

Ploce Port Authority

REPUBLIC OF CROATIA

TRADE AND TRANSPORT INTEGRATION PROJECT

(IBRD Loan No. 7410-HR)

ENVIRONMENTAL MANAGEMENT PLAN

for the reconstruction of the “C1B” Road

Ploce – February 2015

## Introduction

The main objective of the Trade and Transport Integration Project is to develop trade along Corridor Vc by improving the capacity, efficiency and quality of services on the southern end of Corridor Vc with particular focus on the port of Ploce and on coordination aspects among all corridor participants.

This is proposed to be achieved through:

(i) *Construction of new bulk cargo terminal, reconstruction of existing bulk cargo terminal to serve a purpose as a terminal container and supporting port infrastructure.* The works to be carried out are civil works for a bulk cargo terminal and a multipurpose/container terminal with supporting road/rail /energy infrastructure within the port area;

(ii) *Establishing electronic port community system.* Development and rollout of a modern electronic port community system, integrating all members of the port community into a seamless information system;

(iii) *Establishing concessions for new terminals.* Development and services required to support the successful implementation of the project (audit, procurement), to implement PPA business plan and establish the concession for new terminals.

## Objective

The main objectives of this **Environmental Management Plan (EMP)** are to:

- Review environmental due diligence procedures related to the reconstruction and rehabilitation of internal Port of Ploce Road, commonly marked "C-1", together with infrastructure and surrounding surfaces.
- Prepare mitigation measures and monitoring plan. The mitigation plan is designed to anticipate possible environmental impacts in design, construction and operational phase of the project, assess their significance and, furthermore, to describe actions and activities for mitigation of the significant activities. Monitoring part of the plan is focusing on particular impacts as well as prescribing procedures, activities, timeframe and frequency of the overview.

In addition to environmental due diligence, EMP encompasses review of social safeguards such as concerns over impacts to cultural heritage (including assessing the presence of cultural values, cultural land issues, cultural sites, "chance finds" during the construction phase, etc.) and health and safety issues (H&S; regulatory framework and best practices compliance).

The PPA is obliged to make an EMP, and the contractor is responsible for its implementation, or company that will perform the works of construction of the road C1B. The contractor is obliged to incorporate the measures prescribed by the EMP in their daily operational procedures. EMP is an integral part of tender documents for the construction of road.

The contractor is required to regularly report to the supervising engineer of the Ploce Port Authority on implemented measures, accidents, complaints and all relevant environmental protection during construction and to deliver all the requested data during the preparation of regular reports on the work which the PPA quarterly reports to the World Bank.

**Mitigation**

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
CONSTRUCTION	Dust	<p>Use existing licensed asphalt plants and stone quarries.</p> <p>When transporting dusting-prone materials the trucks (load) must be covered or the load must be sprayed with water and wet.</p> <p>Water the construction site and material storage sites as appropriate (in windy and dry conditions) e.g. during aggregate base construction.</p> <p>Apply wind fences/shields/protection whenever appropriate.</p> <p>If the strong wind occurs, the works with dust prone materials should be stopped (e.g. clearing and excavation, aggregate base piling, etc.).</p> <p>Apply time and quantity management to dust-prone materials. Do not keep large quantities on the site, or for a long period of time.</p> <p>Limit equipment/machinery and transportation vehicles operation speed at site (to 40 km/h).</p>	<p>Could be significant if construction is conducted in the dry period of the year</p>	<p>Contractor</p>	

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
	<b>Fumes and odor</b>	When transporting asphalt the truck load must be covered. Transportation of odorous materials (such as wastes, sludge, etc.) has to be on the covered trucks.	Not significant	Contractor	

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
	<p><b>Workers' H&amp;S</b></p>	<p>Contractor and subcontractors have valid operating licenses.</p> <p>The local construction and environment inspectorates and communities have been notified of upcoming activities.</p> <p>All legally required permits have been acquired for construction and/or rehabilitation and are kept on site.</p> <p>All work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment.</p> <p>Workers' personal protective equipment will comply with international good practice (obligatory wearing of hardhats at all times, masks and safety glasses as needed and prescribed, harnesses and safety boots).</p> <p>Appropriate signposting of the sites will inform workers of key rules and regulations to follow.</p> <p>Safe organization of bypassing traffic.</p> <p>Parts of the construction site that are not fenced should be marked with appropriate sign-posts or/and psychological fences (warning tapes).</p> <p>In the case of mining the mining company's team is consisted of well trained and competent employees.</p>	<p>Not significant</p>	<p>Contractor</p>	

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
	<p><b>Noise</b></p>	<p>Working hours are between 6 h and 19 h. In the case for need for night work necessary permits need to be obtained and ornithologist consulted.</p> <p>Contractor should use state of the art machinery with low level of noise emission.</p> <p>In the case of mining the contractor has to obtain permission for use of explosive substances in accordance with Article 16, Rule book on conditions and production of explosives (OG 55/09). The permission is obtained from Croatian Ministry of Internal Affairs. The public and all relevant authorities need to be informed ion the time and manner of mining.</p>	<p>Not significant</p>	<p>PPA Contractor</p>	

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
	<b>Biodiversity</b>	<p>Working hours are between 6 h and 19 h. In the case for need for night work necessary permits need to be obtained and ornithologist consulted.</p> <p>Limit/establish the working zone. The workers, machinery and vehicles can use only previously identified and agreed upon roads.</p> <p>Consult the ornithologist for the additional measures in construction.</p> <p>Environmental manager has to be present during the excavation and filling works. Before filling in, the excavated canals have to be checked for fauna and eggs by the environmental manager. Canals cannot be filled in before it is cleared of larger animals and eggs.</p>	Not significant	PPA Contractor	
	<b>Traffic management</b>	<p>Haul materials at off peak traffic hours.</p> <p>The workers, machinery and vehicles can use only previously identified and agreed upon roads.</p> <p>No materials or wastes should be kept on the roads.</p> <p>Part of the road is clear for purposes of port operations thus traffic regulation needs to be in place.</p>	Not significant	Contractor	



PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
	<b>Resource efficiency and landscape conservation</b>	Use existing licensed asphalt plants and stone quarries.	Not significant	Contractor	
	<b>Emissions to Air</b>	<p>Use of water with all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill and demolition activities which may cause dusting and particles emissions.</p> <p>Ensure all transportation vehicles and machinery have been equipped with appropriate emission control equipment, regularly maintained and attested.</p> <p>Ensure all vehicles and machinery use petrol from official sources (licensed gas stations) and on fuel determined by the machinery and vehicles producer.</p> <p>There will be no excessive idling of construction vehicles at sites.</p> <p>Haul materials at off peak traffic hours.</p> <p>Capacity of transport should be harmonized with the excavating capacity.</p>	Could be significant if construction is conducted in the dry period of the year	PPA Contractor	
	<b>Emissions to Water</b>	<p>Organize and cover material storage areas. Minimize storage of materials time and quantity wise.</p> <p>Isolate concrete, asphalt and other works from watercourses.</p> <p>All surface run-off water has to be removed</p>	Significant  Included in the project cost	Contractor	

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
		<p>and disposed in the way that would not jeopardize surrounding land, residential buildings and other constructions. In the case the design shows as inadequate for such task the developer or main engineers is obliged to supplement or change the design as well as apply the new solution.</p> <p>Wash trucks, other vehicles and machinery only in predefined suitable areas with water management and treatment (minimally oil and grease separators followed by the sedimentation or retention tank).</p> <p>Machinery and vehicles can be parked (manipulated) only on asphalted or concrete surfaces with surface runoff water collecting system. This water can then be either collected to retention basins or transported to a proper water treatment facility, or the water collecting system has to include oil separator and sedimentation tank.</p> <p>Prevent hazardous spillage coming from tanks (mandatory secondary containment system, e.g. double walled or bunded containers), construction equipment and vehicles (regular maintenance and checkups of oil and gas tanks).</p> <p>Temporarily on site stored waste should be covered or stored on the place only on asphalted or concrete surfaces with surface runoff water collecting system. This water should be collected to retention basins and transported to a proper water treatment.</p>			

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
		<p>Ensure proper handling of lubricants, fuel and solvents by secured storage and following MSDS</p>			
	<p><b>Waste Management</b></p>	<p>Waste collection and disposal pathways and licensed sites will be identified for all major waste types expected from site cleanup, demolition and construction activities.</p> <p>All construction waste will be collected and disposed properly by licensed collectors.</p> <p>The records of waste disposal will be regularly updated and kept as proof for proper management, as designed.</p> <p>Existing waste from the location should be removed prior to the construction works start</p> <p>Containers for all types of envisaged (and occurring) wastes on the site have to be available and properly marked (name and assigned waste key-code). A depot for temporary storage of waste materials needs to be identified and marked.</p> <p>Mineral (natural) construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and temporarily stored in appropriate containers. Depending of its origin and content, mineral waste will be reapplied to its original location or reused.</p>	<p>Not significant</p>	<p>Contractor</p>	

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
		<p>Whenever feasible the contractor will reuse and recycle appropriate and viable materials.</p> <p>Discarding any kind of waste (including organic waste) or waste water to the surrounding (especially to the sea and river) is strictly forbidden. Burning waste on site is also strictly forbidden.</p> <p>Construction waste will be disposed in accordance with Rule book on Waste Disposal (OG 117/07) and Rule book on Construction Waste Management (OG 38/08)</p> <p>Excavated materials and construction materials can be deposited only to pre-designated points. In this case appropriate water management needs to be applied in order to avoid erosion and landslides.</p>			

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
	<p><b>Toxic/Hazardous Materials and Waste Management</b></p>	<p>Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information.</p> <p>All hazardous substances should be kept in a leak-proof container to prevent spillage and leaching. This container should poses secondary containment system such as bunds (e.g. bunded-container), double walls, or similar. Secondary containment system must be free of cracks, able to contain the spill, and be emptied quickly.</p> <p>The containers with hazardous substances must be kept closed, except when adding or removing materials/waste. They must not be handled, opened, or stored in a manner that may cause them to leak.</p> <p>The containers holding ignitable, hazardous or reactive wastes must be located at least 15 meters from the facility's property line and at least 30 meters from the water line.</p> <p>Hazardous waste will be collected, transported and disposed by a licensed company contracted by the Contractor of works. The wastes are transported by specially licensed carriers and disposed in a licensed facility. Containers for all types of envisaged (and occurring) hazardous wastes on the site have to be available and properly marked (name and assigned waste key-code).</p> <p>Paints with toxic ingredients or solvents or lead-based paints will not be used.</p>	<p>Significant</p> <p>Included in the project cost</p>	<p>Contractor</p>	

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
	Soil	<p>Soil work and management will take into account metrological data and conditions when planned and carried out (e.g. temperature of the soil, humidity, snow, ice, etc.)</p> <p>Strip soil only as necessary and store/replace reuse post construction.</p> <p>Use of antifreeze and/or accelerator compounds is not allowed.</p> <p>Protect and restore non-construction areas. Design slopes and retaining structures to minimize risk, provide appropriate drainage and vegetation cover.</p> <p>Carry out surface drainage works to divert the rainwater that would erode the soil.</p> <p>Apply storm water management to minimize erosion and offsite sediment delivery to receiving waters.</p> <p>Parking site has to be respected following the defined place.</p> <p>Prevent hazardous spillage coming from tanks (mandatory secondary containment system, e.g. double walled or bunded containers), construction equipment and vehicles (regular maintenance and checkups of oil and gas tanks).</p>	<p>Significant</p> <p>Included in the project cost</p>	Contractor	

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
		<p>Machinery and vehicles can be parked (manipulated) only on asphalted or concrete surfaces with surface runoff water collecting system. This water can then be either collected to retention basins and transported to a proper water treatment facility or the water collecting system has to include oil separator and sedimentation tank.</p> <p>In the case of leakage, the contaminated soil should be and disposed as hazardous waste.</p>			
	<p><b>Material supply</b></p>	<p>Producer of asphalt, concrete, and the stone aggregate quarry has to obtain/hold all required working and emission permits and quality certifications.</p> <p>Producer of asphalt, concrete and the stone aggregate quarry has to present a proof of conformity with all national environmental and H&amp;S legislation.</p> <p>Ensure the subcontractor has all the necessary skills and experience and precautionary systems in place to prevent a wash off of bituminous materials (primer or primer binder).</p> <p>Water in bitumen emulsion production or concrete should not be contaminated with hazardous or toxic chemicals (however, technological water is preferred).</p> <p>Asphalt and bitumen emulsion application will take into account metrological data and conditions when planned and carried out (raining periods, overcast, cooler and</p>	<p>Not significant</p>	<p>Contractor</p>	

PHASE	ISSUE	MITIGATION MEASURES	COSTS	INSTITUTIONAL RESPONSIBILITY	COMMENTS
		<p>dumper weather, etc.)            Ensure all transportation vehicles and machinery have been equipped with appropriate emission control equipment, regularly maintained and attested.</p> <p>Bitumen emulsion is applied only to adequately compacted and swept surfaces with adequate moisture content.</p> <p>Positioning of the emulsion sprayer should be such so spaying beyond the area to be primed or primer sealed.</p> <p>Ensure that emulsion sprayers are well maintained, operated by trained crew and spray nozzles are operating correctly.</p> <p>Avoid windy conditions when spraying.</p> <p>Equipment should be cleaned in areas where there will be no impact to the environment or danger of surface run-off (e.g. areas where water is collected to retention basins and transported to proper water treatment, and waste is separated and appropriately disposed).</p> <p>All materials have to be approved by the site engineer.</p> <p>Materials temporarily stored on site should be protected and separated. HDPE pipes are not to be in touch or stored next to oil, coatings, solvents, etc.</p>			



**Monitoring**

PHASE	WHAT Parameter is to be monitored?	WHERE Is the parameter to be monitored?	HOW Is the parameter to be monitored?	WHEN Is the parameter to be monitored (frequency)?	WHY Is the parameter to be monitored?	COST	RESPONSIBILITY
<b>Construction</b>	Material Supply – Use existing asphalt and concrete plants, stone quarries	Supplier’s plant	Inspection	Before work begins	Assure compliance with environmental, health and safety requirements	Not significant	Contractor
	Material Supply – Possession of official approval or valid operating license for engaged quarries, asphalt plants, concrete producers.	Supplier’s plant	Inspection	Before work begins	Assure compliance with environmental, health and safety requirements	Not significant	Contractor
	Waste management Possession of license and other permits of the disposing site management company	Disposing site management company premises	Inspection	Before work begins	Avoid illegal dumping		Contractor
	Waste management Waste collectors – possession of operating permits and licenses	Submission of required documentation. On site.	Document review	Before work begins	Avoid illegal dumping, leakages and pollution		Contractor

<b>PHASE</b>	<b>WHAT</b> Parameter is to be monitored?	<b>WHERE</b> Is the parameter to be monitored?	<b>HOW</b> Is the parameter to be monitored?	<b>WHEN</b> Is the parameter to be monitored (frequency)?	<b>WHY</b> Is the parameter to be monitored?	<b>COST</b>	<b>RESPONSIBILITY</b>
	Asphalt transport Truck load covered	On site	Inspection	Regularly	Avoid dusting and spillages		Contractor
	Materials with odors will be covered during transportation	On site	Inspection	Regularly	Avoid dusting and spillages		Contractor
<b>Construction</b>	Water quality at water treatment outlets	On site positions K1 – CT outlet K2 - CBT outlet	Outsourced: Sampling, analysis, interpreting, recommendations	Quarterly	Reduce impact to aquatic flora and fauna	Not significant	PPA
	Dust prone materials are stored in minimal quantities and for minimal amount of time. Material is either wetted, or protected by wind fences. Speed of motorized vehicles at the site is limited to 40kmph Works that involve dust prone materials are stopped in the case of strong winds.	On site	Measures implemented and there are no traces of dusting.	Inspection	To prevent air pollution	Moderate	Contractor

<b>PHASE</b>	<b>WHAT</b> Parameter is to be monitored?	<b>WHERE</b> Is the parameter to be monitored?	<b>HOW</b> Is the parameter to be monitored?	<b>WHEN</b> Is the parameter to be monitored (frequency)?	<b>WHY</b> Is the parameter to be monitored?	<b>COST</b>	<b>RESPONSIBILITY</b>
	<p>Health and safety</p> <p>Required permits have been acquired</p> <p>Contractor and subcontractors have valid operating licenses as well as construction and rehabilitation licenses</p>	<p>Submission of required documentation.</p>	<p>Documents and permits are in place</p>	<p>Review prior to construction</p>	<p>Ensure safety and good conduct</p>	<p>Not significant</p>	<p>PPA</p>
<b>Construction</b>	<p>Health and safety :</p> <p>Appropriate signposting is in place</p> <p>Workers use protective equipment</p> <p>Traffic is organized to safely bypass working areas</p> <p>Local construction and environment inspectorates and communities have been notified of upcoming activities.</p> <p>Construction is either fenced or marked or fenced with the warning tapes.</p>	<p>On site</p>	<p>Inspection</p>	<p>Regularly</p>	<p>To prevent accidents</p>	<p>Moderate</p>	<p>Contractor</p>

<b>PHASE</b>	<b>WHAT</b> Parameter is to be monitored?	<b>WHERE</b> Is the parameter to be monitored?	<b>HOW</b> Is the parameter to be monitored?	<b>WHEN</b> Is the parameter to be monitored (frequency)?	<b>WHY</b> Is the parameter to be monitored?	<b>COST</b>	<b>RESPONSIBILITY</b>
	<p>Experts' opinions (biologist and ornithologist) have been included to making vibrating machines working schedule.</p> <p>Before filling in excavated canals they are checked for fauna and eggs.</p>	On site	Inspection	Regularly	To prevent accidents	Moderate	PPA Contractor
	<p>Mining team is well trained and experienced.</p> <p>Mining permissions are obtained. All relevant bodies and the public have been informed in the mining time schedule.</p>	At contractor's premises	Document review	Before works	To prevent accidents	Insignificant	Contractor
	<p>Working hours stated in the permit are respected</p> <p>In the case of night work ornithologist is consulted and all permits are obtained</p> <p>Working zone is established</p>	On site	Inspection	Regularly	To prevent disturbing of the wildlife and local community	Not significant	Contractor and PPA

<b>PHASE</b>	<b>WHAT</b> Parameter is to be monitored?	<b>WHERE</b> Is the parameter to be monitored?	<b>HOW</b> Is the parameter to be monitored?	<b>WHEN</b> Is the parameter to be monitored (frequency)?	<b>WHY</b> Is the parameter to be monitored?	<b>COST</b>	<b>RESPONSIBILITY</b>
	<p>Materials are hauled during the non-peak traffic hours</p> <p>Capacity of the transport is harmonized with the capacity of excavations (no half empty trucks nor too much traffic)</p> <p>No excessive idling of construction vehicles on site</p> <p>No materials and wastes are kept on the road.</p>	On site	<p>Documentation review</p> <p>Inspection</p>	Regularly	To prevent congestions and manage resources (fuel) efficiently and reduce air emissions	Not significant	Contractor
<b>Construction</b>	<p>Vehicles/machinery/equipment are have been attested and equipped with emissions control equipment and use prescribed fuel.</p> <p>Fuel is purchased at licensed gas stations</p>	On site	Documentation review	Regularly	To use resources (fuel) efficiently and reduce air emissions	Not significant	Contractor
	<p>Watercourses are protected from works</p> <p>Storage of materials is minimized time and quantity wise. Materials are separated and covered if appropriate.</p>	On site	Inspection	Daily	Ensure water quality and minimize impact to nature	Moderate	Contractor

<b>PHASE</b>	<b>WHAT</b> Parameter is to be monitored?	<b>WHERE</b> Is the parameter to be monitored?	<b>HOW</b> Is the parameter to be monitored?	<b>WHEN</b> Is the parameter to be monitored (frequency)?	<b>WHY</b> Is the parameter to be monitored?	<b>COST</b>	<b>RESPONSIBILITY</b>
	Trucks are washed, parked or manipulated only in designated places equipped with oil and grease separators. This applies to fuel tanks, hazardous compounds, solvents, and other toxic substances.	On site	Inspection	Regularly	Ensure water quality and minimize impact to nature	Moderate	Contractor

PHASE	WHAT Parameter is to be monitored?	WHERE Is the parameter to be monitored?	HOW Is the parameter to be monitored?	WHEN Is the parameter to be monitored (frequency)?	WHY Is the parameter to be monitored?	COST	RESPONSIBILITY
	<p>All surface run-off water is removed and disposed in a safely manner</p> <p>All hazardous substances are kept in a leak-proof container to prevent spillage or leaching. The container has a secondary containment system e.g. double walled or are bunded containers. They are labeled with detailed composition and handling information.</p> <p>Construction equipment and vehicles are regularly maintained. These are parked only on denoted surfaces with runoff collecting systems (connected to oil separators).</p> <p>Temporarily on site stored waste is covered or stored on the place only on asphalted or concrete surfaces with surface runoff water collecting system. This water should be collected to retention basins and transported to a proper water treatment.</p> <p>Lubricants, fuels, solvents and other hazardous chemicals are kept in secured storage and following MSDS.</p>	On site	Inspection	Regularly	Ensure water quality and minimize impact to nature	Moderate	Contractor

PHASE	WHAT Parameter is to be monitored?	WHERE Is the parameter to be monitored?	HOW Is the parameter to be monitored?	WHEN Is the parameter to be monitored (frequency)?	WHY Is the parameter to be monitored?	COST	RESPONSIBILITY
	<p>Waste collection and disposal pathways are identified, recorded and archived for all waste types occurring during the construction.</p> <p>Existing waste from the location is removed before the works commenced.</p> <p>Containers are provided for all anticipated waste categories (and those that occur during the works) and are marked with appropriate key-code.</p> <p>Mineral (natural) construction and demolition wastes is separated from general refuse, organic, liquid and chemical wastes by on-site sorting and temporarily stored in appropriate containers. Depending of its origin and content, mineral waste is reapplied to its original location or reused.</p> <p>Reuse and recycling is applied when possible.</p> <p>Waste disposal and burning on site is not practiced.</p> <p>A depot for temporary storage of waste is post-marked.</p> <p>Excavated materials are deposited on the pre-defined and marked points.</p>	On site	<p>Inspection</p> <p>Documentation review</p>	Regularly	Ensure water quality and minimize impact to nature	Moderate	Contractor



PHASE	WHAT Parameter is to be monitored?	WHERE Is the parameter to be monitored?	HOW Is the parameter to be monitored?	WHEN Is the parameter to be monitored (frequency)?	WHY Is the parameter to be monitored?	COST	RESPONSIBILITY
	<p>The containers with hazardous substances kept closed, except when adding or removing materials/waste. They are be handled, opened, or stored in a manner that may cause them to leak.</p> <p>The containers holding ignitable, hazardous or reactive wastes are located at least 15 meters from the facility's property line and at least 30 meters from the water line.</p> <p>The wastes are transported by specially licensed carriers and disposed in a licensed facility.</p> <p>Paints with toxic ingredients or solvents or lead-based paints are not used.</p>	On site	Inspection	Regularly	Ensure water quality and minimize impact to nature	Moderate	Contractor

<b>PHASE</b>	<b>WHAT</b> Parameter is to be monitored?	<b>WHERE</b> Is the parameter to be monitored?	<b>HOW</b> Is the parameter to be monitored?	<b>WHEN</b> Is the parameter to be monitored (frequency)?	<b>WHY</b> Is the parameter to be monitored?	<b>COST</b>	<b>RESPONSIBILITY</b>
	<p>In planning the soil work metrological data are taken into account.</p> <p>Soil is removed only as necessary and stored/replaced/ reused.</p> <p>Appropriate drainage and vegetation cover is designed.</p> <p>Drainage works are carried to divert the rainwater that would erode the soil.</p> <p>Storm water management is applied to minimize erosion and offsite sediment delivery to receiving waters.</p>	On site	Inspection	Regularly	Landslides and erosion prevention	Significant	Contractor
	<p>Antifreeze and/or accelerator compounds are not used.</p> <p>Polluted soil is removed and properly disposed</p>	On site	Inspection	Regularly	Soil pollution prevention	Significant	Contractor

PHASE	WHAT Parameter is to be monitored?	WHERE Is the parameter to be monitored?	HOW Is the parameter to be monitored?	WHEN Is the parameter to be monitored (frequency)?	WHY Is the parameter to be monitored?	COST	RESPONSIBILITY
	<p>Materials supply</p> <p>Producer of asphalt, concrete, and the stone aggregate quarry has to obtain/hold all required working and emission permits and quality certifications.</p> <p>Producer of asphalt, concrete and the stone aggregate quarry has to present a proof of conformity with all national environmental and H&amp;S legislation.</p> <p>Ensure the subcontractor has all the necessary skills and experience and precautionary systems in place to prevent a wash off of bituminous materials (primer or primer binder).</p>	In suppliers premises	Documents review	Prior to ordering	Supply chain management, CSR, Quality management	Not significant	<p>Contractor</p> <p>PPA</p>

PHASE	WHAT Parameter is to be monitored?	WHERE Is the parameter to be monitored?	HOW Is the parameter to be monitored?	WHEN Is the parameter to be monitored (frequency)?	WHY Is the parameter to be monitored?	COST	RESPONSIBILITY
<b>Construction</b>	<p>Bitumen emulsion is applied only to adequately compacted and swept surfaces with adequate moisture content.</p> <p>Positioning of the emulsion sprayer is such so spaying beyond the area to be primed or primer sealed.</p> <p>Metrological data and conditions in planning asphalt and bitumen emulsion application.</p> <p>Emulsion sprayers are well maintained, operated by trained crew and spray nozzles are operating correctly.</p> <p>Equipment is cleaned in areas where there will be no impact to the environment or danger of surface run-off.</p> <p>Water in bitumen emulsion production is not contaminated with hazardous or toxic chemicals.</p> <p>Materials should be kept separately.</p>	On site	Inspection	Regularly	Soil and water protection: resource efficiency	Not significant	Contractor

PHASE	WHAT Parameter is to be monitored?	WHERE Is the parameter to be monitored?	HOW Is the parameter to be monitored?	WHEN Is the parameter to be monitored (frequency)?	WHY Is the parameter to be monitored?	COST	RESPONSIBILITY
	<p>On site cement plant: Petroleum is kept on site in the secondary containment system tanks such as bunds (e.g. bunded-container), double walls, or similar.</p> <p>Manage storm-water in a way it does not reach the natural recipient unpurified (water should be collected and transported to water treatment unit)</p> <p>All waste is separately collected and disposed to a licensed facilities. Containers, marked, should be available on the site for hazardous and non hazardous wastes.</p> <p>Materials such as lime, sand or stone have traceable origin and to licensed quarries.</p> <p>Water used in production is toxins-free and technological water if possible.</p> <p>Quality control is in place. Returns are minimal.</p> <p>Staff members are well trained and knowledgeable</p>	On site	<p>Inspection</p> <p>Document review</p>	Regularly	Soil and water protection: resource efficiency	Not significant	Contractor

PHASE	WHAT Parameter is to be monitored?	WHERE Is the parameter to be monitored?	HOW Is the parameter to be monitored?	WHEN Is the parameter to be monitored (frequency)?	WHY Is the parameter to be monitored?	COST	RESPONSIBILITY
Construction	<p>Transportation trucks are washed only in designated places that are equipped with water collectors and water treatment units.</p> <p>Transportation vehicles are parked only in designated places that are equipped with oil separators.</p>	On site	Inspection	Regularly	Soil and water protection	Not significant	Contractor