

Biosecurity Management Plan

Sound of Harris Seagrass Restoration Project

namara projects ltd

Document Control

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Executive Summary

The Sound of Harris contains one of Scotland's largest remaining areas of subtidal *Zostera marina*. This Biosecurity Management Plan establishes procedures to minimise the introduction and spread of invasive non-native species, pathogens and contaminated biological material during donor collection, temporary storage, transport, transplantation and monitoring. The Plan adopts local donor sourcing, donor batch traceability, Check–Clean–Dry principles and continual monitoring.

1. Introduction

This Biosecurity Management Plan establishes procedures to prevent or minimise the accidental introduction or spread of invasive non-native species (INNS), marine pathogens and other biological contaminants during restoration of subtidal seagrass within the Sound of Harris.

1.1 Objectives

- Prevent introduction of invasive non-native species.
- Minimise spread of marine pathogens.
- Maintain the health of donor and recipient meadows.
- Ensure compliance with regulatory requirements.
- Provide clear operational procedures and monitoring.

1.2 Scope

The Plan applies to donor meadow surveys, diver collection, shore-based holding tanks, recirculating systems, transport, transplantation, monitoring, vessels, diving equipment, equipment cleaning and demobilisation.

2. Project Description

The Sound of Harris supports approximately one-third of Scotland's known subtidal eelgrass resource. Restoration uses healthy donor material collected from approved local donor meadows and transplanted into suitable restoration sites identified through ecological assessment.

3. Biosecurity Policy

Namara Projects Ltd is committed to protecting the ecological integrity of the Sound of Harris through local donor sourcing, inspection of donor material, donor batch traceability, dedicated holding systems where practicable, Check–Clean–Dry procedures, staff training, monitoring and continual improvement.

4. Legislative and Guidance Framework

Prepared with reference to relevant Scottish legislation, the Scottish Code for Conservation Translocations, NatureScot Seagrass Restoration in Scotland – Handbook and Guidance, GB Non-native Species Secretariat Check, Clean, Dry guidance, and applicable project licence conditions.

Part 2 – Biosecurity Risk Assessment

5.1 Risk Assessment Methodology

Biosecurity risks are assessed using qualitative likelihood and consequence ratings. Residual risks shall be reduced to Low or Moderate through implementation of the control measures described in this Plan.

Risk	Initial Risk	Residual Risk
Invasive non-native species on donor plants	High	Low–Moderate
Transfer of seagrass disease	High	Moderate
Sediment transfer	High	Low
Retained seawater	Moderate	Low
Shore-based holding tanks	High	Low
Recirculating systems	High	Low
Vessel biosecurity	High	Moderate
Diving equipment	High	Low
Planting equipment	Moderate	Low
Donor batch mixing	Moderate	Low
Wastewater disposal	Moderate	Low
Personnel and contractors	Moderate	Low
Monitoring operations	Moderate	Low
Biosecurity incident	High	Moderate

Principal Control Measures

- Inspect donor meadows before collection.
- Collect only healthy *Zostera marina* shoots.
- Maintain donor batch traceability.
- Minimise sediment movement.
- Keep donor batches separate during transport and storage.
- Use dedicated holding tanks where practicable.
- Recirculate water only within a single donor batch.
- Drain, clean, disinfect, rinse and refill recirculating systems before introducing another donor batch.
- Apply Check–Clean–Dry procedures to vessels, diving equipment and transplant tools.
- Do not discharge holding tank water into another donor or restoration meadow.
- Record inspections, cleaning and incidents.

Residual Project Risk

Following implementation of the prescribed control measures, no activity is expected to retain a High residual biosecurity risk. The highest priority areas requiring continued supervision are donor plant health, temporary holding systems, recirculating seawater systems and vessel movements.

Risk Assessment Review

Review the risk assessment before each restoration season, following operational changes, after any biosecurity incident, when new invasive species are identified within or near the Sound of Harris, or where monitoring indicates unexpected transplant mortality or disease.

Part 3 – Standard Operating Procedures

These Standard Operating Procedures establish the minimum biosecurity requirements for all seagrass restoration activities undertaken by Namara Projects Ltd within the Sound of Harris.

SOP 1 – Donor Meadow Selection

Inspect approved donor meadows for invasive non-native species, disease symptoms and overall plant health before collection. Record findings and photograph representative areas.

SOP 2 – Donor Collection

Collect only healthy *Zostera marina* shoots, minimise sediment disturbance, reject unhealthy plants and maintain donor batch identity.

SOP 3 – Transport

Transport donor material in clean, labelled containers. Keep batches separate, shaded and submerged in donor seawater where practicable.

SOP 4 – Temporary Holding Tanks

Use dedicated holding tanks for each donor meadow where practicable. Label tanks and monitor temperature, salinity, dissolved oxygen, pH, turbidity, plant condition and mortality daily.

SOP 5 – Recirculating Systems

Water may be recirculated within a single donor batch. Before another donor batch is introduced, remove all plants, drain the system, clean, disinfect, rinse, inspect filters, refill with fresh seawater and record completion.

SOP 6 – Water Quality

Maintain suitable water quality to minimise plant stress. Investigate any deterioration immediately.

SOP 7 – Transplantation

Maintain donor batch traceability, minimise sediment movement and use only cleaned equipment.

SOP 8 – Vessel Biosecurity

Inspect hull, anchors, ropes and deck equipment before and after operations. Remove visible fouling and biological material.

SOP 9 – Diving Equipment

Apply Check–Clean–Dry procedures to all diving equipment and field gear.

SOP 10 – Cleaning and Disinfection

Remove debris, wash equipment with freshwater, disinfect where required, rinse and record cleaning.

SOP 11 – Waste and Wastewater

Do not discharge holding tank water into another donor or restoration meadow. Dispose of wastewater in accordance with project procedures.

SOP 12 – Records

Maintain donor inspection forms, tank monitoring sheets, cleaning logs, vessel inspections, transplant records and incident reports.

Operational Biosecurity Checklist

- Donor meadow approved
- No evidence of invasive species
- No significant disease observed
- Collection equipment clean
- Vessel inspected
- Holding tanks prepared
- Water quality acceptable
- Donor batch labels prepared
- Cleaning equipment available
- Biosecurity briefing completed

No restoration activities shall commence until all checklist items have been confirmed.

Part 4 – Incident Response, Monitoring and Appendices

7. Biosecurity Incident Response

Any suspected invasive non-native species, seagrass disease, unexplained transplant mortality, accidental mixing of donor batches, untreated wastewater discharge or failure of biosecurity controls shall be treated as a reportable biosecurity incident.

Immediate Response Actions

- Stop work immediately.
- Isolate affected plants, equipment and water.
- Photograph and document observations.
- Record location, donor batch and personnel involved.
- Notify the Project Manager.
- Prevent movement of suspect material.
- Implement corrective actions before work recommences.

8. Monitoring

Routine monitoring forms part of the ecological monitoring programme and includes donor meadow condition, transplant health, invasive non-native species surveillance, disease observations, holding tank condition, vessel cleanliness and equipment hygiene.

Daily Holding Tank Monitoring

Parameter	Record
Temperature	✓
Salinity	✓
Dissolved Oxygen	✓
pH	✓
Water Clarity	✓
Plant Condition	✓
Mortality	✓
Disease Observations	✓
Corrective Actions	✓

9. Training

All personnel shall receive project-specific induction covering invasive non-native species awareness, disease recognition, holding tank procedures, Check–Clean–Dry requirements and incident reporting.

10. Audit and Review

The Biosecurity Management Plan shall be reviewed annually, before each restoration season, following any significant incident, operational change or revision to regulatory guidance.

11. Responsibilities

The Project Manager has overall responsibility for implementation. The Biosecurity Lead provides technical oversight. Dive Supervisors, Vessel Masters, Scientific Divers and Field Staff are responsible for compliance with this Plan and reporting any concerns.

Appendices

- Appendix A – Daily Holding Tank Inspection Sheet
- Appendix B – Equipment Cleaning Log
- Appendix C – Donor Batch Record
- Appendix D – Biosecurity Incident Report

Conclusion

This Biosecurity Management Plan provides a practical framework for managing biosecurity risks during the Sound of Harris Seagrass Restoration Project. By implementing these procedures, Namara Projects Ltd will minimise the risk of introducing or spreading invasive non-native species and marine pathogens while supporting successful restoration of *Zostera marina* habitats.

Note

The invasive species *Sargassum muticum* (Japanese wireweed) is present in the Sound of Harris and can be found (infrequently at present) attached to rocks and shell debris within the seagrass habitat.