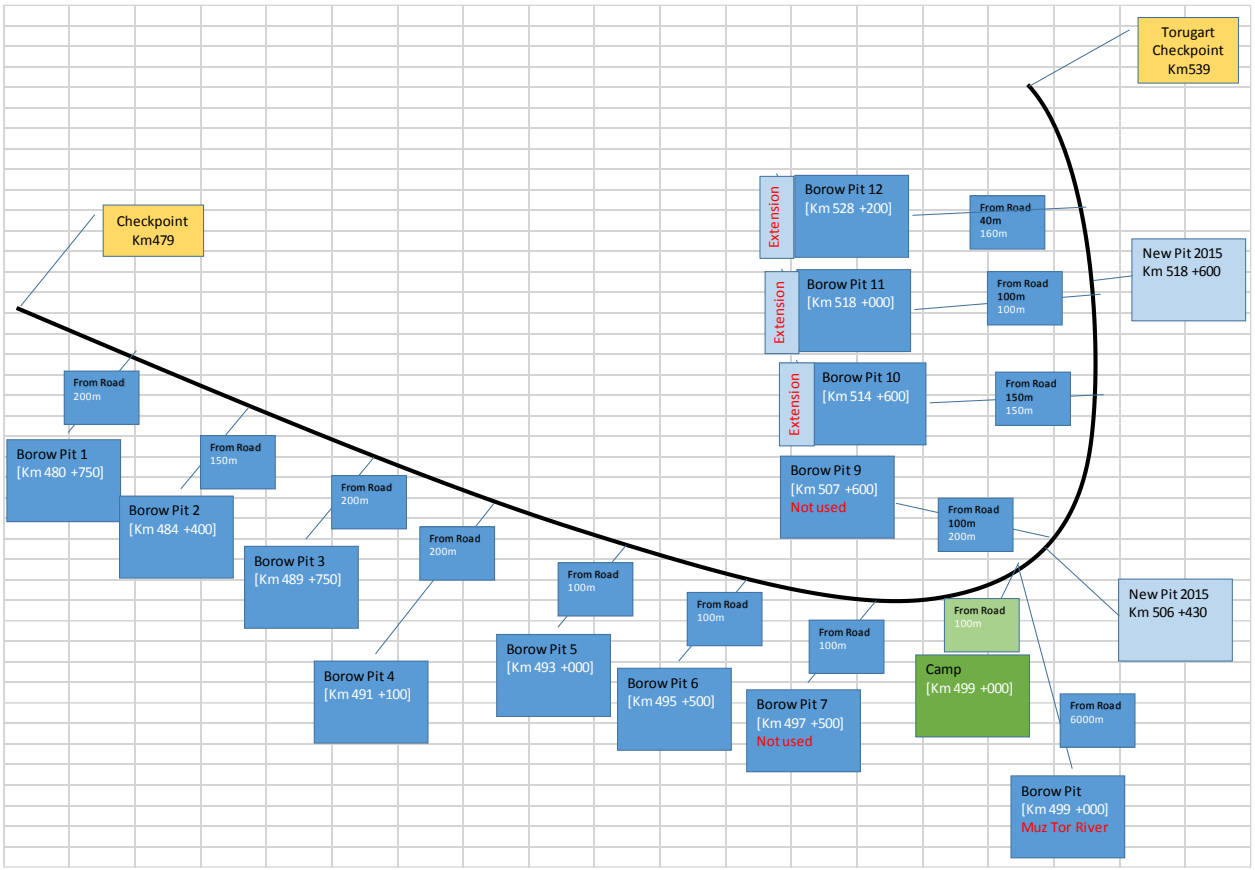
	Spill Response	RMU Spill response team	Personal safety, contain, control and remove. An introduction to the practices of spill control	22 September 2015	Dr Green (IPIG) assisted by A Taylor (TERA)	Spill control equipment.	Spill control equipment including PPE (personal protection equipment) specified and procured
	Spill Response	RMU Spill response team	Practical module building on classroom workshop in October (See Annex 6)	24 May 2016	Dr Green (IPIG) assisted by A Taylor (TERA)	Spill control equipment including PPE (personal protection equipment) handed over	n/a
Procurement outstanding	Management of KJSNR	KJSNR management	Workshop for Planning Ecological Monitoring at Chatyr-Kul	25 May 2016	Dr Green (IPIG) assisted by A Taylor (TERA)	Water quality monitoring equipment procurement outstanding	Need for laboratory in Naryn and trained professional to operate and maintain equipment. SAEPF agreed to take on this issue.
	Management of KJSNR	KJSNR management	Workshop on Survey Design for Ecological and Water Quality Monitoring at Chatyr-Kul and design and use of databases	26 May 2016	Dr Green (IPIG) assisted by A Taylor (TERA)	Water quality monitoring equipment procurement outstanding	
	Management of KJSNR	KJSNR management	On site training in Ornithological monitoring – North side of Lake.	7 Jun 16	E Shukerov (Tera NES) assisted by A Taylor (TERA)	4WD being actively used by KJSNR	n/a
	Use of Boat	KJSNR	Two modules: (i) Basic boat safety; and (ii) Basics of outboard engine maintenance	Sept 2016	Supplier	Boat, support equipment handed over to KJSNR 27 Nov 2016	On-water training to be scheduled in Q2 2017.
	Water Quality	KJSNR	How to calibrate use and maintain equipment	Sept 2016	Supplier (tbc)	Equipment and preferred supplier identified. Retendered Dec 2016	SAEPF have prepared lab and appointed technician
	On site training in the use of spill control equipment	RMU	Using spill control equipment in a site situation. Using constructed spill controls in KJSNR	September 2016	Dr Green (IPIG) assisted by A Taylor	Equipment procured and handed over. Spill controls constructed.	Training carried out 23 September 2016

VIII. ANNEX 4 - ORGANIZATION CHART FOR ENVIRONMENTAL MANAGEMENT (2016 SEASON)



IX. ANNEX 5 - STATUS OF BORROW PITS - JUNE 2016 AUDIT

Figure 40: Location of Borrow Pits



CAREC Transport Corridor 1 (Bishkek – Torugart Road) Project 3 - BNT3 – Km 479 to 538

Borrow Pit Restoration Audit

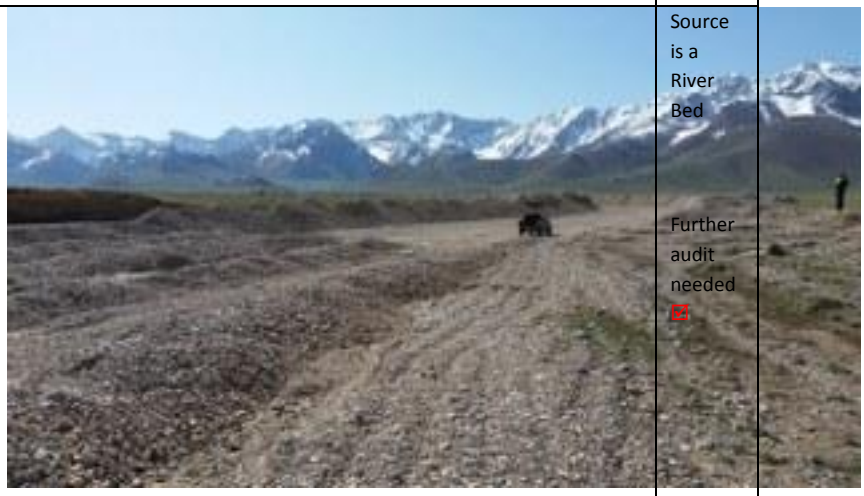
Date of Audit: 2 Jun2 2016

Time of Audit: 08:45

Weather at Audit: Sunny and bright

Present			
1	Nurdinov Nurlan	Environmental Officer	China Road and Bridge Corporation (CRBC)
2	Andrew Taylor	International Environmental Specialist	TERA International Group Inc. (TERA)
3	Eric Shukerov	National Environmental Specialist	

Restoration followed the CRBC Borrow Areas Re-cultivation Project Under the CAREC Transport Corridor 1 (Bishkek Naryn Torugart road) Project 3 Km 479 to 538 (Village At Bashy 2015) approved by SAEPF 23 October 2015 (Ref No.023/302 signed Kalybek uulu Bolotbek, Chairman of the Naryn Regional Management, State Agency on Environmental Protection and Forestry).

Pit #		Km	Checklist	Photos taken on 2 June 2016 (unless stated).	Other
B 1	Outside KJSNR	480+750 R	Re-contoured to Restoration Plan All work complete Note. Additional levelling of the surplus material has been carried out since photo was taken		Source is a River Bed Further audit needed ☒

B 2		484+400 R	Re-contoured to Restoration Plan All work complete Note. TERA has requested some additional re-contouring of the surplus material on the southern edge of the pit.		Further audit needed ☑
B 3		489+750 R	All work complete Re-contoured to Restoration Plan Note. This pit is identified in the restoration plan for the disposal of surplus inert material (e.g. out of specification products, unused sands and gravel, etc.)	 	Further audit needed on completion of any surplus material being disposed to this pit ☑
B 4		491+100 R	Re-contoured to Restoration Plan All work complete		River Bed Further audit needed ☒
B 5		493+000 R	Re-contoured to Restoration Plan All work complete		Further audit needed ☒

					
B 6		495+500 R	Re-contoured to Restoration Plan All work complete		Further audit needed ☒
B 7		497+500 R	Not used		Not used
		499+300 L	Re-contoured to Restoration Plan All work complete Note. New pit added for the 2015 construction season		Further audit needed ☒