T.C. ULAŞTIRMA VE ALTYAPI BAKANLIĞI

EPC Contractor

REC ULUSLARARASI

PROJECT

NORTHERN MARMARA MOTORWAY SECTION 8 PPP PROJECT

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Abbreviations and Acronyms

CESMP	Construction Environmental and Social Management Plan
CLO	Community Liaison Officer
BAP	Biodiversity Action Plan
EBRD	European Bank for Reconstruction and Development
EBRD PR	EBRD Performance Requirement
EHS	Environmental, Health, and Safety
ESHS	Environmental, Social, Health and Safety
EPA	Environmental Protection Agency
EPRP	Emergency Preparedness and Response Plan
EPC	Engineering, procurement and construction
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management and Monitoring Plan
ESMS	Environmental and Social Management System
GIIP	Good International Industry Practice
GN	Guidance Note
HSE	Health, Safety and Environment
IFC	International Finance Corporation
ISO	International Organization for Standardization
KPIs	Key Performance Indicators
LMP	Landscape Management Plan
NCR	Non Compliance/Conformance Report
NMM	Northern Marmara Motorway
OHS	Occupational Health and Safety
PPE	Personal Protective Equipment
IFC PS	IFC Performance Standard
REC	REC International
SDSs	Safety Data Sheets
SPV	Special Purpose Vehicle (Nakkaş Otoyol A.Ş.)
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
WHO	World Health Organization

1. PURPOSE

This Landscape Management Plan was prepared by the EPC Contractor “REC International” (hereafter called “REC”) which is applicable to the construction phase of the Project.

The ultimate responsibility for its implementation resides with REC, and REC’s sub-contractors & suppliers will be required to demonstrate compliance of their activities against this plan. This plan is intended to be ‘living document’ that can be refined and modified as situations change.

The purpose of this plan is to guide the reinstatement of temporary work areas, temporary infrastructure and the construction RoW (Right of Way) for the Northern Marmara Motorway Section 8 PPP Project (NMM-Nakkaş-Başakşehir Motorway).

2. SCOPE

This Plan covers the procedure for the post-construction reinstatement of the construction RoW and all temporary project areas (work areas and infrastructure) used to support construction, including (but not limited to) construction camps, maintenance areas, service roads, borrow pits, dumping sites, quarries, crusher sites, laydown areas, waste management and disposal sites, temporary storage locations for soil stockpiles, and damaged verges.

The following key objectives apply:

- Implementation of the Landscape Management Plan to ensure the reinstatement of land disturbed by construction activities back to a condition equivalent or similar to its original pre-construction character.
- The main purpose is to meet the goal of ‘no harm to the environment’.
- The Project, therefore, seeks to proactively manage the reinstatement process as follows:
  - Present a clear framework of the tools and processes in place to guide reinstatement and landscape management;
  - Outline actions necessary for effective reinstatement management taking into account natural processes and technical feasibility;
  - Define the measures necessary for the overall reinstatement management;
  - Incorporate the requirements of the Construction Environmental and Social Management Plan (CESMP), international and national standards, and stakeholder requests;

- Achieve long-term stabilization of slopes and embankments soils against soil erosion;
- Minimize the duration of disturbance through progressive and timely rehabilitation actions;
- Define roles and responsibilities for implementing mitigation measures;
- Outline monitoring and auditing requirements; and
- Describe additional measures required to implement Good International Industry Practice (GIIP).

This Landscaping Management Plan has been developed with references to the CESMP for the project, the 'Habitat Restoration and Recreation Plan' and the 'Soil Management Plan'.

3. REFERENCES

3.1 Relevant National Legislation

Table 1. National legislation of relevance.

Title	Reg. , Gaz. Date
Environment Law	2872, 11/09/1983
Soil Protection and Land Use Law	5403, 19/07/2005
Regulation on Waste Management	29314, 02/04/2015
Regulation on Control of Soil Pollution and Point Source Polluted Fields	27605, 08/06/2010
Regulation on Health and Safety Conditions Regarding Use of Work Equipment	28628, 25/04/2013

REC and its contractors are responsible for reviewing relevant local legislation and requirements to capture all requirements.

3.2 Relevant International Standards and Guidelines

Table 2. **International standards/guidelines of relevance.**

Source	Document Title
IFC (2012)	IFC Performance Standards (PS) and Guidance Notes (GN) and in particular IFC PS3 and GN3: Resource Efficiency and Pollution Prevention
IFC (2007)	IFC General EHS Guidelines: including Environmental, Occupational Health and Safety, Community Health and Safety, and Construction and Decommissioning
IFC (2022)	IFC General EHS Guidelines for Cement and Lime Manufacturing: Occupational Health and Safety

Source	Document Title
IFC (2007)	IFC General EHS Guidelines: for Construction Materials Extraction Construction and Decommissioning
IFC (2007)	IFC General EHS Guidelines: for Toll Roads
IFC & EBRD	Common Note on Workers' Accommodation: Processes and Standards
EBRD (2019)	EBRD Environmental and Social Policy that inlcudes the Performance Requirements and in particular: Performance Requirement (PR) 3: Resource Efficiency and Pollution Prevention and Control
EBRD (2010)	EBRD Sub-sectoral Environmental and Social Guidelines: Building and Construction Activities
WHO (2019)	WHO recommended classification of pesticides by hazard and guidelines to classification, 2019 edition. Geneva: World Health Organization; 2020. Licence: CC BY-NC-SA 3.0 IGO.

REC and its contractors are responsible for reviewing relevant international standards, guidelines and requirements to capture all requirements.

3.3 Other Important References

Key documents used in developing this Plan are:

- CESMP developed by ERM (2022).

4. LINKS TO OTHER PLANS/PROCEDURES

This Plan is to be read and implemented in conjunction with the CESMP.

The following plans are also relevant and need to be read and implemented together with this Plan:

- Habitat Restoration and Recreation Plan REC-ÇYS-KMO-PL-15
- Soil Management Plan REC-ÇYS-KMO-PL-10
- Surface Water and Groundwater Management Plan REC-İSG-ÇYS-KMO-PL-09
- Cultural Heritage Management Plan REC-İSG-ÇYS-KMO-PL-08
- Chance Finds Procedure REC-ÇYS-KMO-PR-28
- Stakeholder Engagement Plan

- Community Health, Safety and Security Plan REC-İSG-KMO-PL-13
- Health and Safety Plan REC-İSG-ÇYS-KMO-PL-01
- Biodiversity Action Plan REC-ÇYS-KMO-PL-06

IMPORTANT: It is of CRITICAL IMPORTANCE to note here that the landscaping plan and 'Habitat Restoration and Recreation Plan' need to be read and implemented together, as there will certainly be some key areas where natural habitat will be restored or recreated within the road corridor/expropriation area and where the specific ecological requirements detailed in the 'Habitat Restoration and Recreation Plan' will likely supersede the measures or be complimentary to the measures detailed in this Landscape Management Plan. Careful coordination is therefore required.

5. ROLES AND RESPONSIBILITIES

SPV Senior Management

Has overall accountability for the Project on behalf of Nakkaş Otoyol A.Ş, including delivery in line with applicable national and Lenders standards.

Ensure allocation of sufficient resources for the Plan implementation including for ESHS organization, permitting, training, equipment and qualified personnel.

Ultimate responsibility for ensuring implementation of required corrective actions including in response to identified ESHS non-compliances or incidents.

Periodical review of the ESHS management effectiveness.

REC Project Manager

The REC Project Manager has the overall responsibility for the implementation of the Project activities stated in this plan. They will be suitably competent and have a strong understanding of construction best practice aligned with national law and applicable Lender requirements.

The REC Project Manager is accountable for overall ESHS performance and making the human and financial resources available to ensure compliance with Project ESHS requirements.

The REC Project Manager also has the following responsibilities:

- Ensure that all NMM managers and contractors understand and fulfil their plan-related responsibilities.

- Respond to monitoring findings and ensures implementation of remedial works as required.

REC Construction Manager

The Construction Manager is responsible for the implementation of ESHS mitigation measures contained within this plan through method statements and site working practices.

The Construction Manager will ensure that:

- Construction activities (undertaken by REC itself or by the subcontractors), are in compliance with Project ESHS requirements;
- All construction staff receive appropriate safety and environmental training, prior to commencement of work;
- A thorough investigation is carried out for any accidents or incidents which may occur;
- A self-regulatory review and/or audit of implementation of this plan is carried out on a regular basis.
- Relevant authorities are informed immediately in case of damages to utilities such as underground and aboveground electricity lines, water lines, gas lines, oil pipelines, etc.;
- The worksites are secured (secured trenches, temporary bridges, traffic controls, barricades, signs and warning lights, etc.); and
- Appropriate site boundary- and access controls are implemented near settlements to prevent unauthorized entry to construction or activity sites especially by children (e.g., fencing of construction section in the vicinity of settlements or communities).

Deputy Project Managers

- Responsible for the implementation and control of the Plan.
- Ensures that NMM Design Team integrates mitigation measures into the final project design.
- Participates in site inspections to plan and confirm the detailed design of site measures.
- Participate in inspections of remedial works.
- Reviews and approves detailed contractor plans and method statements incorporating HSE measures in accordance with this Plan.
- Ensures that all personnel involved in construction activities, including contractors, are adequately trained and informed of the requirements of the Plan.

- Participates in site inspections in the early stages of works at each section with the HSE Manager, Site Managers, and contractors.
- Reviews and approves HSE reports.
- Audit contractor/subcontractor performance.

REC E&S and H&S Managers

E&S and H&S Managers are responsible for the following:

- Monitoring and assurance of the EPC Contractor's subcontractors ESHS system performance and requirements of the Project.
- Developing CESMP and other ESHS plans and procedures and assures that Project requirements are considered.
- Reviewing subcontractors and suppliers ESHS documentation and ensure that they are aligned with Project ESHS requirements.
- Monitoring performance through Key Performance Indicators (KPIs), reports, audits, and meetings.
- Reporting on ESHS performance to REC Project management, Nakkaş Otoyol A.Ş ESHS Management, and other related parties.
- Establishing Emergency Response Teams (ERT) and defining roles and responsibilities of ERT members.
- Ensuring that all ESHS training needs are identified, provided and recorded.
- Disclosing relevant ESHS information to Project staff and public and coordinating activities for raising awareness.
- Supporting the Deputy Project Manager with ensuring that all personnel including contractors are adequately trained and informed on the requirements of this Plan.
- Leading site inspections with the NMM Deputy Project Managers to plan and confirm the detailed design of site measures.
- Preparing detailed contractor landscape management plan in accordance with this Plan, integrating measures into final design drawings and method statements to submit these to the NMM Deputy Project Managers.
- Leading weekly site inspections with contractors during construction phase.
- Auditing contractor/subcontractor HSE Performance.

- Managing the grievance mechanism regarding HSE subjects.
- Ensuring that workers are provided with necessary Personal Protective Equipment.
- Preparing weekly HSE Performance Reports.

REC Environmental Engineer and H&S Inspector

- Conduct daily ESHS inspections.
- Ensure that all construction personnel (including subcontractors) working or visiting the site understand the ESHS requirements of the Project and comply fully with them.
- Make sure that ESHS risk assessments are performed prior to the activities.
- Monitor subcontractors' ESHS performance, their compliance to the ESIA and ESHS plans.
- Report and record ESHS accidents or incidents to H&S Supervisor.
- Monitor that all personnel (including contractors) have undergone all necessary training.
- Assist subcontractors and suppliers to develop and implement their site specific plans and procedures.
- Monitor implementation of all relevant management plans and procedures, including on site.
- Track the impacts of the Project against the Project Objectives and Key Performance Indicators as defined in the Management and Monitoring Plans and work with the subcontractors where amendments to the mitigation measures are required.
- Identify breaches of management plans, recommend corrective actions.
- Stop work activities in the event of serious breaches of rules that may cause serious impacts on health and safety, environment and community or on the reputation of the Project. (All workers have the obligation to intervene in case of a dangerous situation and have to report to the supervisor).

REC E&S and H&S Foreman / Technician

- Performs periodic site inspections and reports identified nonconformities to E&S and H&S Managers.
- Ensures that all HSE related measures are undertaken at workplaces.
- Maintains records and keep an inventory.

Contractors/Subcontractors

- Implementing the various landscaping interventions according to this Plan.

6. GENERAL RULES AND IMPLEMENTATION

6.1 Overall objective

Areas cleared during construction for temporary use, such as borrow pits, camp areas, concrete batching plants and storage areas, will be restored, as soon as possible, with the goal of producing a stable vegetative cover (consistent with the original vegetation cover) to minimize soil erosion, dust and spreading of invasive alien species, and with the aim of restoring the original habitat to an equivalent or similar state as far as practically possible.

Note that biodiversity restoration objectives are not dealt with explicitly but are addressed more specifically in the 'Habitat Restoration and Recreation Plan', which also considers natural and critical habitat offset requirements.

6.2 Landscape design and planning

The issues that will have significant bearing on the success of landscaping and management are likely to be as follows:

- Earthworks
- Weed control and management
- Amount of existing vegetation that can be retained
- Integration of areas of ecological value (e.g. creeks, wildlife habitat and corridors, valued terrestrial vegetation and habitat)
- Incorporation of other dual values (e.g. flood storage requirements, stream hydrology, wildlife crossings planned)
- Topsoil protection and replacement
- Provision of seed and/or maintenance of seed bank
- Planting substrate and soil mixes
- Proper use of mulch
- Plant establishment and growth, including proper timing
- Prevention of third-party interventions by securing access to landscape areas

- Soil erosion prevention
- Slope stability
- Maintenance of planting.

Proper landscaping design and planning is therefore required, taking into account the following:

- Sensitive vegetation to be retained will be fenced or sign-posted before work commences on site, and as much vegetation as possible will be retained to maintain the integrity of the landscape and the visual screening already present.
- Temporary Working areas will be as small as practicable and areas chosen for the storage of materials will avoid areas of high visual impact to nearby residents/viewers and areas of high ecological value/sensitivity which mentioned in BAP.
- The areas outside of the Project's expropriated construction borders will not be occupied.
- Only indigenous vegetation (plant species) that are native to the region and local area will be used for restoration, soil improvement, erosion control, stream banks and habitat rehabilitation.
- Seeding and planting of grass shrubs and tree species typical of the local vegetation species, such as Mediterranean maquis/garrigue and mixed forest vegetation succession, will be used to ensure optimal ground cover.
- The action is expected to produce positive effects on local flora, fauna and habitats.
- At the end of the construction phase stream and river crossings will be fully rehabilitated, therefore effects on freshwater habitats are expected to be minimal.
- Planting mixes will be selected using native species and planting will be set out to establish new and enhance existing native habitats. The use of native species is important so that the Motorway planting will, over time, become almost indistinguishable from the vegetation naturally occurring in the surrounding area. Non-native species should only be used in locations where their presence is of local relevance, for example in urban areas to match any existing non-native planting.
- Only weed free mulch recycled from the slashing and clearing on the site will be used within landscape planting areas. Where an area has been identified as requiring mulch, and mulch is not available from onsite source, then a commercially available mulch blend can be used. Hydroseeding with mulch or adding tackifier to assist with improving adhesion may also be considered.

- Planting of native species in selected areas and habitats will be introduced to restore or compensate for lost natural habitats, in accordance with the 'Habitat Restoration and Recreation Plan'.
- Planting to occur outside of the dry season and avoiding adverse conditions such as prolonged drought periods.
- Re-vegetation will allow for reconnecting of hedgerows or areas of planting formerly severed as a result of the construction works in order to reinstate local landscape connectivity and character.
- Landscape design treatment will seek to restore regional identity where possible by enhancing landscape character.
- Opportunities to provide views out from the Motorway to the surrounding landscape will be taken into account in the landscape design.
- Breaks in Motorway planting will provide for views out whilst mitigating nearby residents of settlements from adverse visual impacts.
- Planting will be designed to visually screen road structures and earthworks from nearby residential dwellings and settlements.
- Planting treatments will be interrupted to open up key views and vistas for motorists, to reinforce local identity.
- In locations where noise mitigation barriers are to be installed, this will preferentially be introduced as plantation or engineered earth structures designed to fit or match the topography of the surrounding landscape.
- Ensure sites are left as safe, stable, non-polluting landforms for humans, native flora and fauna, and livestock use.
- Landscape planning must take into consideration the location and maintenance requirements of wildlife corridors (see Section 7.9.2 and Annex 13.4 of the CESMP).
- Minimize loss of land capability within agricultural areas.
- Assist in the minimization of long-term impacts to:
  - Environmentally sensitive areas
  - Regional and national biodiversity ecosystems
  - Ecological and biodiversity sensitive habitats [these are identified specifically in the Environmental and Social Impact Assessment (ESIA) report, the Construction

Environmental and Social Management Plan (CESMP), Biodiversity Action Plan (BAP) and Habitat Restoration and Recreation Plan).

6.3 Implementation

Step 1: Site stabilization

- Sites are to be inspected prior to reinstatement to assess their level of readiness.
- Stabilization works will be undertaken at sites where slopes/soils are identified as lacking stability, such as abandoned camp areas, waste disposal sites and other project locations that may pose a health and safety hazard to the community.
- Contaminated soil and/or waste materials on site will need to be removed and/or treated prior to proceeding with the reinstatement process.
- Any fallen trees may be chipped into mulch and stockpiled and composted for use as mulch on planting areas.
- Stripped grass may provide mulch and a source of grass seed to aid revegetation.
- The amount of bare disturbed soil should be kept to a minimum, and these areas should be re-vegetated quickly (as soon as construction works have been completed and temporary work areas vacated, temporary infrastructure has been removed, sites stabilized and prepared for planting) to prevent conditions promoting weed establishment.

Step 2: Reinstatement

- Temporary disturbance footprints that are no longer required for operational purposes are to be returned to the previous land use, or to a land use in accordance with landholder needs and regulatory requirements.
- Alternatively, this may involve providing an offset or creating an environment conducive to returning pre-disturbance biodiversity values (refer specifically to the ‘Habitat Restoration and Recreation Plan’).
- A phased development and restoration approach will be considered such that as each activity is completed at one section, areas shall be reinstated.

There are several methods available to the Project to carry out reinstatement and landscaping interventions/works which are included in Table 3.

Table 3. Key interventions for reinstatement of vegetation//habitat

Key Actions	Description
Topsoil Management	• Topsoil that is stripped and stored as part of construction activities is to be re-spread as part of stabilization and reinstatement activities. • Correctly preserved topsoil resources can provide viable source of seed-stock, biological life and nutrient conditions that assist with soil productivity and fertility, and thereby vegetation establishment. • Maintain the original soil layering and do not mix topsoil and subsoil layers. • Reinstate soils in the reverse order (subsoil, then topsoil). • Avoid compaction of soils, for example though excessive vehicle tracking, and rip soils where compacted to allow for vegetation growth.
Contaminated Land	• Where there is a risk of contaminated land occurring, such as mechanical workshops within construction camps, laydown areas, or other areas where significant hydrocarbons have been stored, these will be carefully managed. • Install secondary containment around tanks or storage areas to limit spills with a minimum containment of 110% of the stored volume. For more than one oil storage tank in the system, the secondary containment must be capable of storing 110% of the largest capacity tank or 25% of the total capacity, whichever is the greater. For non-bulk tanks or oil/fuel drums, these will employ temporary bunds and drip trays. • Contamination of land or waste materials on site will need to be removed and/or treated prior to proceeding with the reinstatement process. • The site will be kept tidy and free of litter and debris as far as possible.
Watercourse Crossings	• Where clearing of riparian vegetation is unavoidable, the objective will be to reinstate the watercourse banks and riparian vegetation as soon as practical post construction. • To minimize erosion and destabilization of watercourse banks, erosion controls will be constructed or installed, where necessary. • The surface will be typically be lightly scarified before the spreading of the topsoil, to promote regeneration of native vegetation and prevent loss of topsoil.
Landform Management and Preparation of Soils prior to Revegetation	• Sites will be re-shaped to a safe and stable landform, with surface drainage lines and topsoil profile re-instated. • Where practical, sites will be reshaped to a natural landform. • For planting with topsoil and mulch, 1:3 is the maximum slope recommended. • In places where there is a steeper slope, a more customized planting solution may need to be considered, using proprietary products such as biodegradable coconut fibre matting or hydroseeding/hydromulching. • However, if it is not practical to reshape sites where cut and fill operations have occurred on slopes, or within highly dispersive soils. In these instances, a stable landform will be reinstated by surface re-profiling, contouring, or benching. • Methods to reshape the landform will vary depending on the level of disturbance. • Protect the reinstated bare soil surface with a physical barrier, such as a thin layer of mulch or geotextile/erosion control matting. • Soil erosion features will be stabilised via backfilling as appropriate. • Permanent erosion and runoff control features will be regularly inspected, remediated and maintained. • Organic matter may also be utilised to improve soil fertility and should be dug into the planting area soils prior to planting.
Revegetation	• Natural Regeneration – Natural regeneration is the preferred method for re-reinstating native vegetation where short-term disturbances are proposed, and a viable native seed bank is available.

Key Actions	Description
	• Assisted Revegetation - Where natural regeneration is ineffective assisted revegetation will be undertaken. In areas where long-term disturbances have occurred or where natural regeneration is deemed as ineffective, assisted revegetation will be required to ensure that disturbed areas are rehabilitated with species richness representative of the adjacent land use or natural area. • Revegetation you should use native plant species or seeds which are weed free. • Identify indigenous species for planting and suitable sources for seed and plants as appropriate. • Plantings maybe installed as tube stock or via hydroseeding to increase plant survival. • Identify commercial sources of seed / plants from local nurseries for example. • Encourage rapid re-vegetation through re-seeding using rapid growing, indigenous runner grasses (e.g. *Cynodon dactylon*). • Plant beds shall be maintained as weed free and mulched annually to suppress weed growth and retain moisture content within the soil. • Planting, where necessary should be undertaken by hand or small machinery to minimize disturbance to the local soils. • An application of slow release fertilizer may be required at the time of planting. Only approved fertilizers that are not highly hazardous to the environment are to be used, in accordance with EU and WHO classifications. Natural/organic fertilizer to be used where possible (see also KGM's Technical Specification for landscaping of Highways, published in 2008). • Avoid planting in narrow isolated areas which are difficult to access to maintain.
Weed Management	• Controlling and managing weeds will be a major factor for both vegetation establishment and its ongoing management. • Earthmoving equipment should be cleaned before entering the site to minimise weed and pathogen spread, especially where equipment has been used near noxious weeds. • Where required, pest and weed management will be needed to enable the regeneration of pre-disturbance land uses and to ensure that the disturbance does not allow for the introduction of new species or invasive species to an area or increase the localized population of a species. • Refer to the Invasive Alien Species/Weed control protocol contained in Section 7.24 of the CESMP for this purpose. • Only use registered or approved agro-chemicals, and ensure they are properly labelled and adhere to the guidelines on pesticide/herbicide use and management as per EBRD PR 3 (EBRD, 2019). • If pest infections are detected the competent authority needs to approve the respective pesticide/biocide for pest control. • Complying with Turkish regulations on pesticide use. If pest infections are detected the competent authority needs to approve the respective pesticide/biocide for pest control. Pesticides of WHO Type 1a and 1b will not be used (WHO 'Recommended Classification of Pesticides by Hazard and Guidelines to Classification' - 2019). • Select applicable technologies and practices designed to reduce unintentional drift or runoff. • Establish buffer zones or strips along with water sources and surface water bodies. • Store herbicide/pesticide chemicals appropriately by following the hazardous materials storage and handling management practices (see Section 7.16 'Hazardous Materials Management' in the CESMP).
Livestock Management	• Where livestock occur within areas undergoing reinstatement, temporary stock fencing will be erected to ensure cattle cannot damage reinstatement works in accordance with Project's standards (i.e. prevent grazing to allow vegetation re-growth in order to stabilise the soil surface).
Waste Management	• Waste management will be done according to the Waste Management Plan.

Key Actions	Description
	• For fertilizing the landscaping in the Right of Way, only natural fertilizer will be used as required in KGM's Technical Specification for landscaping of Highways, published in 2008.

7. TRAINING

- All employees will undergo HSE induction training.
- Generic training will be provided on a number of topics that will be discussed through formal training sessions and regular Toolbox Talks and refresher trainings and this will be provided at the following times and under the following circumstances:
  - For new employees who have completed the standard induction training and have been identified according to the training needs assessment and training matrix as requiring further training in particular aspects of their work role;
  - Whenever an existing employee is given a new job assignment (extremely important that supervisors emphasize safety during the initial task assignment);
  - Whenever new work procedures are started;
  - Whenever new equipment is installed or to be used or new hazards are introduced;
  - Whenever new materials or substances are used;
  - Whenever there is exposure of a new hazard to the employee;
  - Based on an assessment of trends in non-conformances; and
  - Based on an assessment of grievances recorded.
- Generic training with regards to the management of soils will be addressed under the following topics/themes (with reference to the Soil Management Plan):
  - Ecological sensitivities on site
  - Emergency preparedness and response
  - Fuel and hazardous materials storage and transportation
  - Good practice controls
  - Incident reporting
  - Pollution prevention and control
  - Vehicle and equipment operating rules
  - Waste management

Refer to the Training Matrix in Section 9.5 of the CESMP which identifies training needs for various levels of staff.

8. MONITORING, ASSURANCE AND VERIFICATION

8.1 Monitoring

Implementation of this Landscape Management Plan is to be verified according to the reporting requirements included in Chapter 10 of the CESMP.

REC will be responsible for the implementation of an appropriate routine inspection and monitoring programme to the satisfaction of Nakkas Otoyol A.Ş., enabling both parties to ensure works are being carried out in accordance with this Plan and to identify and implement any corrective actions or possible improvements as necessary.

A written record of all inspections will be maintained or available on-site.

Monitoring will be required for certain KPIs and will include the following:

- Topsoil management;
- Vegetation / habitat surveys;
- Fixed-point photographs;
- Inspections of sediment and erosion control;
- Fauna and flora monitoring of key habitats.

A photographic record of each area of vegetation will be undertaken prior to works commencing and at the completion of works.

Monitoring reports are to include:

- Dates of visits;
- Condition of the vegetation;
- Condition of protective fencing;
- Works undertaken in the vicinity since the previous visit; and
- Any additional actions required.

The rehabilitation of storage areas, borrow pits, camp areas, and concrete plants will be monitored at least twice a year for a period of 3 years during the vegetative growing season (spring/summer: March to October) in order to ensure that re-vegetation is proceeding correctly and to intervene in a timely manner in case of signs of vegetation stress or erosion problems.

In addition; REC, will monitor site based construction activities and ensure their delivery in accordance with relevant laws and Project commitments.

8.2 Maintenance

Maintenance will include the following key actions for landscaped sites:

- Regular checks for problem weeds, especially those that are aggressive and invasive, and also in the early stages of infestation when control is still relatively easy;
- Observations to detect damage from pests and diseases, waterlogging, and vandalism;
- Checks following heavy rainfall or severe weather events or prolonged dry periods so remedial action can be taken for soil erosion or vegetation die-off;
- Modification of planting around stream and stormwater management areas to align with water levels, including any seasonal variations in soil wetness and water levels;
- Modification to planting around barriers, signage and other structures to ensure adequate setbacks are maintained;
- Modifications to planting around access routes, pedestrian walkways and cycleways to ensure planting does not obscure visibility or access;
- Checking areas of significant erosion or scour to ensure revegetation success.

8.3 Auditing

The schedule, the frequency, the scope, and objectives of audits as well as the responsible internal auditors will be defined and updated as necessary. Audits will take place annually in general by external parties, however internal monthly audits also apply.

Internal auditing will address the following:

- The correct implementation of this Management Plan;
- The correct development and implementation of REC Procedure(s);
- Success according to KPIs;
- The correct and timely implementation of an auditing and review system by the REC.

The results of environmental audits will be communicated regularly to Project management personnel. A Corrective Action Plan will be prepared following the audits with corrective actions as per the Corrective Action Procedure.

8.4 Contingency Measures

Contingency actions may be required depending on the success of initial landscaping, and these are detailed in Table 4.

Table 4. Landscaping contingency measures.

Risks	Proposed contingency measures
Inadequate weed control leading to widespread failure of revegetation	• Review weed control measures and consult with specialists as required to amend measures where necessary. • Review and udpated timing and frequency of control measures implemented.
Poor construction of landscaped sites, including inadequate or insufficient topsoil	• Relevant personnel to be made aware of key landscaping requirements. • Review topsoil management and replacement requirements and consult with specialists as required to amend measures where necessary.
Low or unsustainable nutrient levels in soils	• Consider the use of organic mulches or growth mediums. • Consider importing topsoil.
Wind and/or water erosion of landscaped areas	• Rapidly stabilise topsoil by hydroseeding with rapid growing runner grass cover (such as *Cynodon dactylon)*. • Sow soils with sterile annual cover species to provide rapid stabilisation and erosion control while native species are still being introduced.
Lack of follow up maintenance	• Review maintenance and follow-up requirements and frequency.
Limited rainfall	• Plant local native species adapted to the local climatic conditions. • Plant/sow seed during the growing season at the commencement of spring.
Insect attack/disease	• Encourage natural predators (spiders, insects, frogs, lizards and insectivorous birds and bats) by providing suitable micro-habitat and food resources such as nesting boxes, logs, rocks, etc.
Failure plantings	• Detect failure in annual inspections. • Assess reasons for failures, including extreme weather,fire, grazing impact, and species specific failure. • Undertake soil fertility / nutrient level tests. Soils should also be analysed by a soil laboratory for the following properties at a minimum: pH, Salinity (electrical conductivity), Cation exchange properties and exchangeable cations, major and minor nutrients and Organic matter (%). • Fertilising and composting are not critical maintenance activities except where there are obvious deficiencies, but should be assessed on an annual basis by observation and leaf analysis. • The most common amendments used to bring soils up to a standard suitable for plant growth are: - Lime or dolomite to make acid pH soils more alkaline; - Lime or Gypsum to enhance exchangeable calcium and eliminate sodicity; - Gypsum to make clay soils more friable; - Composts and/or manures to improve organic matter and nutrients levels; - Single or complete fertilizers often with trace elements to correct a particular deficiency or multiple deficiencies. • Refine planting species and seed mixes as necessary.

Risks	Proposed contingency measures
	• Ameliorate identified adverse conditions and replant areas with refined list of suitable species. • Where die-back of plant material has been identified new plants will be planted as soon as possible. • Pruning to be carried out on shrubs and trees that require it according to species to remove the dead and damaged branches and to retain natural shape and to improve health and vigour.

9. REPORTING REQUIREMENTS

The following reporting requirements apply for the EPC Contractor:

- Incident reporting (as necessary, addressed in terms of the Accident and Incident Management Procedure);
- Emergency response reporting;
- Records of annual emergency response training exercises;
- Biannual reports on KPIs and performance trends;
- Monthly reports of relevant training activities completed and attendance registers to be maintained;
- Daily/Weekly/Monthly reports of site inspection activities;
- Audit reports;
- Inspection logs and status of non-compliances; and

In addition, the following external reporting will be done:

- Monthly and biannual ESHS reports on KPIs and performance trends will be submitted to Nakkas Otoyol A.Ş.;
- All environmental and social incidents will be appropriately documented, notified and reported in accordance with established procedures to
- Incident notification and reporting to relevant Turkish regulatory bodies will be performed in line with applicable legislation in force and as stipulated in permits and licenses.
- The Lenders will be notified of incidents pursuant to the terms and conditions agreed upon in the Finance Agreements.

10. KEY PERFORMANCE INDICATORS

Table 5 summarizes the Key Performance Indicators (KPIs) and associated targets that will be used to assess the progress and success of implementation of the landscape management plan.

Table 5. KPIs for landscape management.

KPI	Target	Measurement / Indicator	Period of Monitoring
Temporary infrastructure has been decommissioned and removed post-construction	100% of temporary works have been decommissioned, removed and these areas closed once construction has been completed.	Site inspections	Monthly
Open areas exposed are to be minimised	100% of open/exposed soils left open for periods exceeding 1 week are to be covered or revegetated.	Site inspection / audit	Monthly
Habitat reinstatement and management plan to be compiled	A post-construction habitat reinstatement and management plan has been prepared.	Audits	Annually
Rehabilitation of disturbed areas has been successfully implemented	Post construction, implement and monitor the success of all habitat rehabilitation activities and sites in accordance with all the relevant measures of the landscape management plan to achieve zero non-compliances.	Site inspections / Audits	Annually
Native vegetation used in landscaping	Verified 100% native plant species are sourced and used in planting / landscaping.	Audits	Annually
Sufficient vegetation cover obtained and maintained	>90% coverage by indigenous vegetation is achieved within a reasonable timeframe, with no major areas of bare soil.	Site inspections / Audits	Annually
Final landscape areas are stable	Zero signs of moderate to major soil erosion / collapse of banks, 100% of erosion features (rills/gullies) are stabilised.	Site inspections	Annually
Non-Compliance with Plan	Zero NCRs reported per year.	Audit	Annually
All employees have received relevant training	100% of employees accessing the site (including short-term and long-term employees and visitors) have received the necessary induction and/or generic training (and any specialised training) as required.	Audit	Monthly

11. APPENDICES

11.1 Definitions of Key Terms

Area of Influence: Area potentially affected by impacts from project activities, assets and facilities, including associated facilities.

Biorestoration: The restoration of flora and fauna and the establishment of vegetation to return the vegetation cover and species diversity to pre-construction conditions, where practical.

Disturbed Areas: All areas which are disturbed as part of Project activities.

Erosion: The wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep. Also, detachment and movement of soil or rock fragments by water, wind, ice, or gravity. An occurrence or set of circumstances, as a consequence of which pollution (air, water, noise, and land) or an adverse environmental impact has occurred, is occurring, or is likely to occur.

Sediment Control: Any temporary or permanent measures taken to reduce erosion, control siltation and sedimentation, and ensure that sediment-laden water does not leave a site.

Rehabilitation: The process of returning a site's structural habitat complexity, ecosystem processes and services to that of the pre-existing conditions at the site. These site values are achieved through meeting the rehabilitation criteria.

Reinstatement: Restoring the area to its prior state after construction activities. It is the process of bulk earth works and structural replacement of pre-existing conditions of a site. It also includes placing cleared vegetation across disturbed areas.

Right of Way (Row): The strip of land above and below the road; where construction, maintenance, test, and operation activities occur.

Sensitive Area: An area identified through legislation, regulations or ecological surveys as having particular environmental value.

Soil Texture: The relative proportions of the various soil separates (particle sizes) as described by the classes of soil texture: sand, loamy sand etc.

Topsoil: The surface layer of a soil profile, which is more fertile, darker in colour, better structured and supports greater biological activity than underlying layers. The surface layer may vary in depth depending on soil forming factors, including parent material, location and slope, but generally is not greater than about 300 mm in depth from the natural surface.

11.2 Land Appraisal Checklist

Additional Land Appraisal Checklist	
Purpose:	
Site Visit Results (This section is prepared as a result of the site visit undertaken at the proposed area)	
Name of Requestor (Company and Individual):	
Date:	
Location of the proposed land use:	
Area of land to be affected (sq. meters, km):	
Is the land use temporary or permanent? If temporary, please confirm when final reinstatement is expected.	
Is the area out of the ESIA corridor?	
Will there be any impact to sensitive receptors (Critical Habitats, wetlands, forest, groundwater, etc.)	
Will there be any emissions above and beyond normal construction emissions?	
Will there be any additional or new associated wastewater discharges?	
Will any additional or new (hazardous or non-hazardous) wastes be generated	
Will there be any noise emissions above and beyond normal construction emissions	
Will there be any impact to known cultural heritage resources?	
Are there any known geo-hazards (landslides, faults, flood risk, etc.)? If yes, please describe the issues and how they will be addressed?	
Will there be any additional impact to soils (topsoil, subsoil, etc.)?	
Will there be any possible erosion (due to the excavation, blasting or backfilling activities, etc.)?	
Will there be any additional visual or landscape impact?	
Is there any additional or new environmental monitoring requirement that needs much attention than it may be considered?	
Are any settlements or houses nearby?	
Will any additional or new infrastructure be crossed (irrigation canals, access roads, etc.)?	
Does the activity pose any additional community safety risk?	
Will there be any additional or new impact on existing, local traffic?	
Will there be any positive impacts in terms of employment or procurement? If yes, please describe.	
Will there be any additional or new impact on existing, local traffic?	
What is the dominant vegetation type situated in the areas? Take pictures and GPS coordinates	
Are there any signs of vegetation disturbance? -Fire evidence, remains of charcoal kiln, pitsaw, lumbering, firewood collection, human footpath, animal grazing. (Take GPS coordinates and take pictures)	
Are there any invasive species in the area? -Provide common names, GPS coordinates and take pictures.	
What are the dominant plant species in the area? Provide common/local names	
What are the observed wild animals in the area? -Mammals (large, medium sized, small), birds, reptiles, amphibians. Provide common names.	
Are there any water bodies in the area? If yes, which one? Pond, stream, wetland, floodplain?	

What is the dominant observed aquatic vegetation?	
What are the observed aquatic animals in the area? -Fish, mammals, birds, reptiles, amphibians. Provide common names.	
What is the current usage of area?	
Scale of Impact	
Class 1 Major - major environmental or social impact requiring additional studies and/or development of new mitigation measures.	
Class II Moderate - typically outside of the ESIA corridor but impacts have been identified and can be adequately managed by applying existing ESMPs or newly agreed mitigations.	
Class III Minor – either inside or outside of the ESIA corridor, but no new or different environmental or social impacts are identified; impacts can be managed via existing ESMPs.	