

Environmental Monitoring Report

April 2012

UZB: Talimarjan Clean Power Project

Prepared by Uzbekenergo _____ for the Asian Development Bank.

ABBREVIATIONS

TPP	–	Talimarjan Power Plant
CCGT	–	Combined Cycle Gas Turbine
PMU	-	Project Management Unit
SPS	–	Safeguards policy statement
EIA	-	Environmental impact assessment
NPC	-	Nature Protection Committee
EMP	-	Environmental Management Plan
EPC	-	Engineering, Procurement and Construction
NES	-	National environmental specialist
IES	-	International environmental specialist
CDM	-	Clean Development Mechanism
KMK	-	Karshi Main Kanal

WEIGHTS AND MEASURES

MW	–	Megawatt
km	–	Kilometer
°C	–	Celsius degree

GLOSSARY

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NOTE

In this report, "\$" refers to US dollars.

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I. Background and Objective

The Government of Uzbekistan requested ADB to provide a loan for the country's power supply efficiency. The Talimarjan Clean Power Project (the project) will be part of the first generation of combined cycle gas turbines in the country. The project is located in Kashkadarya Province of Uzbekistan, 440 km south west of Tashkent. The site is an existing gas fired power plant, which currently generates 800 megawatts (MW). The project will install two additional combined cycle gas turbine (CCGT) units of about 450 MW each at the site.

Construction of CCGT units is planned for the expansion of TPP in order to improve the overall efficiency and environmental performance of Uzbekenergo's generating activities across the country. The most advanced and efficient CCGT units available in the 370-450 MW range are being considered for this project.

Based on ADB's safeguards policy statement (SPS), the Project is classified as follows: (i) environment (category A) – environmental impact assessment (EIA), (ii) involuntary resettlement (category C) – no actions, and (iii) indigenous peoples (category C) – no actions. Therefore, an environmental clearance from ADB was obtained in December 2009.

According of Decree Cabinet of Ministry of Republic of Uzbekistan № 491 «On government ecological expertise» the Project is classified as a class 1 Project (is attached in appendix 1) Under the Uzbekistan Environmental Legislation. The environmental clearance was obtained from Nature Protection Committee (NPC) on 5 October 2009 (is attached in appendix 2)

The environmental impact assessment (EIA) has been prepared to meet the requirements of the Uzbekistan Environmental Legislation and includes some additional sections required to meet ADB environment policy requirements. The EIA was disclosed on 15 December 2009. Two rounds of public consultations were held prior to project appraisal. The environmental sensitivity of the Project site and its surrounds is low. Town of Nuristan is the only community close to the plant. There are houses of employees of the Talimarjan TPP. The nearest settlements are over 5 km away. The Project's key environmental issues are **air quality and emissions, noise impacts** on the Nuristan settlement and **water management**. The objective of this report is to provide a progress in implementing Environmental Management Plan and Environmental Monitoring Plan (EMP) as stated in the Environmental impact. This Report was prepared to cover the period of July to December 2011.

II. Status of the Project

In this review period, the Project is at pre-construction stage. The procurement process is ongoing, receipt of Engineering, Procurement and Construction (EPC) contract bidding offers of first stage was closed on 14.03.2011 at 10:00 a.m. There were 10 bidder received. On 16.05.2011 bidding committee transferred examination of assessment results of technical part of bidding offers to the end of May 2011. During this period the review to evaluate the technical proposals and Bidders' eligibility and qualifications to undertake the works was carried out against the Employer's requirements included in the technical specification of the First Stage bidding documents.

At 24.10.2011 there was meeting of Tender Committee N 6 on which was approved the list of bidders allowed for the second stage of biddings. 4 bidders are approved for the biddings at the second stage.

III. Implementation of Environmental Management Aspect Related with the Project

The construction works has not yet started. Therefore, the monitoring of the implementation of EMP focuses only on preparatory activities, which include:

1. Recruitment of Environmental Specialist

At the pre-construction stage, as it is stated in the EIA document that the PMU will have the safeguard unit that will be responsible to ensure that all Government environmental requirement will be incorporated into relevant specifications and ensure that the bidding document and contract document will include environmental safeguard requirement.

The **National environmental specialist (NES)** has been recruited since Feb 2010. The NES will work for the all duration of project implementation. The responsibility of NES is mainly on day to day activities on monitoring the implementation of the environmental management plan (EMP), which include assisting international environment specialist in preparing monitoring report, dealing with any complaint from affected people, coordinating with civil work contractor and engineer to ensure that all environmental problems raised during the construction stage are properly addressed. National consultant is establishes the contacts with ecologist of TPP for agreed (harmonized) execution of existing and future systems and procedures on basis (EMP).

National consultants also conduct work on monitoring or implementation of CDM component of the project (Clean Development Mechanism).

The **International environmental specialist** (IES) has not yet been recruited. At 25.11.2011 between SJSC Uzbekenergo Uzbekistan sand "Corporate Solutions Consulting Limited" (United Kingdom) / "Mott MacDonald Limited" (United Kingdom), was signed contract for importing services for administration and implementation of the project«Talimarjan Power Station Expansion Project – Construction of two units 450MW each CCGT» According this contract is envisaged the recruitment of International consultant on ecology which has the following responsibilities:

The Terms of reference of the International consultant covers developing standard operation procedure to implement EMP, and to carry out monitoring of environmental quality, guide the NES in working with contractor and engineer, and handling and resolving complaint from affected people, if any. The IES will be the main environmental focal point to ensure that environmental concerns of the Talimarjan are properly managed. He/ She will ensure that all report and documents on environmental management of Talimarjan are well prepared. The IES will also responsible to coordinate with other government agencies dealt with environmental concerns of Talimarjan project. The contract shall be effective at March 2012.

2. Environmental Requirement in the Bidding Document, Evaluation of Bidding, and Contract Document

The Bidding document cover EMP requirement from EIA report as well as environmental requirement described in the clearance from the NPC. The chapter 8 of the bidding document described in detail the responsibilities of contractor, and Talimarjan as the owner of the project.

Contractor's Responsibilities

The Contractor shall (a) establish an operational system for managing environmental impacts, (b) carry out all of the monitoring and mitigation measures set out in the Environmental Impact Assessment (EIA) and the Environmental Management Plan (EMP).

The Contractor shall submit to the Employer semi-annual reports on the carrying out of such measures.

The Environmental Requirement in the Bidding Document is attached in appendix 3.

3. Other environmental related works

Institutional strengthening program, such as training, and assessing the gaps identified in the EIA will be undertaken after the recruitment of international consultant.

IV. Conclusions and Recommendations

The monitoring show that environmental requirement at the pre-construction stage have been partly implemented. However, the full compliance on implementation of EMP will be comprehensively done after the recruitment of IES.

This semiannual environmental monitoring report covers the period of July-December 2011, and therefore the next report will cover the period of January – June 2012, and will be submitted to ADB not later than August 2012.

Decree of

Cabinet of Ministry of Republic of Uzbekistan.

On Confirmation of Government Ecological Expertise in Republic of Uzbekistan

In accordance with Action program for executing the of Decree of President of Republic of Uzbekistan dated 2 June of 2000 N UP – 2612 “Measures for implementing of Program of Liberalization and deepening of reforms in political, economic and spiritual areas of society and providing of the safety of country” and also for purposed of implementing the Law of Republic of Uzbekistan on “Ecological expertise” and implementing measures for development of legal-normative basis of providing of ecological safety Cabinet of Ministry approves:

1. To confirm:

Regulation on government ecological expertise of Republic Uzbekistan accorind the appendix 1.

List of activities according which is government ecological expertise is being carried out according the № 2.

2. Control for executing of this decree is on responsibility of deputy of Prime Minister of Republic of Uzbekistan T.H. Haltaeva.

Prime- Minister of Republic of Uzbekistan U.Sultanov.

Tashkent city

31 December 2001

№ 491

List

Of Types of Activities for which is government ecological expertise is made on.

Types of activities which at 1 category of influencing the environment (high risk)

1. Auto roads, subways railways, high speed roads and loading terminals of republican status.
2. Airports.
3. Base oil and oil products I category.
4. Reservoir with a capacity of over 200 million cubic meters.
5. Mining and processing plant capacity of over one million tons of ore per year.
6. Municipal waste landfills (for cities with populations of more than 200 thousand people.).
7. Hydroelectric power plants with a capacity of 30 MW.
8. Production of mining and mining-chemical raw materials to the volume of the rock mass production 2 million cubic meters. M / year or more, reclamation pits formed during extraction.
9. Extraction of fuel resources (oil, gas, coal, etc.).
10. Plants of ferrous and nonferrous metallurgy.
11. Leather-tanning business.
12. Sewage treatment plant capacity of more than 280 thousand cubic meters. m / day.
13. Power lines of republican status and national interstate status.
14. Machine-building Industry (Aircraft, Automotive, Tractor, motor building, etc.).
15. Designated storage or disposal of toxic wastes and tailings pond.
16. Incinerators.
17. Oil and gas pipelines of national importance.

18. Oil and gas refineries.
19. Dams.
20. Underground gas storage facilities.
21. Landfills leaching.
22. Enterprises using heap leach technology.
23. Enterprises Waste Processing I and II hazard classes.
24. Manufacture of accumulators, galvanic batteries and components.
25. The production of asbestos and asbestos products.
26. Manufacture of explosives.
27. Production of equipment or devices containing toxic substances regulated by international agreements.
28. Production, use and storage of radioactive materials (isotopes).
29. Manufacture of rubber and rubber products.
30. Production of glass containing toxic contaminants.
31. Manufacture of tobacco products.
32. Production of cement.
33. Reclamation of tailings ponds of toxic waste.
34. The warehouses of toxic chemicals of national importance.
35. Thermal power station and other installation for burning with thermal capacity 300 MW or more and also facilities with nuclear reactors.
36. Pharmaceutical factories (with the exception of enterprises on packaging of finished drugs).
37. Chemical complexes and factories.

State Committee for Nature Protection

2009 year 5 October

N 18/526

Conclusion

For the object – Environmental Assessment of implementation of the project «Talimarjan Power Station Expansion Project – Construction of two units 450MW each CCGT»

Employer – Talimarjan TPP

The Designer- Teploelectroproect

To director of Talimarjan TPP Basidov I.S.

To Chairman of Kaskadariaoblcompririodu Ashniezovy F.D.

To Acting director Teploelectorproekt Shoaismatovy C.E.

For consideration of Government Ecological Expertise has been submitted the material of the first stage of Environmental Assessment of planned expansion of Talimarjan Power Station Project with Construction of two units 370- 400MW each CCGT

The enterprise is located at Nishan district Kashkadarya Province of Uzbekistan. Near most of industrial site is village of energetics Nuristan is 1 km far to the north-east, and 1 km of east is rail road Karshi Termez , 7 km to the south is Karshi Main Kanal; to the immediate vicinity of the enterprise is pastures and arable agricultural land.

Talimarjan TPP is thermal condensing power plant. Presently at TPP is being exploited energy unit N 1 with installed capacity 800 MW/

The main departments of power plant is: boiler-turbine, electrical, chemical, central repair workshop, C&I, hydro technical facilities, testing and adjusting equipment; the auxiliary services such as : department of mechanics and transportation building-repair, gas (fuel) section, preparing and conducting repairs etc.

The main equipment of TPP is the boiler ТГ-805-С3, steam turbine К-800-20-5 with generator ТВВ -800-2. Steam producing capacity of boiler – 2600 ton per hour, the pressure of first steam – 255 kgs per square sm, the exhaust temperature of the steam – 545 C. There is starting heating boiler house. The main fuel at power station is natural gas. Smoke gases emitting of boiler of unit contain nitrogen oxide, Carbone monoxide and Benzoperylene are exhausted to the atmosphere via smoke stacks with height 270 m and diameter 6, 6 m from heating boiler house two pipes with heights 30m and 40 m. The sources of the exhausts with contaminating particles to the atmosphere is also: pipes of ventilating devices, deflectors of warehouses , venting valves of reservoirs for safekeeping of technical oils, benzene and diesel fuel, candle for blowing off gas pipes. Overall exhausts of contaminating substance is 2647, 2 ton. Maximal near earth concentration of nitrogen oxide outside of borders of power plant side is 0, 35 maximum contamination level (the limit is 0, 25 maximum contamination level) concentration of other ingredients is less than limit. Exceeding of allowable near-earth maximum contamination level of nitrogen oxide was recorded because of failure to planned by technical department of the bypass of smoke gases from 4 steam boilers of boiler house via main pipe of TPP. Upon completion of this planned technical measure it is forecasted to diminish allowable near- earth maximum contamination level of nitrogen oxide outside of borders of power plant till 0, 1 maximum contamination level.

For it is technical needs for TPP is used technical water from КМК for 2007 there was water intake of 578757 thousand cubic meters.

The design of the project envisages the expansion of Talimarjan TPP with two CCGT units :Gas turbine installation MS 9001 FA of General Electric with capacity 390,8 MW and Gas turbine installation V94.3 A2 Siemens with capacity 406 MW .The installation of CCGT units is planned instead of earlier envisioned steam turbine condensing unit N 2 with capacity 800 MW. After of operational acceptance of 2 planned CCGT units overall capacity of plant will be 1600 MW efficiency of CCGT shall be 57 % (efficiency of existing energy installation of energy system is 34-37%)

The construction site for 2 CCGT units is envisaged on TPP territory from west side of front side of main building.

CCGT shall operate on natural gas. Smoke gases are to be bypassed vie two individual smoke stack pipes with heights of 85 m and diameter 6.1 m. At CCGT is planned to utilize for burning of natural gas combustion chambers with dry low –toxic burners. Envisioned that such technical solution shall enable to diminish the

emission of nitrogen oxide in comparison with energy unit N1 and boilers of boiler house of TPP in 4,3 and 10 times correspondingly.

For the technical needs of CCGT shall be used the technical water from KMK. Upon launching the CCGT into operation the planned overall intake of the water shall be from KMK 578797 thousand cubic meter per year (permissible 710 281, 9 thousand cubic meter per year). The water shall be used in system of water cooling of the technological equipment and also shall be used in system of preparation for replenishment of losses in cycle of heat recovery steam generator.

Technical water supply of CCGT is envisioned by combined schematics: at summer- direct cooling, at winter – indirect cooling. For functioning at direct cooling schematics for technical water supply at the next stage of design necessary to define the type and quantity of cooling towers.

The waste water at CCGT initially shall be cleaned at existing at TPP cleaning facilities and further in volume of 6 cubic meters per hour shall flow at drain N 1 to the bypassing channel.

Upon launching into operation of two CCGT and taking into consideration of implementing the measure of bypassing of smoke gases from steam boilers of boiler house via existing pipe with height 270 m near- earth maximum contamination level of nitrogen oxide outside of borders of power plant is forecasted 0, 23 maximum contamination level (the limit is 0, 25 maximum contamination level).

Waste at TPP is produced while conducting the planned and preventive works. Black scraped metal and nonferrous scraped metal are submitted to Vtorchermet and Vtorcvetmet correspondingly. The waste also produced in process of water preparation and cleaning the drainage water, upon the regeneration of utilized transformer oil, turbine oil and also like the wiping materials upon technical maintenance of auto vehicles. Upon launching into operation of two CCGT is forecasted the production of the same kind and same quantity of waste like at the present situation.

The assessment of situation upon launching into operation of two CCGT of the situation related to the probable accidents at TPP has demonstrated that there is no exclusion of situations related to the big quantity of fire- hazard and explosives components. In the design is analyzed the situation of accident according the following scenario – spill over of oil at wear of parts of turbine with it is consecutive inflammation (ignition). Meanwhile at zone of irretrievable damage shall be personnel who maintain the main equipment of the station. In order to

minimize the probability of occurrence of accidents at CCGT is envisioned the automatic system of governance ensuring high maintenance reliability and implementation of technological protection and blocking, executing the current regimes of functioning of energy units.

The review of submitted documentation has demonstrated that implementing the project of construction of two units of CCGT at Talimarjan TPP with capacity 370-400 MW in comparison with construction of condensing energy unit N 2 shall reduce the gross exhausts of contaminating materials into atmosphere in 4,5 times ,reduce the emission of nitrogen oxide in 4,3 times reduce specific consumption of fuel from 310 gram per kw per hour till 222-225 gram per kw per hour and reduce emission of greenhouse gases on 1203443- 1269975 ton of CO₂ – equivalent per year, reduce the effluence of thermal water to KMK due to accepted indirect water supply system with cooling at ventilating cooling towers.

On the next stage of design it is necessary in order to reduce near- earth maximum contamination level of nitrogen oxide outside of borders of power plant till the level of limit one should provide bypass smoke gases from boilers ГМ-50 of boiler house via existing smoke pipe of TPP with height of 270 meter, and also to solve the issue of installing at all the organized points of exhausts of contaminating materials of atmosphere of the TPP the automatic systems of control.

Submitted documentation reflect the first stage of Environmental Assessment of the object of ecological expertise conforms to the requirements of the existing documentation for safeguarding the environment.

Till the completion of construction of two CCGT units at Talimarjan TPP it is necessary to elaborate in required order by legislation for submission to government ecological expertise The Statement of ecological consequences.

Government ecological expertise of Goskompriroda of the Republic of Uzbekistan agrees with draft of statement on environment assessment of expansion of Talimarjan TPP with construction of two Units of CCGT with capacity 370-400 MW.

Kashkadaria regional committee for nature protection is should foresee the control of executing the compliance to the legislation on the nature protection during the implementation of the object of ecological expertise.

Acting for first deputy of chairmen (signature) R.S. Habirov

Extract from

BIDDING DOCUMENT 2 of 3

Talimarjan Power Station Expansion Project, Construction of Two Units (400-450 MW each) Combined Cycle Gas Turbine, Talimarjan Thermal Power Plant.

6.2 Specification

Issued on: 15 November 2010

Invitation for Bids No.: SJSC/UzbekEnergo/ICB-2010-001

ICB No.: SJSC/UzbekEnergo/ICB-2010-001

Employer: State Joint Stock Company UzbekEnergo

Country: Republic of Uzbekistan

1.7 ENVIRONMENTAL AND OTHER SITE LEGISLATIVE REQUIREMENTS

Design and construction site based management plan (SBMP)

The Contractor must prepare and submit to the Employer an SBMP at a date agreed with the Employer.

The SBMP must detail daily operations and show how the commitments made by the Employer and any approvals, licences or authorisation issued for the Works are to be implemented and complied with including the conditions or requirements of any approvals of the development application (DA).

The SBMP must meet the requirements of ISO14001, including site job environmental analysis.

The SBMP controls and monitoring procedures which must be in place before work begins on site are:

traffic management plan

environment, including:

- ▶ noise management plan
- ▶ dust management plan
- ▶ air emissions management plan
- ▶ soil and erosion management plan
- ▶ stormwater management plan
- ▶ wastewater management plan
- ▶ hazardous materials management plan
- ▶ waste management and recycling plan.

emergency and contingency plan detailing procedures and training of staff to deal with emergencies

site landscaping and rehabilitation

induction

fire and safety

the workplace health and safety plan.

The SBMP must meet the requirements of ISO14001, including site job environmental analysis.

Legislative and statutory obligations

There are a number of legislative and statutory obligations that the Contractor will have to comply with.

They include requirements imposed by the DA in respect of:
air quality

noise

flora and fauna

oils and water

cultural heritage.

Air quality

The Contractor must guarantee NO_x and CO emissions from the plant.

Table **Error! No text of specified style in document.**-1: Emissions

Emission	Guaranteed Emission Levels	Guaranteed Emission Range	Load
NO _x	25 ppmvd (@15%O ₂ dry)	from minimum environmental load to 100% load	to 100% load
CO	10 ppmvd (@15%O ₂ dry)	from minimum environmental load to 100% load	to 100% load

The start up profile may need to adhere to DA limits.

Air temperature impact on personnel must be limited by safety standards for local conditions.

The HRSG stack must also be of sufficient height, to be declared by Contractor, to protect any personnel working on the HRSG.

Contractor to provide details on the options for the stack height configuration and NO_x emission controls.

Noise

The Contractor shall comply with the noise limit for the closest noise sensitive receptor in accordance with the Uzbekistan Regulation Construction Norms and Rules KMK 2.10.08-96 "Protection from noise". Day and night limits are provided below.

Receptor	Day (dBA)	Night (dbA)
Street	75	75
Inside dwellings	65	60

Guaranteed far field noise levels

The guaranteed far field noise levels LA10, adj, 10 mins at any existing noise sensitive receptor must not exceed the background measurements in Table 17-2 by more than 3 dB(A) when Talimarjan thermal power station and both CCGT units are operating and in any case shall not cause the values to exceed a limit of 75 dB(A).

Table **Error! No text of specified style in document.**-2: Noise level measurements

Receptor	Description	dB(A)
1	End of house #13	67
2	House #15 (5 m from wall)	66
2a	House #15, apartment 7 (4 th floor, open balcony)	64
3	Near to Talimarjan power plant gates	63
4	Inside railroad facilities yard	65
5	In front of switchyard	64

“LA10, adj, 10 mins” means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10% of any 10 minute measurement period, using Fast response.

Guaranteed near field noise level

The guaranteed near field noise level limit is 80 dB(A), nominally 1 metre from the noise source at locations where personnel may be working.

Thirty or more locations around the Works shall be selected by the Project Manager.

This limit shall not apply within noise limiting enclosures, such as the STG enclosure. But the noise limit of 80 dB(A) nominally 1 metre from the enclosure must be met.

Contractor must include in cost the appropriate noise abatement scheme to meet the above requirement.

Safety valves and Bypass valves

Safety valves, steam bypass valves and other noisy valves and devices must be fitted with silencers to maintain transient noise levels at an acceptable limit.

Flora and fauna

Prior to the finalization of the design site layout the Contractor shall seek advice from the Employer confirming the location of any protected flora and fauna areas on the site.

The Employer may nominate areas within the site that are to be considered as protected areas.

Fire suppression measures and equipment for construction site shall be provided in accordance with the relevant SNIIP Construction Norms and Regulations in the Employer's country.

The Contractor shall comply with all state permits, regulations and laws that apply to flora and fauna.

Within the area allotted for construction the vegetative soil layer (top soil) should be cut, transported and stored for future use during site remediation and landscaping.

According to the EPC contract the Contractor shall not disturb vegetative cover in non construction areas during the course of the contract.

Existing vegetation stands shall be considered to be protected areas.

Any damage must be repaired or reinstated at the Contractor's expense and to the satisfaction of the Employer.

Constructor shall not disturb native fauna without the prior written permission of the employer.

The Contractor shall liaise with the Employer before commencing any clearing of native vegetation.

Site control measures

Erosion control measures

Erosion control measures and silt collection measures will ensure that environmental values are protected during construction activities.

During construction soil erosion and sediment shall be controlled in accordance with requirements contained in environmental impact assessment. Temporary sedimentation pond/s shall be constructed on site for use during the construction period.

All storm water run-off from disturbed areas of the site will be directed to the temporary sedimentation pond using diversion bunds, drains or vegetated swales.

The pond shall be designed to allow sediment to settle out prior to discharge from the pond.

The discharge from the pond will be directed onto a stabilised area and will flow towards the drainage slope of the site.

If required, additional controls shall be applied to the discharge to limit the velocity of the discharged water.

Water quality of any discharge from the construction site and which enters any watercourse shall conform to national and international guidelines for water quality for the protection of aquatic ecosystems.

Construction activities

The following activities will be completed during before the main plant construction phase commences:

Bonded areas for storage of machinery, fuel, chemicals and construction materials;

Contained areas for stockpiling of topsoil and subsoil's;

Establish transport routes over disturbed land in order to remove unnecessary vegetation disturbance.

Build an access route into and out of the construction area that will be stabilized and clearly sign posted and have a security entrance;

Have a construction plan with staged development to minimize site disturbance;

Site drainage, sediment and erosion controls must be implemented and in place prior to or as soon as possible following the removal of any vegetation from areas draining to or from those control systems;

A truck wheel washes at the site exit;

Inspection shall be conducted in accordance with the State checklist for Inspection Procedures.

Construction erosion protection

The following measures to minimize erosion and mitigate potential adverse effect on water quality during construction are proposed:

The construction site boundary will be fenced off to prevent accidental vehicular movement outside the construction zone;

No vegetation clearing is to be undertaken within 50 m of high bank of each watercourse nominated on site. Where possible, existing vegetation will be retained and used to act as a filter for stormwater runoff.

Vegetation clearance should be undertaken in a manner to minimise the exposure of bare soil. Grass, root-stock, organic litter and vegetation debris should be retained where possible to minimise erosion potential;

The recovery and stockpiling of all excavated topsoil for later re-use in site revegetation;

Clean runoff from upstream undisturbed areas should be directed around all disturbed areas and stockpiles, using diversion bunds and catch drains;

Cleared topsoil and subsoil will be stripped and stockpiled separately, although the amount of topsoil will be limited;

Topsoil and subsoil will be formed into low mounds, no greater than 2 m in height, to maximize the reservation of the existing vegetation propagules mixed in with the soil. Revegetation over the surface of the top soil should be encouraged;

Stockpiles will be located away from drains and sediment control measures installed to prevent sediment loss from the stockpiles entering the storm water system;

Vehicles will be prevented from driving over the topsoil;
Progressive re-vegetation of disturbed areas or stockpiles should be carried out as soon as possible;
Regular inspection and maintenance of silt fences and other sediment and erosion control measures. Inspection and removal of collected material from erosion and sediment control measures should occur following rainfall events greater than 20mm;
Corrective action for any damage to control measures should be taken immediately.

Post construction

A restoration and landscaping plan shall be developed during the design phase of the project.
This shall include measures associated with the re-vegetation and landscaping of all remaining exposed areas using stockpiled soils and mulched vegetation with appropriate watering and maintenance until vegetation is suitably established.