Draft Construction Environmental Management Plan (CEMP)

Coire Glas Pumped Storage Scheme

(Project Ref. LH000012)

DRAFT CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

COIRE GLAS PUMPED STORAGE SCHEME

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GLOSSARY

ACoW	Archaeological Clerk of Works
ECoW	Ecological Clerk of Works
GCoW	Geotechnical Clerk of Works
LCoW	Landscaoe Clerk of Works
SHE	Safety, Health and Environment
Site ECoW	Appointed by the *Employer*
Site Environmental Representative	Appointed by the *Contractor*

DOCUMENT VERSION			
Version No.: V1.0			**Date:**
	Name	**Position**	**Signature**
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DOCUMENT REVISIONS			
Revision No:	**Description:**		**Date:**
Revision Details:			
	Name :	**Position :**	**Signature :**
Revised by :			
Checked by :			
Reviewed by :			

DOCUMENT DISTRIBUTION RECORD			
Version and Revision No. :	**Document**	**Date of Issue**	**Recipient**
V1.0			

1 INTRODUCTION

1.1 Construction Environmental Management: Aims & Objectives

1.1.1 The Revised Coire Glas Pumped Storage Scheme is a Proposed Development situated on Forestry Commission (Scotland) land to the south west of Laggan Locks, approximately 19 km to the south west of Fort Augustus.

1.1.2 The primary function of The Proposed Development would be to extract, store and release energy to or from the electricity transmission system as required.

1.1.3 This document provides information on Environmental Management for the Revised Coire Glas Pumped Storage Scheme project and has been prepared for the Planning Authority and statutory consultees. This document outlines the proposed management methodology to be employed during the construction of The Proposed Development.

1.1.4 The principal objective of this document is to provide information on the proposed infrastructure and information on how SSE (the *Employer*) intend to avoid (wherever possible), minimise and control adverse environmental impacts associated with the development. Furthermore, this document aims to define good practice as well as specific actions to be implemented following receipt of a planning consent.

1.1.5 The information contained within the CEMP will form part of the Civils Works Information (WI) to the Contract between the *Employer* and the civil works *Contractor* (once appointed). The methods and principles contained herein, as well as within referenced legislative instruments and published guidance documents, are adhered to by the *Contractor* in developing the detailed design, construction method statements and other plans relating to environmental management as required by the Contract.

1.1.6 The *Contractor* submits all relevant information as detailed in this document to the *Employer* for acceptance in according with the contract provisions. No works commence prior to the *Employer's* acceptance.

1.1.7 The *Employer* provides an updated CEMP to the Planning Authority post-consent / pre-works (CEMP v1.1). The *Employer* provides the *Contractor* with an electronic copy of the CEMP v1.1 which the *Contractor* develops and maintains for the duration of the works (CEMP Version 2.0).

1.1.8 This document is read and would be implemented on site in conjunction with industry best practice, current environmental legislation, published guidance documents, and other documents referred to within the CEMP (see Section 17).

1.2 Roles, Responsibilities and Structure of the CEMP

1.2.1 The *Contractor* appoints an appropriately competent person or persons (*Contractor's* **Site Environmental Representative**) to manage and ensure *Contractor* compliance to this CEMP. These tasks are summarised in Table 1 below, prior to, during and upon completion of the construction works. Table 1 is intended as an aide memoir to the detailed requirements for each proceeding chapters in this CEMP, and should be used in that context.

1.2.2 The Site Environmental Representative will be a full-time role and the relevant person will be based on site unless otherwise agreed by the *Employer* prior to commencement of construction.

The Site Environmental Representative and the independent *Employers* Site Ecological Clerk of Works (ECoW) will liaise closely on environmental matters.

1.2.3 The *Contractor* demonstrates the competence of the Site Environmental Representative, including a minimum of 2 years site experience, to the *Employer* via submission of relevant information (e.g. CV, training records, membership records) for acceptance prior to commencement of construction works.

1.2.4 The *Contractor* is responsible for obtaining all necessary consents, licences and permissions[1] for his activities as required by current legislation governing the protection of the environment.

1.2.5 A copy of this document and related files and documents will be kept in the site offices for the duration of the site works and will be made available for review at any time. Upon completion of the construction *works*, the *Contractor* submits a complete CD copy of the final set of information to the *Employer* for their records.

1.2.6 Where the *Contractor* has standard documents within his own company / corporate Environmental Management Plan which might cover a particular requirement of this CEMP, these will either be inserted or cross referenced within the relevant Section of the detailed CEMP (v2.0).

1.2.7 A **Checklist** has been included in Section 18, providing the *Contractor* with a summary of the minimum information to be provided to the *Employer* pre-, during and post-construction. The information / documents listed in the Checklist represent the minimum information to be provided to the *Employer* / Planning Authority at the stages indicated in the Checklist.

[1] For example, discharge consents, abstraction licenses, Waste Management License (WML) Exemption, Permission, notification or consent for road closure, opening or diversion.

Table 1 – Principal *Contractor* CEMP Duties (Site Environmental Representative to manage deliverables)

'During Construction includes any enabling works for the purpose of this table

***Contractor* Duties**	**Project Timescale**	**Checklist of deliverable**
Start up Meeting	Pre-construction	• Waste Management Plan • Risk Assessment & Method Statements for all works and tasks prior to these being undertaken , with environmental management information included • Site Set up in relation to Fuel Storage and Management • Emergency Incident Response Plan • Environmental Contacts
Site Inductions and provision of environmental information	During construction	• Site Induction leaflet • Environmental Noticeboard and Eco Map • Environmental Toolbox Talks • Training on the use of spill kits (on ground and in surface waters), to be provided on a regular basis (to account for staff/subcontractor changes)
Weekly Environment progress meetings	During construction	• Planned Works • Environmental Risk Log • Drainage Maintenance Register • Pollution Prevention Mitigations
Obtaining all relevant permissions, consents for licenses and permits for activities covered by current legislation governing the protection of the environment.	Pre-construction and During construction	• CAR license or registrations out with GBR • PPC permit for mobile plant (e.g. concrete batch plant) • Species Protection Licenses
Adheres to good practice in watercourse crossing design	During construction	• Consults with 'Ecological Clerk of Works' (ECoW) in advance of ALL works to allow pre-commencement ecological surveys to be completed.
Provide drainage management plan	Pre-construction and During construction	• Drainage Map (drains to be numbered as installed) • Drainage Maintenance Register

***Contractor* Duties**	**Project Timescale**	**Checklist of deliverable**
Details of all open excavations and stock piled materials	During construction	• Excavation Register
Handling of temporary materials will be managed in line with best practice	During construction	• Provide to the site ECoW locations and designs for peat and other spoil storage requirements including methods for reinstatement works and incorporated drainage elements, for acceptance, **prior to works commencing** • Minimised material handling • Protection to material stockpiles • Reinstatement Plans
Responsible for pollution prevention for the duration of the contract and until such time as permanent measures, such as permanent drainage and silt mitigation controls, are deemed to be adequate and appropriately constructed.	During construction	• Installs water protection measures • Dedicated refuelling area • Provision of spill kits and plant nappies • Consults with ECoW for 'Permit to Pump' prior to pumping water • Implements watercourse buffer zones • Weekly Environmental inspections and formal environmental record keeping Regular visual inspections of the watercourses on site
Ecological Protection Compliance	During construction	• Compliance with Species and Habitat Protection Plans • Informs the ECoW at least two weeks ahead of ALL works commencing • Consults the ECoW on any mitigation measures required as part of the works
Environmental Audits	During construction	• Undertakes a programme of environmental audits
Waste Management	During construction	• Implementation and monitoring of the Site Waste Management Plan (SWMP), including waste contractor information • Provision of suitable skips and separated waste bins at compounds, offices and satellite premises

***Contractor* Duties**	**Project Timescale**	**Checklist of deliverable**
Responsible for ensuring that all materials on site are responsibly stored	During construction	• Material Data Sheets and signage • Appropriate storage and secondary containment for oils, chemicals and other materials
Reduces Impact to areas of sensitive habitat	During construction	• Microsites development infrastructure to reduce any impact to sensitive habitats, in consultation with the ECoW and other specialist (e.g. Geology/Hydrology or Archaeologist) if required/as necessary
Reinstatement of construction disturbed areas	During construction	• Reinstatement is carried out as timely as possible • Makes best use of excavated turf and peat and complies with the reinstatement procedures and principals contained within this CEMP and the Peat Management Plan
Ensure any forestry works subcontracted comply with legislation and industry codes of practice	During construction	• Risk Assessment & Method Statements for all works and tasks prior to these being undertaken in line with Works Information, ensuring environmental information and management is detailed.

2 PROJECT INFORMATION

2.1 Scheme Description

2.1.1 The Proposed Development entails the construction of two main areas of work: the upper reservoir works comprising the upper reservoir, dam, upper control works, surge shaft and ventilation shaft; and the lower reservoir works comprising the lower control works, a jetty, administration building, and emergency access tunnel portal on the shore of Loch Lochy, linked by a series of underground tunnels and the cavern power station.

2.1.2 The upper reservoir works would be accessed off the A87 at White Bridge (Invergarry) utilising existing forestry tracks (some of which require to be upgraded) and the creation of new tracks. The lower reservoir works, as well as the excavation of rock for the majority of the underground works, would be accessed off the A82 at North Laggan, following the minor public road and existing forestry tracks, both of which would require upgrading. A new temporary haul road to connect the lower reservoir works with the upper reservoir works would provide an opportunity for quarried rock from the upper reservoir to be supplemented if feasible by suitable tunnel spoil from spoil excavated from the underground works.

2.2 Schedule of Mitigation

2.2.1 The Schedule of Mitigation is provided in Appendix 3.2 of the EIA Report.

2.2.2 Following receipt of a planning consent, the Mitigation Schedule will be updated and incorporated into a Commitments Register which will detail all mitigation measures referred to in the EIA Report and additional documentation provided to, and approved by the Planning Authority. This version will be included in the updated CEMP v1.1.

2.3 Planning Conditions

2.3.1 Table 2.0 below will be updated to include details of relevant planning conditions attached to any consent to be received, and will detail which section(s) of the post consent CEMP (v1.1) documentation covers specific planning conditions.

TABLE 2.0
RELEVANT PLANNING CONDITIONS AND RELATED DOCUMENTATION

Planning Condition		Related CEMP Section / other document

2.3.2 The updated CEMP (v1.1) document will be submitted for review by the Planning Authority prior to commencement of any construction works.

3 CORRESPONDENCE & GENERAL COMMUNICATION

3.1 Roles & Responsibilities

3.1.1 The *Contractor* provides a complete record of all relevant communication and reports associated with all aspects of environmental management. As a minimum the *Contractor* maintains records of the following where applicable to the project:

A) Minutes and attendance record of start-up meeting (on-site meeting prior to commencement of construction works).

B) **Environmental risks** (as part of the SHE risk register required under the SHE Specification).

C) Minutes of weekly meetings covering environmental (ecology, archaeology, hydrology etc.) issues (meetings may be combined with e.g. progress meetings)

D) *Employer* and *Contractor* **Audit Reports** (Section 3.3)

E) **Records of toolbox talks** (Section 4)

F) **Site inspections records** (e.g. fuel areas, dust, noise monitoring - Section 5)

G) **Waste Management Plan** and records (Section 6)

H) **Drainage Maintenance Register** (Section 7)

I) **Visual Water Quality Monitoring Records** (Sections 8)

J) **Excavation Register** (Section 14)

K) **Geotechnical Risk Register** (Section 14.3)

L) **Licensing and Consents**: copies of all permissions, consents, licenses and permits and related correspondence.

M) General Correspondence: All other relevant internal and external communication records relating to environmental management.

3.2 Environmental Audits

3.2.1 The *Contractor* undertakes a programme of environmental audits, including audits of his sub-contractors, on a quarterly basis (as a minimum) and provides an audit report to the Employer within 2-4 weeks of the audit being undertaken.

3.2.2 Environmental audits may be completed at any time by the *Employer,* but at least one per quarter. The *Contractor* maintains a record of all completed audit forms and records of corrective action and close outs.

3.3 Risk Assessments and Method Statements

3.3.1 The *Contractor* provides risk assessments and method statements (RAMS) for all works and

tasks prior to these being undertaken. These documents take into account and address all of the environmental aspects of the planned works and will include proposed mitigation measures, reviewed by the Site Environmental Representative and the Site ECoW in advance of works starting.

3.4 Notice Boards

3.4.1 The *Contractor* provides and maintains project environmental notice board(s) which are positioned to ensure that all operatives have the opportunity to review a notice board on a daily basis. As a minimum this will include one notice board to be placed in each compound.

3.4.2 The environmental notice boards are maintained by the *Contractor's* Environmental Representative and shall be updated at least monthly (or where the ECoW provides updated environmental information). As a minimum, the notice boards contain:

- Description of the key environmental risks and intended risk mitigation measures;
- Accompanying Environmental Constraints/Eco Map illustrating the location of the key risks and required exclusion zones / buffer zones and location of emergency response equipment, as required by the CEMP; and
- Key contact numbers and responsible personnel identified within the Environmental Incident and Emergency Response Plan (EIERP).

4 SITE INDUCTION AND TRAINING

4.1.1 The *Contractor* ensures that all contractor employees, sub-contractors (irrespective of whether employed by the *Contractor* or the *Employer*), suppliers, and other visitors to the site are made aware of the specific environmental issues relating to their work. Accordingly, environmental specific induction training will be prepared and presented to all categories of personnel working and visiting the site.

4.1.2 As a minimum, the *Contractor* provides inductees with the following information:

- Identification of specific environmental risks associated with the work to be undertaken on site by the inductee (e.g. exclusion zones, fuel handling, spill kit locations, sensitive habitats, drainage control/mitigation, spill control, silt pollution control, waste minimisation and recycling, reporting of environmental observations).
- Environmental Incident and Emergency Response Procedures (including specific Environmental Communication Plan requirements – refer to Section 16 for further information).

4.1.3 The *Contractor* provides a convenient sized copy of the Site Environmental Constraints / Eco Map to all inductees showing sensitive areas, exclusion zones, wash out areas, watercourses, refuelling exclusion areas, location of skips, etc. The map shall be updated and re-issued as required. Any update will trigger a tool box talk – see below - to comment and stress on necessary change.

Training and Toolbox Talks

4.1.4 The *Contractor* provides as a minimum one tool box talk (or other environmental related training session) relating to the topics below, to all staff on a regular basis (to account for staff/subcontractor changes etc.);

- Material handling, including: excavation, segregation, storage and reuse/disposal of excavated materials;
- Dealing with groundwater and surface water, including: managing surface water ingress into excavations, dewatering excavations, managing pumped water and identifying and treating contaminated groundwater or surface water;
- Waste management, including waste storage and segregation and littering;
- Control of fuel and refuelling and fuel handling procedures;
- Surface water run-off, drainage control and silt mitigation;
- Ecologically sensitive areas; and
- Archaeologically sensitive areas.

4.1.5 Additional tool box talks are added as required based on circumstances such as unforeseen risks, repeated observation of bad practices, perceived lack of awareness, pollution event, and on any other environmental issues which arise on site.

4.1.6 Where necessary, the *Contractor* requests the assistance of the Site Environmental Representative and any other specialist personnel on site (e.g. ECoW, archaeologist, hydrologist, etc.) to undertake specific toolbox talks or parts thereof as required.

4.1.7 The *Contractor* maintains a record of all toolbox talks or other environmental related training sessions delivered their content and the attendees and provides this electronically to the employer on a quarterly basis.

4.1.8 The *Contractor* provides, as a minimum, training on the use of spill kits (on ground and in surface waters), to be provided on a regular basis (to account for staff/subcontractor changes etc.).

5 POLLUTION PREVENTION & MITIGATION

5.1 Responsibility

5.1.1 The *Contractor* is responsible for pollution prevention for the duration of the contract and until such time as permanent measures, such as permanent drainage and silt mitigation controls, are deemed to be adequate and appropriately constructed.

5.1.2 It is the responsibility of the *Contractor* to contact SEPA, other statutory and non-statutory bodies, and stakeholders in the vicinity of and downstream of the proposed project so that the requirements and interests of these parties are adhered to and protected throughout the duration of the Contract.

5.1.3 The *Contractor* is familiar with and executes works in accordance with relevant applicable legal requirements, following guidance provided in the SEPA Guidance for Pollution Prevention (GPP), and other guidance (not limited to) as detailed in Section 17.

5.1.4 The *Contractor* ensures that all staff and subcontractors working on site will be familiar with pollution prevention and mitigation measures as detailed in this document via the Site Environmental Representative; this includes subcontractors, *Employer's* direct contractors and other *Employer's* representatives working on the site.

5.2 General Pollution Prevention Measures

5.2.1 The following points (not exhaustive) indicate general pollution prevention measures in accordance with those highlighted within the guidelines referenced in this document and the EIA

Report. Pollution Prevention measures relating to specific tasks are also detailed in the respective sections of this document.

i. Any material or substance which could cause pollution, including fuels/oils, wet cement, raw concrete or silty water will be prevented from entering groundwater, surface water drains or watercourses by the appropriate use of and appropriate placement of (temporary) sediment control structures, silt fences, cut-off drains, silt traps and drainage to vegetated areas where appropriate. Any sign of failing water treatment measures or sight of silted or contaminated water entering any watercourse on site will be reported immediately (within 30 minutes).

ii. There will be no direct discharge of water into a watercourse. Any silty water generated on site will ideally be settled out as much as possible through drainage mitigation measures (silt traps, etc.). Discharge will be over non-sensitive, vegetated areas at least 50 metres from watercourses, avoiding discharges to open drains connected to watercourses.

iii. Silt laden run off should be expected from any areas of recently exposed soil or rock. This silt laden run-off will be captured and directed via berms or ditches towards specially constructed sediment control structures.

iv. Siting of settlement ponds will take into consideration access requirements for reinstatement and maintenance (for example: periodic silt removal, expansion of ponds or incorporation of additional silt mitigation measures, etc.). The *Contractor* discusses and agrees the location of lagoons and other drainage mitigation measures with the ECoW prior to associated works taking place.

v. Details of typical settlement ponds and silt mitigation measures are indicated on Figure 1 as included in this CEMP. Additional filtration measures may include flow attenuation measures such as weirs, rock bars and / or anchored and embedded straw bales within settling ponds or between series of ponds.

vi. External fuel delivery lorries will only be allowed as far as the site compound where there will be a designated refuelling area equipped with an **impermeable concrete base graded to an oil interceptor with control monitoring facilities, and protected from vehicle collision**.

vii. Fuel transfer / refuelling will be undertaken by specifically trained and competent staff or undertaken under competent supervision. All refuelling will be carried out at least 50 metres from watercourses. Where this buffer distance cannot be achieved advice will be sought from the ECoW and a minimum distance will be agreed with the *Employer.* Fuel pipes on plant, outlets at fuel tanks etc. will be regularly checked and maintained to ensure that no drips or leaks to ground occur. Plant nappies or absorbent material will be place beneath plant during refuelling.

viii. Areas of waste oil / fuel / chemical storage and permanent refuelling will be located at least 50 metres away from watercourses or drainage paths. Where this is not possible, advice will be sought from the ECoW and a minimum distance will be agreed with the *Employer*. Such storage areas will be sited on an impervious base to prevent the downward percolation of contaminants to natural soils and groundwater.

ix. Spill kits will be available within each plant on site and also located close to identified pollution sources or sensitive receptors (fuel storage areas, water course crossings, etc).

x. Irrespective of the buffer distance and location of refuelling, interceptor drip trays (or similar e.g. plant nappies - open metal drip trays are not acceptable) will be available. Plant

nappies/interceptor drip trays will be positioned under any stationary mobile plant which is not integrally bunded to prevent oil contamination of the ground surface or water. Interceptor trays must be positioned to prevent rain water ingress.

xi. All stockpiled materials will be stored in designated areas, discussed with and approved by the ECoW to avoid sensitive ecological / environmental features and isolated from any surface drains and a minimum of 50 metres away from watercourses. Aggregate or fine materials storage will be enclosed and screened/sheeted**.**

xii. Washing-out of concrete wagons on site shall only be permitted when the *Contractor* has provided a designated, suitably prepared wash-out area with signage identifying the area as suitable for concrete wagon wash-out.

xiii. The concrete 'washout' in the designated area shall not be emptied into any watercourse and shall be disposed of in accordance with the Site Waste Management Plan.

xiv. Tools, equipment or materials will not be washed in watercourses. Mortar mixing and material storage areas must be away from watercourses.

xv. The Contractor installs wheel washing facilities at the site entrance prior to works commencing in proximity to the road junction.

5.3 COSHH

5.3.1 The *Contractor* is responsible for ensuring that all materials ordered or brought to site listed as hazardous under the Control of Substances Hazardous to Health (COSHH) Regulations are accompanied with a hazardous information sheet. The *Contractor* complies with the COSHH Regulations. Materials stores shall be monitored by the Site Environmental Representative.

5.4 Pollution Monitoring & Controls

5.4.1 The *Contractor* carries out regular inspections via the Site Environmental Representative in relation to of oil/fuel storage areas and plant, The frequency and responsibility for undertaking these inspections will be recorded by the *Contractor* and communicated to the *Employer* prior to commencement of the works.

5.4.2 The *Contractor* carries out regular inspections of dust in dry weather, to ensure dust suppression methods are used if required such as;

- Water spray to be used when weather conditions cause excessive dust;
- Shielding/damping down cutting and grinding operations;
- Reduce site speed limits to 20mph to reduce dust potential;
- Provide adequate protection for fine or dry materials from wind (e.g. cover up materials and lorries);
- Minimise drop heights into haulage vehicles;
- Screen plant where necessary;
- No burning of waste on site;
- Wheel wash to be used as and when required; and
- A screening barrier will be installed at the lower reservoir works to protect users of Loch Lochy during rock cutting.

5.4.3 The *Contractor* adheres to the Construction Noise & Vibration Management Plan (CNVMP), which is to be developed upon receiving a planning consent, and formally agreed with The Highland Council (The Planning Authority), prior to construction work commencing.

5.4.4 To ensure compliance of the works with this document and pollution prevention requirements, the *Employer* regularly monitors the *Contractor's* works. **Should the *Employer* identify any failure to comply with the requirements of this document or the *Contractor's* own method statements the *Employer* may stop the associated works until such time as the failure is rectified**. Any associated cost or time delay incurred will be borne by the *Contractor.*

6 WASTE MANAGEMENT

6.1 Site Waste Management Plan (SWMP) Implementation and Records

6.1.1 In accordance with best practice the *Employer* requires a Site Waste Management Plan (SWMP) for all their construction sites. The *Contractor* utilises one of the available WMP templates e.g. Smart Waste or WRAP waste management plans[2], or similar. The SWMP provides details on how waste reduction is to be implemented at the site and also how this is to be monitored throughout the construction phase. The *Contractor* has responsibility for implementation and monitoring of the SWMP.

6.1.2 A number of difference waste streams are likely to arise during construction of The Proposed Development. The *Contractor* identifies all waste streams[3] and provides an estimate of expected waste volumes for each waste type generated within the waste stream.

6.1.3 The *Contractor* ensures all relevant information is taken into account in preparing his SWMP (for example intrusive ground investigation data, supply chain assessments, options appraisals etc.).

6.1.4 The *Contractor* provides details of their proposed waste contractors (carriers, transfer station, waste recipient etc.) to the *Employer* as part of the SWMP, according to the provisions of the contract.

6.1.5 The requirements of the SWMP are communicated to all site operatives during their induction. Furthermore, all operatives on site attend waste reduction toolbox talks to increase awareness of recycling/waste reduction.

6.1.6 The *Contractor* provides adequate numbers of separate bins (e.g. for paper, cans/plastic, kitchen waste etc.) and skips / waste containers (e.g. for wood, metal, plastics, hazardous waste, general waste) to facilitate waste segregation and recycling.

6.1.7 The *Contractor* provides a site plan showing all waste disposal and recycling locations.

6.1.8 The *Contractor* checks the contents of the site waste and recycling skips on a weekly basis via the Site Environmental Representative. Non-compliance will be highlighted at the weekly progress meeting and appropriate actions taken e.g. a toolbox talk to all site operatives.

[2] Information on WRAP and SMART SWMPs can be found on https://www.ciria.org//CIRIA/Resources/Resource_Efficiency_Knowledgebase/Resources/REK/Resource_Efficiency_Knowledgebase_.aspx and http://www.smartwaste.co.uk/page.jsp?id=97

[3] For example food waste, paper, plastics, glass and other typically domestic refuse and sewage, concrete, waste chemicals, fuel and oils, packaging, e.g. paper, plastics and wood, waste metals, polluted water from plant, vehicle and wheel washes.

7 TEMPORARY DRAINAGE

7.1 Scope and Minimum Requirements

7.1.1 The Controlled Activities (Scotland) Regulations 2011 (CAR) regulate activities in or in the vicinity of rivers, lochs and wetlands, including construction and related engineering activities such as drainage control. Changes to CAR have been brought in by the Water Environment (Miscellaneous) (Scotland) Regulations 2017. Construction drainage works may now require (depending on the nature of the works) Registration with SEPA. The *Contractor* refers to and complies with the updated requirements as contained within the SEPA CAR practical guide, Version 8, January 2018.

7.1.2 The *Contractor* submits all temporary drainage designs and drawings at least 4 weeks prior to the start of the works. Where approval of these designs is required by Local Planning Authority and their Consultees, the *Contractor* allows at least 4 weeks for these approvals from the date of acknowledgement by Local Planning Authority.

7.1.3 The *Contractor* undertakes maintenance of all temporary and permanent drainage solutions as and when required at a frequency at least weekly whilst Principal Contractor.

7.1.4 The *Contractor* maintains a **Drainage Maintenance Register** and issues this to the Project Manager on a weekly basis. This is managed by the Site Environmental Representative.

7.1.5 The *Contractor* designs all new drainage to accommodate a 1:200 year + climate change storm event, as a minimum.

7.1.6 The *Contractor* designs and constructs a drainage system including all silt mitigation measures necessary to prevent the pollution of existing drainage systems and watercourses for construction and post construction activities.

7.1.7 As a minimum all temporary drainage is installed as the track is constructed, where possible the permanent drainage is installed as the works progress. In the event that temporary drainage is installed at the time of construction the permanent drainage is installed within 3 months of that section of track being completed, where possible.

7.1.8 All drainage associated with the *works*, with the exception of that carrying purely Greenfield run-off, is not permitted to discharge directly into any existing drainage or watercourse without at least 2 treatment volumes (e.g. settlement and filtration).

7.1.9 Siting of settlement ponds will take into consideration access requirements for reinstatement and maintenance (for example: periodic silt removal, expansion of ponds or incorporation of additional silt mitigation measures, etc.).

7.1.10 The *Contractor* discusses and agrees the location of lagoons and other drainage mitigation measures with the Site Environmental Representative and Site ECoW prior to associated works taking place.

7.1.11 Except where necessary to facilitate the crossing of a watercourse, no works will be undertaken within 50 metres of any watercourse (except where an element of infrastructure is downgradient of that watercourse).

7.2 Clean Water Diversion

7.2.1 Green field run-off will be kept separate from silty water or other potentially contaminated water. Where appropriate, interceptor ditches and other drainage diversion measures will be installed –

in advance of any excavation works – in order to collect and divert green field run-off away from construction disturbed areas.

7.2.2 Schematic arrangements for tracks and watercourse crossings are illustrated on Figure 2 included in this CEMP, a schematic section of typical cut and fill track drainage is provided on Figure 3.

7.2.3 The *Contractor* keeps the number and extent of greenfield drainage / interceptor ditches to a minimum (required by civil design).

7.2.4 Greenfield cut-off ditches will be reinstated wherever possible to assist in the maintenance of hydrological connectivity in priority habitats.

7.3 Borrow Pit Drainage

7.3.1 Schematic representation of a typical borrow pit drainage arrangement is provided on Figure 4 as included in this CEMP. The *Contractor* constructs all necessary drainage prior to commencing excavation of the borrow pit. This incorporates interceptor (cut-off) drains to prevent water ingress to the area of works from the surrounding topography and a toe drain to control water ingress and flow around the base of the excavation.

7.3.2 The *Contractor* channels borrow pit drainage to settlement ponds located a minimum of 50 metres from any watercourse.

7.3.3 Details of Borrow Pit Management are also contained within **Appendix 14.2 of the EIA Report**.

7.4 Construction Compounds

7.4.1 As with tracks and borrow pits, green field run-off and development run-off will be kept separate and appropriate silt mitigation measures will be deployed. Pumping of water from excavations is subject to a 'permit to pump'.

7.4.2 The construction compound(s) is/are free draining with oil interceptors and contain a bunded area for maintaining vehicles and plant, or other pollution control measures, as appropriate / required to protect existing water courses and private water supplies.

7.4.3 The laydown area(s) are free draining with oil interceptors and contain a bunded area for maintaining vehicles and plant, or other pollution control measures, as appropriate / required to protect existing water courses and private water supplies.

7.5 Access Track Drainage

7.5.1 The *Contractor* designs all new drainage to be installed alongside the access tracks, where appropriate. The dimensions of the ditches will be sized to accommodate the development run-off from site infrastructure and green field run-off from adjacent ground resulting from a 1:200 year + climate change storm event.

7.5.2 The *Contractor* designs the frequency of relief drains crossing the access tracks to ensure the longitudinal track drainage ditches do not surcharge during the 1:200 year + climate change storm event.

7.5.3 If the *Contractor* constructs any parts of the *works* without its designated drainage system in place, or a sufficient temporary alternative, the *Project Manager* may instruct the *Contractor* to exclude all non-essential traffic from that area until the drainage system is in place.

7.5.4 The *Contractor* provides pipe culverts for cross drainage, which will have stone lined sumps at both inlet and outlet pints, to reduce erosion and scouring.

7.5.5 The *Contractor* provides silt traps / catch pits at the inlet of all cross drains to prevent the pipes becoming blocked and prevent erosion at the inlet points.

7.5.6 The *Contractor* provides permanent check dams / water bars (flow barriers or dams constructed across the drainage channel) at regular intervals within drainage ditches, particularly on all slope inclines. Check dams are required in order to reduce the velocity of water and therefore allow settlement of coarser sediment particles, as well prevent scouring of the drainage channel itself.

7.5.7 Check dams are constructed of clean aggregate graded 50 mm – 300 mm and are embedded into the side walls and invert of the excavation by at least 100 mm.

7.5.8 The *Contractor* erects and maintains silt fences to protect all watercourses, which may be affected, within 50 metres of any element of the *works* or drainage outfall. The *Contractor* maintains these.

7.6 Peat and Soil Storage Drainage

7.6.1 The *Contractor* considers the location of any temporary peat or soil storage areas such that erosion and run-off is limited, leachate from the stored material is controlled and stability of the existing ground, particularly in peatland areas, is not affected. The *Contractor* also gives consideration to the impacts of poor drainage control in any areas where peat is used in reinstatement (see sections 14 and 15).

7.6.2 Interceptor ditches, down slope drainage collection systems, containment berms (embedded where appropriate), and appropriate drainage mitigation measures will be required as with other infrastructure described above.

7.6.3 The *Contractor* carefully selects the locations and design the peat and other spoil storage requirements including methods for reinstatement works and incorporated drainage elements. Such design will be prepared in consultation with the Site Environmental Representative, ECoW and *Employer* prior to works commencing.

7.6.4 Details of Peat Management Practices are also contained within the Draft Peat Management Plan (PMP) contained in **Appendix 14.5 of the EIA Report.**

8 WATER QUALITY MONITORING

8.1 General Requirements

8.1.1 In line with best practice, the *Employer* undertakes surface water quality monitoring where an impact on surface water bodies cannot be ruled out. The *Employer* considers it best practice to obtain baseline surface water quality data prior to commencement of the works, and to monitor water quality during the works, in order to identify any significant changes of water quality which may be attributed to the construction works.

8.1.2 The surface water monitoring programme is implemented and maintained by the *Employer* and either undertaken by the *Employer's* environmental staff or by an environmental consultant appointed by the *Employer.*

8.1.3 Where a decrease in water quality resulting from construction works is observed the *Contractor* will undertake remedial measures and will bear the costs of all associated sampling and investigation. The *Contractor* may wish to undertake confirmatory sampling and analysis at any point during the works at his own cost.

8.1.4 A surface water monitoring plan will be prepared following receipt of planning consent. The plan will detail proposed monitoring locations, monitoring frequency and analytical parameters based on the findings of the EIA Report and any subsequently submitted documents / information (e.g. Addendum EIA Report). The Water Quality Monitoring Plan will be submitted to the Planning Authority post-consent / pre-commencement of works as part of CEMP v1.1.

8.2 Surface Water Quality Monitoring Locations

8.2.1 Monitoring of water quality will be carried out on selected watercourses and water bodies; specific monitoring locations will be identified post-consent during the detailed design phase (pre-commencement of works).

8.3 Monitoring Frequency and Analytical Parameters

8.3.1 Surface water quality monitoring will usually be undertaken at the following intervals:

Pre-construction (baseline) monitoring:	Monthly, commencing 12 months prior to any construction works taking place.
During construction:	Monthly, commencing within 2 weeks of start of works, and ad-hoc if deemed necessary, e.g. following a pollution incident
Post construction:	Monthly, for (minimum of) six months and maximum of 12 months following completion of construction works.

8.3.2 Monitoring of specific locations may cease within 6 months of works ceasing in this area, following consultation with SEPA where necessary.

8.3.3 The surface water quality monitoring will include the monitoring of field parameters at each location prior to the collection of water samples at each location for analysis at a UKAS accredited laboratory.

8.3.4 The field parameters monitored during each monitoring round and obtained via use of a hand-held monitoring device, are pH, electrical conductivity, temperature, and dissolved oxygen. Monitoring results will be recorded in the field.

8.3.5 Water samples at each location will be obtained and submitted to a UKAS accredited laboratory. Generally, analysis for the following parameters will be undertaken:

Table 4.0
PROPOSED LABORATORY ANALYTICAL PARAMETERS

Analytical test	Rationale
Electrical conductivity	Useful indicator of the overall salinity of surface or spring water
pH	Overall water quality parameter which could indicate effects on water acidity due to changes in land use and disturbance of peatlands.
Temperature	General physical indicator

Table 4.0 PROPOSED LABORATORY ANALYTICAL PARAMETERS	
Analytical test	**Rationale**
Dissolved oxygen	Likely to be high in all streams but needs determining as an important indicator of water quality.
Turbidity	Measurable on site, and the most noticeable indicator of impact to a water course
Total suspended solids (TSS)	TSS: measure of water quality for construction developments and hence a TSS limit is generally specified for discharges from construction sites.
Biochemical oxygen demand (BOD)	A measure of the biologically degradable substances in water and a standard surface water quality parameter.
Chemical Oxygen Demand (COD)	Measure of possible releases from disturbed peat turf and peat.
Dissolved organic carbon (DOC)	Key component of carbon cycle and known to be sensitive to development on peatland. Organic carbon can help to reduce metal toxicities. May correlate closely with colour.
Soluble iron	Solubility can be affected by pH. High iron concentrations may precipitate out if physical conditions change.
Ammoniacal Nitrogen	Nutrient, known to occur as pulse after ecosystem disruption.
Total reactive phosphorus (orthophosphate)	Standard nutrient parameter, known to occur as pulse after ecosystem disruption and may lead to eutrophication (algal blooms).
Nitrate	End product of nitrogen pollution. Principal nutrient and standard nutrient parameter. Indicator of background pollution and needed for assessing any impact of ground disturbance during construction.
Chloride as Cl	Indicator of rainfall inputs and site weathering, often related to geology of catchments, partly controls electrical conductivity readings.
Total Petroleum Hydrocarbons (TPH) (CWG by GC-FID)	Monitor impact from potential hydrocarbon releases on site during construction works.

8.4 Surface Water Quality Monitoring Reports

8.4.1 A monthly monitoring report on the findings of the monitoring exercises will be prepared and provided to the *Employer* and the *Contractor* within 1 week of receipt of analytical results.

8.4.2 The pre-construction monitoring results will inform baseline values (average and maximum baseline levels), and the monthly monitoring reports for the period covering the construction and post-construction works will highlight any results exceeding the baseline conditions.

8.5 *Contractor's* Visual and Field Water Quality Monitoring

8.5.1 The *Contractor* ensures that all personnel and visitors on site are encouraged (at site inductions) to report visual indications of changes in water quality (e.g. discolouration or other evidence of contamination) in any watercourses on site.

8.5.2 **The *Contractor* undertakes regular visual inspections of the watercourses on site** via the Site Environmental Representative. The *Contractor's* monitoring records will include the following minimum information:

- Antecedent and current weather conditions;
- Current construction activities within the vicinity and in particular up stream or up gradient of the observation point;
- Visual assessment of water colour, turbidity and flow rate;
- Evidence of chemical contamination;
- Visual evidence of silt or sediment pollution within the water column or on the bed of the watercourse/standing water body.
- Details on any communication, corrective action and / or mitigation undertaken as a result of any water quality issues observed during the monitoring visit.

8.5.3 Where evidence of pollution is observed to the water environment, emergency response procedures will be implemented and the incident will be reported to the *Employer* within 30 minutes (section 16). Remedial measures will be implemented immediately and details of action taken will be recorded.

8.6 Private Water Supplies (PWS)

8.6.1 Two private water supply (PWS) sources have been recorded at PWS22 and PWS23-PWS25 (see Appendix A – Environment Constrains Plan), which lie in a surface water catchment in which the pumped storage development is proposed.

8.6.2 Development of the proposed temporary haul road could affect the quantity and quality of water that drains to the source of PWS24-26.

8.6.3 All surface water sourced PWS have pipelines connecting sources to the properties that lie beneath roads and tracks for proposed upgrade.

8.6.4 Prior to construction, upgradient of the sources of private water supplies PWS22 and PWS24-26, a programme of baseline water monitoring would be completed to confirm baseline water quantities and quality. This would be carried out at least 12 months prior to construction to establish natural fluctuations. This data would be used as a monitoring record against which monitoring data collected during construction and operation could be assessed.

8.6.5 Monitoring of the quality of water at the water supply to Kilfinnan Farm (PWS23), Highland Lodges (PWS24), Great Glen Lodges (PWS25) and Kilfinnan Lodges (PWS2) would be assessed by the Employer post-consent (at least 12 months prior to construction), and information on any mitigation / monitoring measures proposed will be submitted to the Planning Authority pre-commencement of works (CEMP v1.1).

9 WATERCOURSE CROSSINGS

9.1 General

9.1.1 The Controlled Activities (Scotland) Regulations 2011 regulate activities in or in the vicinity of rivers, lochs and wetlands, including engineering activities like river crossings and culverting. Works may require (depending on the nature of the works) Registration with, or a Licence from, SEPA.

9.1.2 Details of Water Crossings are contained within in **Appendix 14.6** of the EIA Report

9.1.3 The Proposed Development lies within the River Lochy and River Ness catchments, and that their tributaries are recognised as high sensitivity receptors as a consequence of existing good water quality, the presence of high value fisheries and private and public water abstractions

9.1.4 The Contractor produces a detailed Water Course Crossing Plan prior to commencement of the works, i.e. detailed plans for each of upgrades or new built structures. The Contractor submits these plans to the Employer and SEPA (via the Planning Authority) for acceptance.

9.1.5 The *Contractor* obtains all necessary permissions prior to the execution of any works affecting a watercourse.

9.1.6 The Site Environmental Representative and the ECoW is consulted with regard to all Watercourse Crossing works (bridges, culverts etc.). The ECoW carries out ecological surveys immediately prior to construction or upgrading to identify areas of mammal activity in watercourses.

9.2 Design Philosophy

9.2.1 The *Contractor* adheres to general good practice in Watercourse Crossing design in line with relevant guidance, in particular CIRIA and Scottish Government publications (Section 17), taking into account various requirements summarised below:

9.2.2 All watercourses over which the access roads / tracks cross will be routed through culverts or under bridges appropriately sized and designed not to impede the flow of water and allowing safe passage for wildlife;

i) Culvert design will be over-engineered so that it can be sunk into the bed of the watercourse allowing riverine substrate to stabilise on the floor of the culvert (i.e. leaves the watercourse in as natural condition as possible);

ii) Low maintenance; and

iii) Visually in keeping with the surroundings.

9.2.3 All river crossings will be designed to convey a minimum 1:200 year + climate change storm event, and individually sized and designed to suit the specific requirements and constraints of its location.

Culverts and Bridges

9.2.4 The design of all culverts is in accordance with CIRIA Report 689. Inlet and outlet will be as ‘Headwall’ design type as stated in the Report for all watercourse crossings. Multiple pipe culverts are not permitted.

9.2.5 The natural bed and banks of any existing watercourse will remain unaffected by any new structure.

9.2.6 The *Contractor* consults and complies with the requirements of the relevant Statutory Authorities, Utilities and Service Providers, including the onsite ECoW and the *Employer* for the construction of any culverts or bridges

9.2.7 The *Contractor* provides watercourse crossing structures (i.e. bridges) with sufficient clear span as to ensure no works are required within the one metre of the watercourse, unless accepted in writing by the Project Manager. The *Contractor* designs all new and upgrades any existing structures spanning watercourses to accommodate the flow resulting from the **1:200 year + climate change storm event**. The *Contractor* designs these structures to ensure they do not to affect any existing floodplain or the downstream flow characteristics of the watercourse.

9.2.8 Where the *Contractor* demonstrates the passing of the unrestricted flow from the 1:200 year + climate change storm event negatively affects the downstream catchment the *Contractor* designs the access track and associate drainage to ensure any surcharging during the 1:200 year + climate change storm event does not jeopardise the structural integrity of any assets while protecting the downstream catchment.

Erosion Protection

9.2.9 Erosion protection is generally required at the outlet of the culvert (and to a lesser extent at the inlet). However by appropriately sizing and designing the structure erosion can be minimised reducing the need for any engineered protection.

9.2.10 Where possible the design will avoid using artificial bank reinforcement, and the watercourse kept as natural as possible. Bank protection measures will have to be justified to SEPA regardless of the required level of authorisation (under the Controlled Activities Regulations) required.

10 ECOLOGICAL PROTECTION

10.1 The Ecological Clerk of Works (ECoW)

10.1.1 The *Employer* considers it best practice to provide an Ecological Clerk of Works (ECoW) for the duration of the construction works, irrespective of whether or not this role is required as part of a Planning Consent.

10.1.2 The ECoW will generally be appointed 3-4 months prior to work commencing on site. The role will be full-time for the duration of the main construction period (construction of infrastructure and associated facilities) and may be reduced to a part time role (2-4 days/week) thereafter subject to *Contractor* performance and general consensus between ECoW, *Employer* and the Planning Authority (where required).

10.1.3 The ECoW will be a Full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) with suitable experience.

10.1.4 Within 3 months prior to commencement of the development on site (or in relevant suitable species survey season, prior to commencement of works) pre-construction surveys will be carried out by a suitably qualified and experienced ecologist/ornithologist on behalf of the *Employer*, for protected species and birds.

10.1.5 Pre-construction survey findings will further inform any additional mitigation measures deemed necessary for the construction works phase. This information will update Species Protection plans in the CEMP (v1.1).

10.1.6 The ECoW advises and assists the *Contractor (including* Site Environmental Representative) in avoiding, minimising and mitigating adverse effects and on all such matters.

10.1.7 The *Contractor* consults with the ECoW prior to undertaking specific works as detailed below, and considers the ECoW's advice at all times.

10.1.8 Where the ECoW disagrees with works being undertaken by the *Contractor,* resulting in a breach of planning conditions or measures detailed in the EIA Report and the CEMP, the ECoW informs the *Employer* immediately. On advice of the ECoW the *Project Manager* / *Employer* may halt *the works* or parts thereof.

10.1.9 The following are anticipated to represent the main tasks which translate these aspects of the role into action. This list is not intended to be exhaustive, and may require modification during the construction period as and when circumstances dictate.

Micrositing

10.1.10 The ECoW (in consultation with the Archaeological Clerk of Works (ACoW) and the Geotechnical Clerk of Works) advises on areas suitable for micro-siting, where applicable and required, in advance of works. The *Contractor* consults the ECoW prior to micro-siting being undertaken.

Drainage Management and Watercourses

10.1.11 The ECoW completes weekly inspections, including effectiveness of Pollution Prevention measures and provides advice to the *Contractor*.

10.1.12 Assesses, in advance of works, habitats and species on ground that may be affected by drainage management.

10.1.13 Reviews drainage management proposals associated with temporary peat storage and reinstatement works in advance of such works commencing.

10.1.14 Surveys in advance of any works near or crossing a ditch or watercourse, the condition of the watercourse and for protected terrestrial and aquatic species, using an established specialist if necessary.

Excavated Materials and Reinstatement

10.1.15 Reviews working areas and route corridors, in consultation with the ACoW as necessary.

10.1.16 Agrees locations for side casting and temporary storage areas as development proceeds.

10.1.17 Monitors the condition of stored turf.

10.1.18 Agrees any required hydroseeding specification, including seed mix in liaison with SEPA.

On-site Communication and Liaison with Consultees

10.1.19 The ECoW will inform the *Employer*'s Project Manager and *Contractor* of areas of particular concern, who will then make a decision as to the subsequent action.

10.1.20 The ECoW is involved in the delivery of biodiversity-related Toolbox Talks as part of the site

induction process. All staff will know of the circumstances when the ECoW should be contacted, and the relevant phone numbers.

10.1.21 The ECoW liaises with the statutory consultees as required and agreed with the *Employer* in line with any Planning Authority requirements (if applicable).

Meetings and Recording

10.1.22 The ECoW attends a weekly (or fortnightly, if agreed) environmental meeting to include representatives from the *Employer*, *Contractor*, sub-contractors. The purpose of this meetings is;

- review the effectiveness of the ecological and environmental mitigation;
- review the construction progress on site in the context of ecological and environmental mitigation;
- discuss construction programme for the following week, and fortnight look-ahead; and
- agree actions on these matters.

10.1.23 The ECoW keeps a record of the following:

- animal sightings and signs (including birds, in addition to other site ornithological monitoring), particularly those noted in searches one or two days in advance of construction;
- the habitats of ground to be developed via survey at least a week in advance of construction work;
- tasks carried out and verbal advice given.

10.1.24 The ECoW maintains a **GIS database** of key recordings made during the construction period. Field records will use, if necessary, differential GPS technology captured into a field GIS system, and GIS updates for the purpose of the Eco Map, will be provided to both the *Employer* and the *Contractor* regularly.

10.1.25 The ECoW assists the *Employer* with the supply of relevant information for compliance assessment.

10.1.26 The ECoW provides a weekly log (template will be provided by the *Employer*).

10.1.27 The ECoW produces a final report to the *Employer* documenting the environmental and ecological effects of the construction period. The evidence for effects will be based on findings included in the minutes of weekly/fortnightly meetings, together with weekly logs and other recording information maintained by the ECoW.

10.2 Ecological Protection Tasks

10.2.1 The ECoW is responsible for the following in relation to ecological protection;

- Erects and maintains markers and notices for limits around watercourses, exclusion zones and other areas with protected species or habitats. The *Contractor* assists the ECoW if required by the ECoW, with the installation of markers and notices.
- Conducts weekly checks for protected species and sensitive habitat (peatland, watercourses) within and adjacent to construction areas, and maintains a register of all habitat inspections carried out.

- Implements species protection plans, if ground checks suggest this is necessary for the protected species and habitats.

- If required, the ECoW will make relevant licence applications (e.g. licence to disturb) to SEPA on behalf of the *Contractor* and will oversee related mitigation measures in accordance with any licence obtained.

Habitat Protection Plans

10.2.2 Proposed measures for both aquatic and terrestrial habitat protection are generally as follows:

- A 50 metre buffer will be maintained between working areas, machinery and watercourses and open drains connected to watercourses in all areas except at watercourse/open drain crossing points (any buffer zones less than 50 metres have to be authorised by the ECoW, the minimum buffer zone is 20 metres). Buffer zones will be demarcated by the *Contractor* where deemed necessary by the ECoW. The *Contractor* will discuss and agree the requirement for demarcation with the ECoW and the Employer prior to commencement of any works.

- As the areas of potential GWDTE are considered to be sustained by surface water rather than groundwater, surface water drainage paths to these habitats would be maintained.

- Construction activities around watercourses will adhere to general good practice measures and Pollution Prevention Guidance produced by SEPA. Relevant guidance documents are referenced in Section 17 of this CEMP;

- Pollution prevention measures will be installed and maintained as appropriate, Sections 5 and 7 provide details on pollution control and drainage mitigation measures;

- Any forestry felling works, in the vicinity of watercourses will adhere to general good practice measures as outlined in Section 12 - Forestry of this CEMP.

Species Protection Plans

Birds

10.2.3 All bird species are protected by law[4]. All breeding birds encountered within the development area access site or at pinch points are protected.

10.2.4 If construction commences before then end of the breeding season the *Contractor* provides bird deterrence measures prior to the start of the next breeding season. If works do not begin until the end of the bird breeding season, the *Contractor* undertakes those checks required e.g. for species such as crossbills if any forestry felling is occurring.

10.2.5 If construction works take place during the main bird breeding season (March to August inclusive), in order to ensure compliance with the legislation, suitable nesting habitat will be checked for nests by a suitably qualified ecologist prior to works taking place and works delayed in areas to a buffer identified by the ECoW, where active nests are identified.

10.2.6 Refer to **EIA Report Appendix 11.2: Confidential Ornithological Appendix** for further

[4] Under the Wildlife and Countryside Act 1981 (Appendix 1) it is an offence to kill them or damage their nests and eggs. Species listed in Schedule 1 of the Act are specially protected, so that it is an offence merely to disturb them while nesting. Other specially protected species are listed on Annex 1 of the EC Birds Directive, which also prohibits wilful disturbance at the nest. However, if disturbance to the nest of any other bird species without special protection were sufficient to prevent parent birds from incubating their eggs or feeding their nestlings, so that the brood died, this could be regarded as an offence under the 1981 Act.

mitigation measures.

Fish

10.2.7 Spawning habitats suited to salmonids and lampreys are present in the lower accessible reaches of the Kilfinnan Burn, close to Loch Lochy. Upstream from Kilfinnan the burn is steep with large areas of bedrock and numerous rapids and waterfalls. Salmonid habitat is consequently of poor quality and resident trout populations are likely to persist mainly in fragmented pockets of suitable habitat separated by obstacles. Kilfinnan Falls is impassable. Immediately upstream from the falls there is a long, incised bedrock gorge with several further waterfalls. Immediately upstream from the gorge, there are alternating reaches of boulder and bedrock dominated habitats. Good quality trout habitat is present in the 1.2 km of stream immediately below Loch a' Choire Ghlais.

10.2.8 The *Contractor* informs the ECoW at least two weeks ahead of works commencing in or near watercourses, and consults the ECoW on any mitigation measures required as part of the works.

10.2.9 All water crossing works should be planned to avoid the spawning period between October to May, for those waterbodies identified as having suitable spawning habitats.

Mammals – Otters and Water Voles

10.2.10 The *Contractor* informs the ECoW at least two weeks ahead of works commencing in or near watercourses, and consults the ECoW on any mitigation measures required as part of the works.

10.2.11 Prior to works commencing, the ECoW marks buffers around all known otter shelters (and water vole burrows, if applicable) using a marking method and distance approved by the planning authority in consultation with SNH.

10.2.12 The *Contractor* does not commence construction activities and blasting within 100 metres from a watercourse used by otters until two hours after sunrise, ceasing two hours before sunset; machinery lights will be directed away from watercourses. Sunrise and sunset time can be obtained from the internet (www.timeanddate.com), but will otherwise be advised by the ECoW;

10.2.13 The *Contractor* ensures that

- all open excavations are ramped to enable easy exit by otter and other species;
- culvert pipes stored on site are capped, or if caps are not available, pipes are stored vertically, to prevent otter entrapment;
- design of any permanent or temporary lighting is such that it is directed away from watercourses and that an unlit corridor of 30 metres either side of watercourses is maintained.

10.2.14 During the construction period, the ECoW carries out further checks, including checks ahead of the construction front.

10.2.15 The ECoW maintains a mapped record of checked areas and a log of otter and water vole surveys and informs the *Contractor* and *Employer* as soon as possible of any potential restrictions and limitations to the planned works as a result of the checks/survey findings.

10.2.16 The ECoW notes key areas of otter and water vole activity and any potential shelters out with a licensable distance from construction and monitors activity at these areas and shelters regularly during construction.

10.2.17 All site personnel report any sightings of otters and water voles and any potential otter shelters / water vole burrows encountered on site to the ECoW as soon as possible.

10.2.18 All site personnel report any sightings of otters and any potential otter shelters encountered on site to the ECoW as soon as possible.

Other Species (Red Squirrels, Pine Marten, Wood Ants, Bats etc.)

10.2.19 The *Contractor* informs the ECoW at least two weeks ahead of works commencing to enable pre-commencement checks to be carried out by the ECoW for protected species, identified in the ES.

10.2.20 The ECoW advises the *Contractor* with any mitigation measures required as part of the works. All site personnel report any sightings of animals encountered on site to the ECoW as soon as possible.

10.2.21 For trees that are to be felled, and that have been identified as possessing potential roost features for bat species, these would be checked by a licensed bat worker for evidence of use prior to forestry works commencing;

10.2.22 A 35 metre works exclusion zone is recommended for Wood ant nests during felling or construction works. Works exclusion zones around Wood ant nests would be clearly marked out prior to construction commencing. Were it not possible to microsite the access routes around a Wood ant nest, translocation may be considered. Nests would be moved in a way that retains the nest architecture and the site to which the nest is to be translocated chosen carefully.

11 ARCHAEOLOGICAL PROTECTION

11.1.1 The majority of archaeological features in the study area would be unaffected by The Proposed Development, with slight direct impacts on one site of national importance and two minor sites of local importance. No mitigation is required for any of these sites.

11.1.2 Any construction works involving ground disturbance will pay due attention to the potential presence of unknown and recorded archaeological subsurface features or structures.

12 FORESTRY WORKS

12.1.1 This Section applies only where the *Employer* has control over the forestry works, i.e. where works are carried out on behalf of the *Employer* / under a contract with the *Employer* or *Principal Contractor*.

12.1.2 Forestry works have the potential to affect protected species, e.g. nesting birds, pine marten, red squirrels, bats and wood ants.

12.1.3 The forestry contractor will liaise with the *Employer* and ECoW to ensure that any protected species and/or sensitive habitats have been considered prior to commencement of the works, and appropriate mitigation measures have been agreed, as detailed in Section 10 of this CEMP.

12.1.4 Forestry operations are undertaken in accordance with the Forests and Water UK Forestry Standard Guidelines, 5th Edition 2011, published by the Forestry Commission.

12.1.5 Tree felling operations will be undertaken by a qualified tree felling/forestry contractor and their subcontractors (if applicable).

12.1.6 All access and egress points for the forestry contractor will be as agreed with the *Contractor*. For all road vehicles all normal highway rules will apply on all routes, at all times. Traffic management will normally be under the control of the *Contractor*. Where there are localised site traffic risks associated with tree felling operations, traffic management will be set up by the forestry contractor in consultation with the *Contractor*.

12.1.7 The forestry contractor provide details of the harvesting and extraction subcontractor and the timber haulage subcontractor (if applicable) prior to commencement of forestry works to the *Contractor* and the *Employer*.

12.1.8 The tree felling contractor and their subcontractors will be familiar and comply with the Pollution Prevention and the Environmental Incident and Emergency Response measures as detailed in the CEMP. The Principal *Contractor* will ensure that subcontractors are familiar with the contents of the relevant CEMP sections.

12.1.9 Large scale machinery will not operate within 20 metres of sensitive watercourses. Within these areas if felling is required, it will be undertaken manually or with small scale machinery to minimise disturbance to watercourses or water dependent habitats. Cable extraction methods will be used to minimize soil disturbance. To reduce the likelihood of soil and water contamination biodegradable chain oil will be used in harvesting machinery over the whole site. All forestry machines on site will carry an oil spill kit specially compiled for forestry operations.

12.1.10 The forestry contractor provides spill kits and drip tanks will be set up to prevent pollution from fuelling operations. All plant regularly checked for fuel and oil leaks, at least once a day. Re-fuelling activities will comply with the Pollution Prevention and the Environmental Incident and Emergency Response measures.

13 LANDUSE AND PUBLIC ACCESS

13.1 Agricultural Land – Not applicable

13.2 Public Access

13.2.1 Safe, alternative walking routes should be provided for all walking routes where there is the

potential for walker and construction traffic to share routes.

13.2.2 Parking and access provision should be discussed with The Highland Council and Scottish Canoe Association in advance of construction at White Bridge to ensure continued access for canoeing and rafting on River Garry.

13.2.3 The Trailblazer Rest at Glas-dhoire should be relocated to a suitable nearby location with provision of appropriate infrastructure to enable canoes to be taken out of the water if necessary.

13.2.4 Measures should be undertaken in discussion with West Highland Sailing Club and The Highland Council to ensure that water fluctuations do not affect docking areas for boats at Laggan Locks.

13.2.5 Implications for operation of the Caledonian Canal should be discussed with Scottish Canals in advance of construction works, to agree mitigation associated with Laggan Locks.

13.2.6 Further details on the implications of fluctuating water levels on users of Loch Lochy should be provided once the detailed design of the scheme is complete.

14 EXCAVATED MATERIALS

14.1 Contractor Requirements

14.1.1 I**n advance of each main phase of works**, the *Contractor (*in consultation with ECoW, and other specialists where required), provides a **method statement detailing storage and reuse procedures for the excavated materials anticipated from that particular work area**.

14.1.2 The *Contractor* liaises with SEPA on all aspects of waste management, if required, to ensure compliance with all appropriate regulatory controls prior to and during construction works.

14.1.3 Any material that is not suitable for a predetermined use without the requirement for treatment (e.g. dewatering) is classed as waste and requires to be dealt with in accordance with the *Contractor's* developed Site Waste Management Plan.

14.1.4 Classification of excavated materials will depend on their identified re-use in reinstatement works. All excavated material will be reused on site where possible, and is detailed further in the Peat Management Plan (PMP) - **Appendix 14.5 of the EIA Report.**

14.2 Excavations

14.2.1 The *Contractor* creates, and maintains, an **Excavation Register**, which is updated regularly (at least monthly) and details the material type (peat must be split between acrotelm, catotelm and mineral soils, distinguishing between different types of mineral materials), volume and intended use for materials and the current and original location of all stockpiled material.

14.2.2 The *Contractor* makes this available to the *Employer's Project Manager* upon request.

14.2.3 The *Contractor's* attention is drawn in particular to any risk of slope instability and peat slides at The Proposed Development Site and should refer to the Peat Landslide Hazard Risk Assessment (Appendix 14.1 of the EIA Report) to ensure that under all conditions, the ground surface stability is fully maintained both during investigation and construction of The Proposed Development.

14.2.4 The *Contractor* undertakes turf and soil stripping and excavation works in line with best practice as described in relevant guidance documents in Section 17, in particular:

- *Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste* (2012); and

14.2.5 The *Contractor* employs a construction management team and plant operators of proven experience of working in a peat environment for all peat drainage, excavation, track construction and reinstatement & restoration *works.*

14.3 Spoil Management Plan

14.3.1 Excavated spoil and its subsequent management is covered separately by Chapter 7- Spoil Management of the EIA Report.

14.3.2 It is proposed that a detailed report evaluating options for the use of excavated spoil material would be outlined in a Spoil Management Plan prior to commencement of the main underground works. This study would be undertaken in full consultation with The Highland Council and other statutory bodies and stakeholders.

14.4 Handling and Temporary Storage of Excavated Material

14.4.1 Where material is not required for immediate reinstatement or restoration, temporary storage may be required. To minimise handling and haulage distances, where possible excavated material will be stored local to the site of excavation and/or local to the end–use site where it is required for re-profiling, landscaping or structural purposes. The *Contractor* agrees storage location(s) with the ECoW prior to commencement of excavations.

14.4.2 To reduce impacts to habitats, areas requiring material storage will be stripped first, to preserve habitats and separately store turves for reinstatement. Stripping of such areas must not exceed the range of a long reach excavator, to ensure these areas do not require machine tracking for reinstatement.

14.4.3 Topsoil and vegetation must be stored separately from subsoil and shall be retained and reinstated on all areas of stripped ground as soon as possible, and in the correct horizontal order, i.e. subsoil beneath topsoil and vegetated turves or peat on top, to prevent erosion and leaching / loss of nutrients and organic matter. Where the *Contractor* excavates topsoil, peat vegetation, or other organic soil the turfs are stored separately and should be of 500 mm in thickness to retain the seedbank and structure, with vegetation facing upward. If required, the *Contractor* waters the turfs to maintain them as suitable for reinstatement and restoration. The *Contractor* stores turfs for a period to be agreed with the ECoW and *Employer*.

14.4.4 Where the *Contractor* excavates peat and mineral soils these are segregated by material type and stored separately in stockpiles. Peat is stockpiled no higher than 1 metre.

14.4.5 Where practical the *Contractor* reuses topsoil/peat immediately, however, where this is not possible it is stockpiled for a period to be agreed with the ECoW and *Employer*.

14.4.6 The *Contractor* only handles peat twice: once from the excavated area to a stockpile and secondly from the stockpile to its final position unless agreed, in advance, with the *Project Manager* and the ECoW.

14.4.7 Stockpiles will be isolated from any surface drains and a minimum of 50 metres away from watercourses, unless otherwise agreed with the ECoW. Where required, stockpiles will include appropriate bunding to minimise any pollution risks.

14.4.8 The *Contractor* maintains the **Geotechnical Risk Register**. The *Contractor* makes this available to the *Project Manager* on a monthly basis for the duration of the *works*.

14.4.9 Details of large scale rock excavation and subsequent use will be updated in the post consent CEMP v1.1, upon refinement of design.

14.5 Cabling Works

14.5.1 Cabling may be required to power the construction site and at this stage it is envisaged that cables required for this will be undergrounded and adjacent to tracks in reaching the site compound. All site underground cable installation will be carried out by an independent 3rd party contractor who will required to adhere to all of the principal *Contractor's* environmental requirements as set out by the CEMP.

14.5.2 Upon design refinement, post the award of a planning consent, any cabling requirements will be detailed more specifically, in the CEMP v1.1.

15 REINSTATEMENT

15.1.1 The *Contractor* undertakes reinstatement of disturbed areas resulting from construction. Reinstatement works are those undertaken during construction and aim to address any damage inflicted on the landscape as part of the construction works.

15.1.2 Reinstatement is undertaken in parallel with, or as soon as possible following, the construction works in each area, such as the re-dressing of road and track verges (and other areas that may be disturbed as a result of the construction process).

15.1.3 Where redressing proves unsuccessful re-seeding (including hydro-seeding if necessary) may be part of reinstatement measures. Reinstatement is primarily undertaken using in-situ and site-sourced materials (turfs and topsoils). The *Contractor* is responsible for the success of the reinstatement and as such is required to redress/reseed areas post completion, for a period of up to 2 years, where areas have not successfully revegetated by at least 50%.

15.1.4 The *Contractor* provides proposed methods for reinstatement of materials in landscaping and re-profiling of: track verges; construction compounds; borrow pits; other disturbed areas and redundant construction features (such as drainage ditches, settlement ponds or other sediment control measures, concrete wash out pits and other features which may not be required as part of the permanent works). Reinstatement proposals will provide details on methods proposed for replacement of turves and re-seeding where appropriate. If reseeding is required, this will be undertaken, where possible, using native species of local provenance. If a seed mix is to be purchased for re-seeding the *Contractor* seeks advice and acceptance from the ECoW. Alternatively the ECoW provides relevant information on a suitable seed mix to the *Contractor.*

15.1.5 Excavated peat from cut and fill sections of access tracks will be used for dressing the side slopes of track sections, to a sufficient depth of a minimum of 500 mm. To prevent silt run off no mineral soil will be used for dressing the side slopes of tracks.

15.1.6 Where practicable, reinstatement and re-profiling of, and around, infrastructure and borrow pits will be carried out as the work front progresses, or as soon as is practical after the substantial completion of the works themselves in a particular area. Early reinstatement and re-profiling is required to minimise visual impact and temporary storage / stockpiling of soils and to promote vegetation and habitat reinstatement as early as possible.

15.1.7 Where feasible, to prevent scour and run off and facilitate vegetation re-establishment, any down-

slope embankments will be graded such that the slope angles are not too steep and there is a gradual transition with the surrounding / existing ground profile.

15.1.8 Outline design proposals for borrow pit re-profiling, including details on reinstatement material origin and classification, placement method, final ground profiles and surface dressing will be submitted by the *Contractor*, signed off by their Geotechnical Clerk of Works (GCoW) and agreed by the ECoW/*Employer* prior to commencement of re-instatement.

15.1.9 The *Contractor* maintains comprehensive records of the location, depth and volumes of all materials used in reinstatement of borrow pits.

15.1.10 Reinstatement of vegetation will be focused on natural regeneration utilising peat or other vegetated turves or soils stripped and stored with their intrinsic seed bank. To encourage stabilisation and early establishment of vegetation cover, where available, peat turves or other topsoil and vegetation turves in keeping with the surrounding vegetation type will be used to provide a dressing for the final surface. **Mineral material is not to be used as a top layer** but instead turves are reinstated with the vegetated side facing upwards, in order to speed up the re-generation process, prevent scour and associated mobilisation of sediments, to minimise the need for re-seeding, and help maintain the original, native species mix.

15.1.11 Following completion of the access tracks the side-cast topsoil and vegetated material will be used to dress off the batters of the new track as part of an ongoing reinstatement process. The turves should be re-instated as soon as is practicable.

15.1.12 The *Contractor* undertakes all works in such a way as to allow reinstatement of disturbed areas to proceed as early as possible and in a progressive and sustainable manner.

15.1.13 Any accidental damage or other impacts caused during the works are repaired and reinstated or restored by the *Contractor* to the *Employer's* satisfaction and in accordance with the Planning Consent and any agreements with the landowners, all prior to taking over by the *Employer*.

15.1.14 The reinstatement of clean water cut off drains and settlement ponds etc. will be considered and implemented once all permanent drainage measures are in place and these are no longer required.

16 ENVIRONMENTAL INCIDENT & EMERGENCY RESPONSE

16.1 General Requirements

16.1.1 The *Contractor* prepares a detailed Environmental Incident and Emergency Response Plan (EIERP) in line with GPP21 and PPG22.

16.2 SEARS and Environmental Auditing

16.2.1 A SSE Safety and Environmental Awareness Report (SEAR) is required to be completed for any potential (near miss) or actual environmental incident or emergency which occurs or on site. Blank SEAR forms will be provided by SSE.

16.3 Summary Sheet for Machinery / Plant Operators

16.3.1 The *Contractor* provides a 1 page Summary Sheet containing the key information for incidents response to be used as a quick reference for any on-site personnel witnessing an incident. A laminate copy of this Summary Sheet will be located with all plant / machinery / on-site vehicles. Key Information to be provided to the ***Project Manager*** **and/or the ECoW within 30 minutes** of

an incident (irrespective of the scale / severity of the incident):

- E.g. What substance was spilled (Material Data Safety Sheet);
- Approximate volume and time of spillage;
- Accurate Location of spill (GPS/grid reference or ID/number referenced on map etc.);
- All measures taken;
- Help required i.e. manpower, machinery, expert advice, disposal, etc. and,
- Whether the spill has reached a watercourse.

17 REFERENCE DOCUMENTATION (CONSULT LATEST VERSION)

- **SEPA Guidance for Pollution Prevention (GPPs/PPG):**
  - *PPG01 General Guide to the Prevention of Pollution;*
  - *GPP02 Above Ground Oil Storage Tanks;*
  - *PPG03 Use and Design of Oil Separators in Surface Water Drainage Systems;*
  - *GPP05 Works and Maintenance in or near Water;*
  - *PPG06 Working at Construction and Demolition Sites;*
  - *PPG07 Safe Storage - The Safe Operation of Refuelling Facilities;*
  - *GPP08 Safe Storage and Disposal of Used Oils;*
  - *GPP13 Vehicle Washing and Cleaning;*
  - *GPP21 Pollution Incident Response Planning; and*
  - *PPG22 Incident Response – Dealing with Spills.*
- *Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste*, a joint publication by Scottish Renewables and the Scottish Environment Protection Agency, Version 1 January 2012.
- SEPA Regulatory Position Statement, Developments on Peat, National Waste Policy Unit, 9 February 2010.
- Engineering in the Water Environment, Good Practice Guide, Construction of River Crossings, First edition, SEPA, April 2008.
- *Prevention of Pollution from Civil Engineering Contracts: Special Requirements* publication (SEPA, 2006).
- The Water Environment (Controlled Activities) (Scotland) Regulations 2013 (as amended) - a practical guide, Version 8.0 January 2018.
- **Scottish Natural Heritage (SNH):**
  - Floating Roads on Peat, Forestry Civil Engineering and SNH, August 2010.
  - Constructed tracks in the Scottish Uplands, March 2005.
- **British Standards Institute (BSI):**
  - Code of Practice for Earth Works, BS6031:2009.
  - Code of practice for noise and vibration control on construction and open sites. Noise, BS5228-1: 2009.
- **Forestry Commission**:
  - Forests and Water UK Forestry Standard Guidelines, 5th Edition 2011

- **CIRIA Publications:**
  - Control of Water Pollution from Construction Sites – Guide to Good Practice (SP156)
  - Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors (C532)
  - Control of Water Pollution from Linear Construction Projects – Technical Guidance (C648)
  - Control of Water Pollution from Linear Construction Projects – Site Guide (C649)
  - Culvert Design Guide, C689, CIRIA, 2010;
  - Environmental Good Practice – Site Guide (C741)
  - The SUDS Manual (C753)
- **Scottish Government:**
  - River Crossings and Migratory Fish: Design Guidance, Scottish Government, 2012.

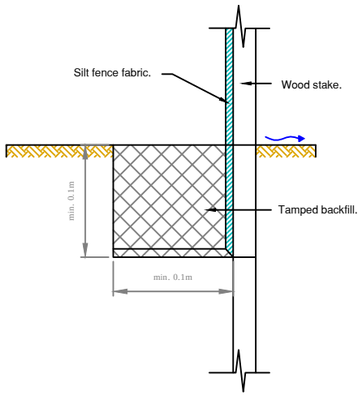
18 CHECKLIST – Required *Contractor's* Information

The information listed in the table below will be provided by the *Contractor* to the *Employer* according to the provisions of the contract, as indicated.

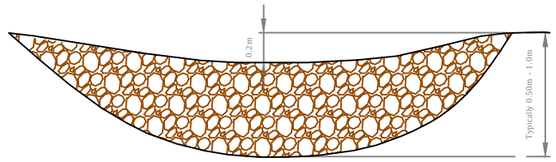
Pre-commencement of works:	**Yes/No**
Name and CV of nominated and appropriately qualified person for **Site Environmental Representative** for all environmental matters – (Section 1)	
Consents, licences and permissions for activities as required by current legislation governing the protection of the environment (Section 1)	
Risk Assessment & Method Statements (Section 3)	
A Site Waste Management Plan (SWMP, Section 6)	
Details of proposed waste contractors and site plan showing waste collection / storage points (Section 6)	
Drainage Maintenance Register (Section 7)	
Watercourse crossing plans and CAR licences/authorisations(Section 9)	
Species Protection License (Section 10)	
Excavation / Reinstatement plans (Section 14 and 15)	
Environmental Incident and Emergency Response Plan (Section 16)	
During and post-completion of works:	**Yes/No**
Records of relevant communication, meetings and reports (Section 3)	
Records of site inductions and tool box talks (Section 4)	
Records of communication with SEPA, (Section 3 and 5)	
Records of all environmental checks/inspections (Section 5)	
COSHH documentation (Section 5)	
Site Waste Management Plan and related information (Section 6)	
Drainage Maintenance Register (Section 7)	
Records of water quality monitoring (Section 8)	
Species Protection License (Section 10)	
Excavation Register (Section 14)	
Records of borrow pit reinstatement (Section 15)	

Note: The above list only relates to requirements of this CEMP. As part of the Contract, other information provisions will be required from the *Contractor*.

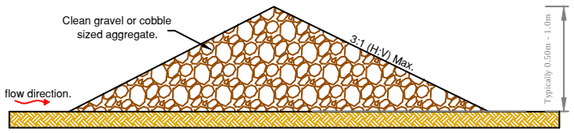
Silt Fence Detail.



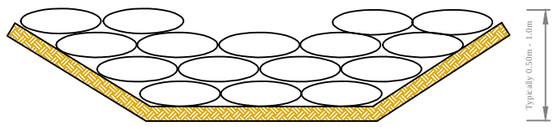
Rock Check Dam Elevation.



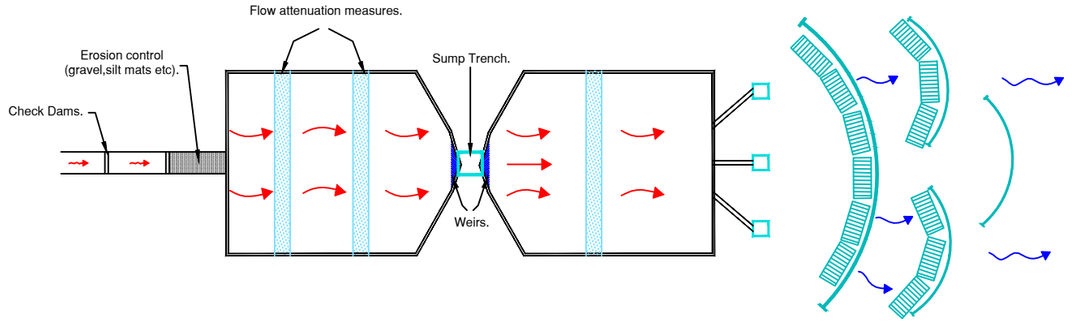
Rock Check Dam Section.



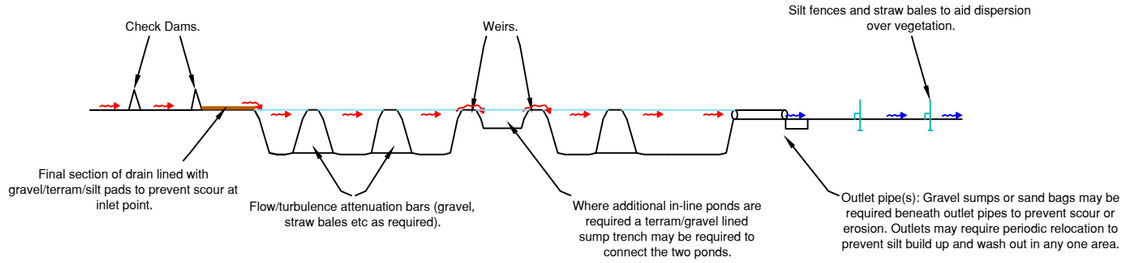
Sand Bag Check Dam Elevation.



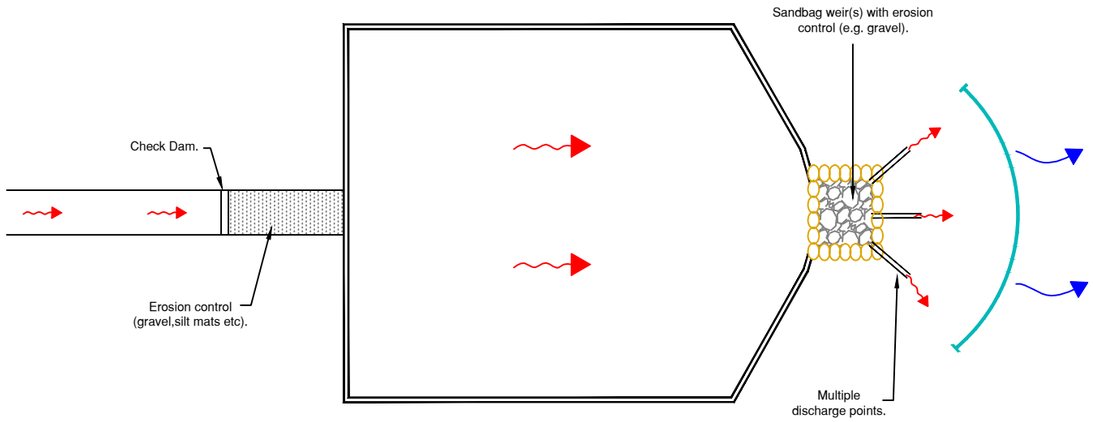
Plan View: In-line Settlement Ponds (typical for higher flow, higher silt load conditions).



Schematic Section: In-line Settlement Ponds.



Plan View: Single Settlement Pond. (Typical for low flow, low silt, load conditions).



NOTES

Silty water

Clean water

Notes

1. Dimensions and number of settlement ponds or requirements for flow attenuation measures will depend on volume and velocity of water and silt load chracteristics.

REV	DATE	DETAILS

PROJECT TITLE

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

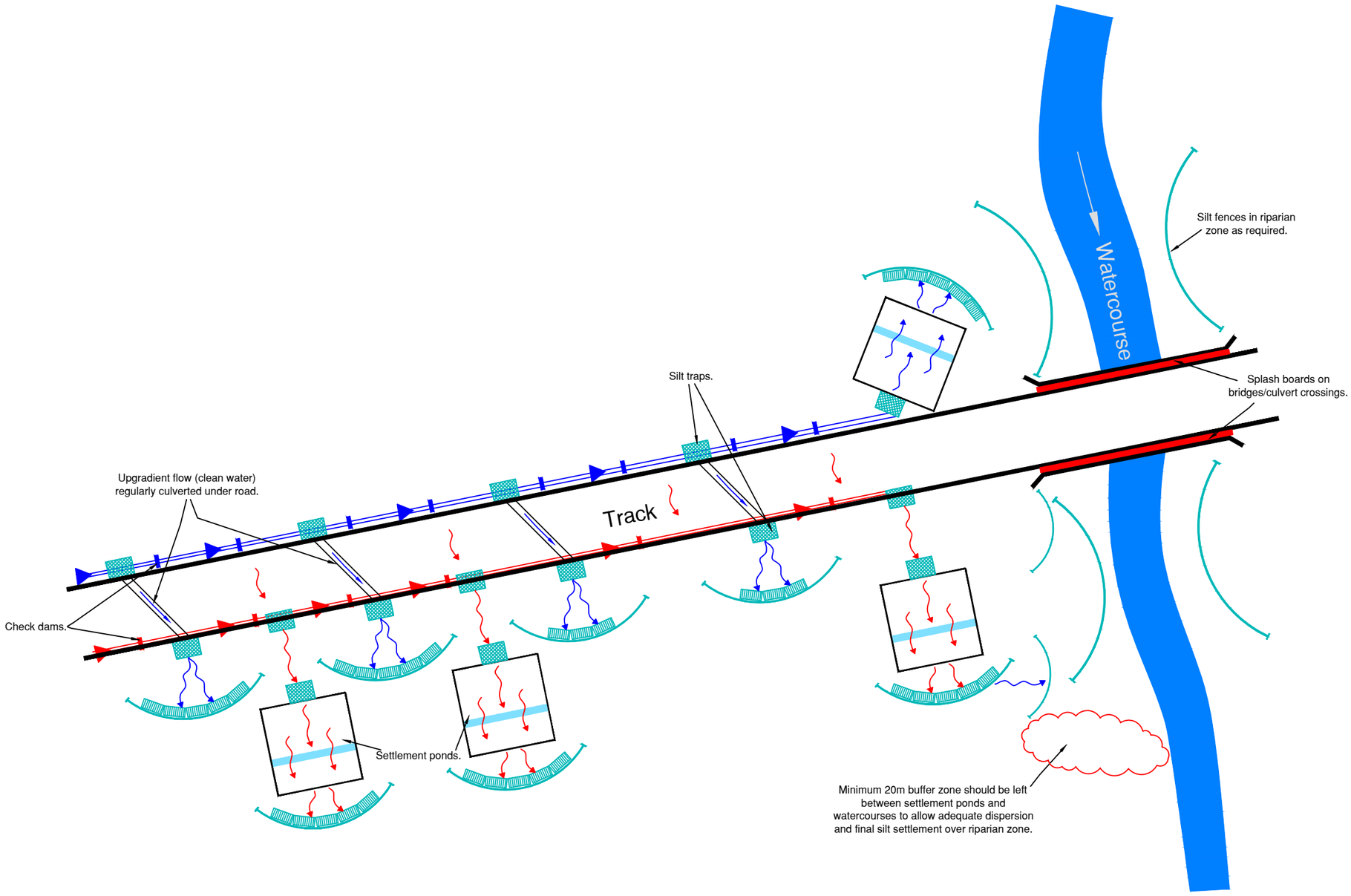
DRAWING TITLE

TYPICAL SCHEMATIC OF SETTLEMENT PONDS AND SILT MITIGATION MEASURES

DRAWN BY	CHK'D BY	APP'D BY	DATE	SCALES
DB			14/10/09	N.T.S.

PROJECT No.	DRAWING No.	REVISION
	FIGURE 1	

SSE Renewables



NOTES

Silty water

Clean water

Silt trap

Silt fence and straw bales

Notes

1. In order to reduce volumes of potentially silty laden run-off, 'clean' (upgradient) surface run-off to be kept away from exposed soil areas and seperated from construction works run-off where possible.

2. Typical details for settlement ponds, check dams and silt fences are shown in Figure 01.

REV	DATE	DETAILS

PROJECT TITLE

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

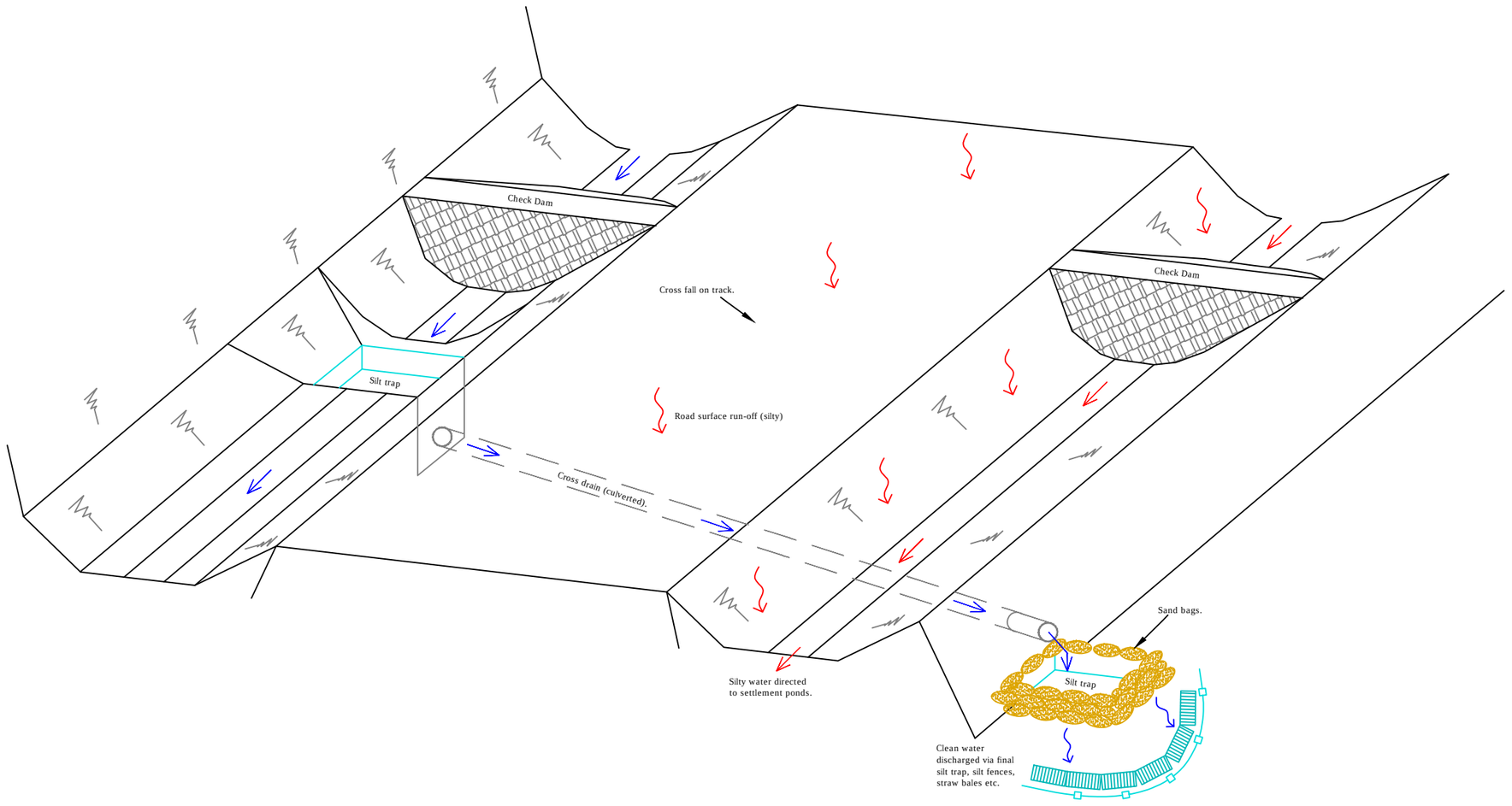
DRAWING TITLE

SCHEMATIC DRAINAGE ARRANGEMENTS FOR TRACKS AND WATERCOURSE CROSSING

DRAWN BY	CHK'D BY	APP'D BY	DATE	SCALES
DB			13/10/09	N.T.S.

PROJECT No.	DRAWING No.	REVISION
	FIGURE 2	

SSE Renewables



NOTES

Notes

1. Refer to Figure 01 for typical details of settlement ponds, check dams and silt fences.
2. Refer to Figure 02 for further details on track drainage arrangements.
3. Where topography or other constraints preclude the segregation of clean / dirty water drainage (as illustrated on this drawing), the road surface cross fall shall be towards the upslope drainage ditch. Flow rates and volumes within such a combined drainage system may be higher and therefore sediment and silt attenuation measures shall be implemented accordingly to control expected increase in flow, erosion and sediment / silt load.

REV	DATE	DETAILS

PROJECT TITLE

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

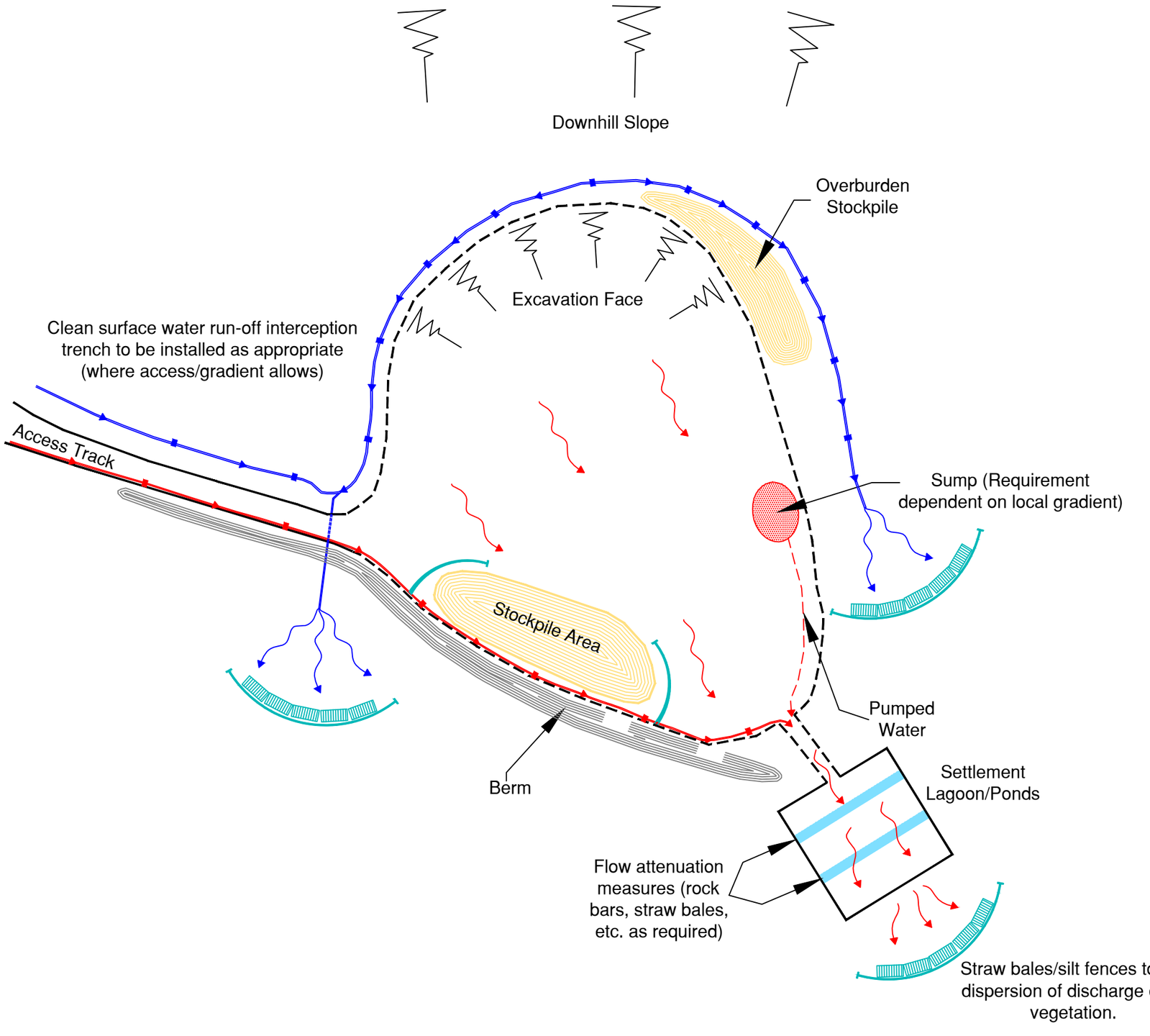
DRAWING TITLE

SCHEMATIC SECTION OF TYPICAL CUT AND FILL TRACK DRAINAGE ARRANGEMENTS

DRAWN BY	CHK'D BY	APP'D BY	DATE	SCALES
DB			13/10/09	N.T.S.

PROJECT No.	DRAWING No.	REVISION
	FIGURE 3	

SSE Renewables



NOTES

- Borrow pit boundary
- Potentially silty run-off/drainage
- Check dams
- Clean water run-off/drainage
- Silt fence and/or straw bales to aid dispersion (and protect stockpile)

1. Borrow pit configurations will vary from that indicated on this drawing (for instance borrow pits are likely to be off-line of continuing access tracks); However, the general principles of clean / dirty water drainage segregation, stockpile erosion and run off control, and general sediment and silt control shall apply irrespective of the final borrow pit configuration.

REV	DATE	DETAILS

PROJECT TITLE

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

DRAWING TITLE

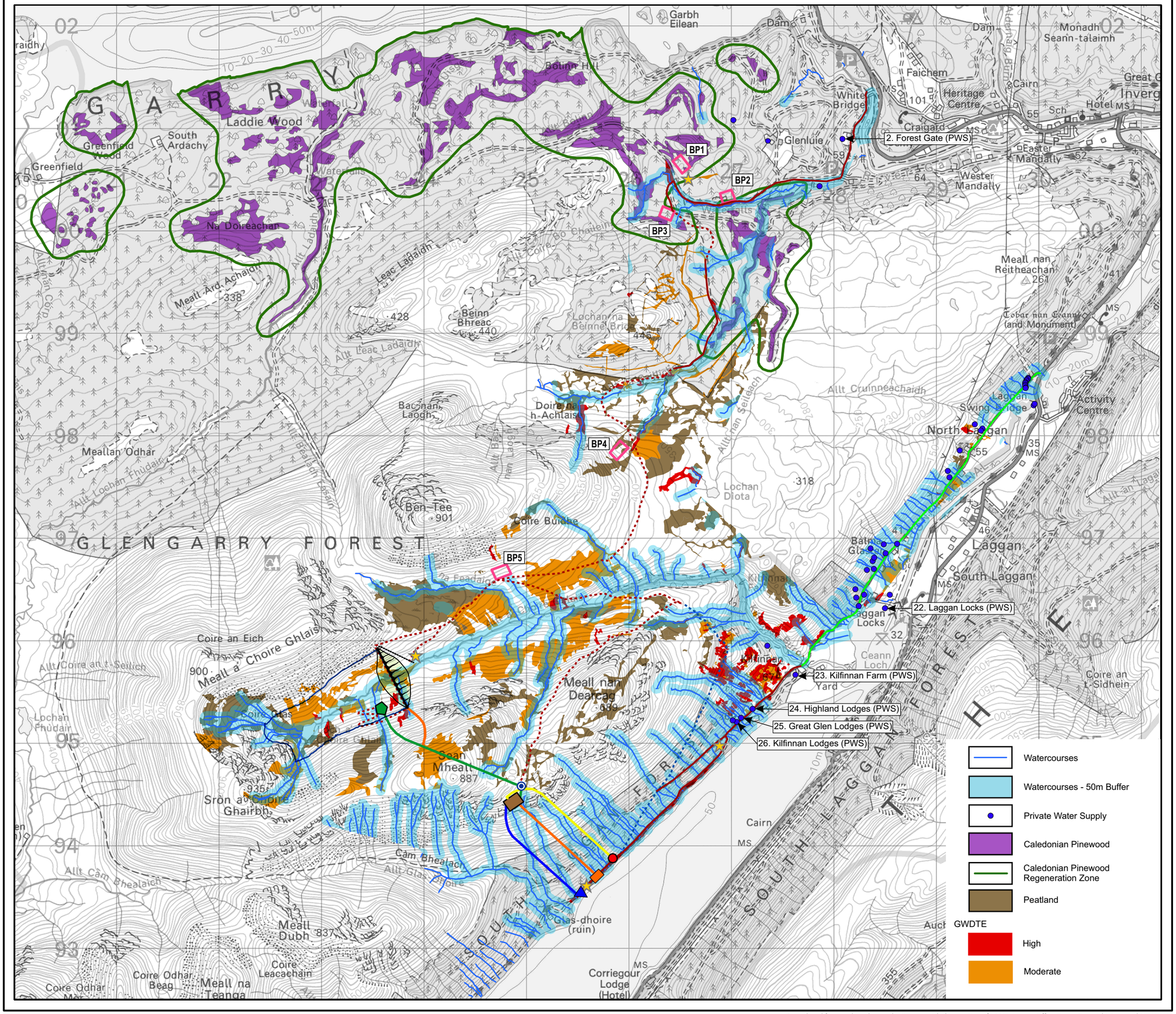
SCHEMATIC BORROW PIT DRAINAGE ARRANGEMENTS

DRAWN BY	CHK'D BY	APP'D BY	DATE	SCALES
DB			14/10/09	N.T.S.

PROJECT No.	DRAWING No.	REVISION
G2009/230	FIGURE 04	

SSE Renewables

Appendix A – Environmental Constraints Map



sse

ash

Key:

- Upper Reservoir
- Dam and Embankment
- Spillway Channel
- Intake Tower
- Headrace Tunnel (underground)
- Tailrace Tunnel (underground)
- Access Tunnel (underground)
- Emergency Access Tunnel (underground)
- Cavern Power Station (underground)
- Surge / Ventilation Shafts
- Emergency Access Tunnel Portal
- Lower Control Works
- Jetty & Administration Building
- Existing Road to be Upgraded
- Existing Track to be Upgraded
- Permanent New Access Track
- Temporary New Access Track
- Indicative Site Establishment Area
- Proposed Borrow Pits

0 0.5 1 1.5 km

SCALE 1:35,000

N

Appendix A

Environmental Constraints

Revised Coire Glas Pumped Storage Scheme
EIA Report