voltalia

Technical Appendix 3.1: Outline Construction Environmental Management Plan

Department: ERM
Project: Bowshiel Solar Farm and BESS
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1. INTRODUCTION

1.1 Background

1.1.1.1 An Outline Construction Environmental Management Plan (oCEMP) has been undertaken by Environmental Resources Management Ltd (ERM) on behalf of Voltalia (the Applicant) for the Bowshiel Solar and BESS Project (the Proposed Development).

1.1.1.2 The Proposed Development is located 2.4 kilometres (km) south of Cockburnspath, and 13 km southeast of Dunbar.

1.1.1.3 The Proposed Development would comprise a Solar PV Array, with associated infrastructure including a 132 kW substation, Battery Energy Storage System (BESS), associated maintenance buildings, CCTV, lighting and access roads. The Proposed Development would have a generating capacity of up to 165 megawatts (MW) from the solar PV modules (solar panels), whilst the BESS will have a generating capacity of up to 80 MW. Planning permission is sought for an operational period of 40 years, thereafter, The Proposed Development would be fully decommissioned, and the land restored. A full description of the Proposed Development can be found in Chapter 3: Development Description or the EIAR.

1.1.1.4 This oCEMP relates to The Proposed Development, hereafter referred to as 'the Proposed Development'. The layout of the Proposed Development is shown on the Site Layout Plan (Figure 1.2). The purpose of the oCEMP is discussed in the Section below.

1.1.1.5 This oCEMP has been produced as part of the planning application for the Proposed Development, specifically, to set out environmental protection measures during construction and to help inform the authoring of a full Construction Environmental Management Plan (oCEMP) at the detailed design stage.

1.1.1.6 This oCEMP takes into account activities to be undertaken during the construction phase of the Proposed Development, including:

- Access tracks;
- Foundations required for the substation and other components; and
- Hardstanding areas and buildings (including electrical compound, cable route, and associated infrastructure).

1.1.1.7 The oCEMP highlights measures that should be used across the Proposed Development during construction activities to ameliorate potential impacts on environmental receptors. This is intended to be a 'live' document and should be updated with more detailed proposals for measures when further information becomes available.

1.1.1.8 The measures set out in this oCEMP are based on industry standards and best practice at the time of writing, driven by international and national legislation as well as national and local policy. In line with this, the measures proposed are intended to be proportionate to the potential effect on environmental receptors with commensurately more robust measures proposed where greater effects are likely to occur.

1.2 Environmental Roles and Responsibilities

1.2.1.1 Environmental roles and responsibilities vary between different stages of a project. Information regarding roles specific to the works can be found in Figure 1.

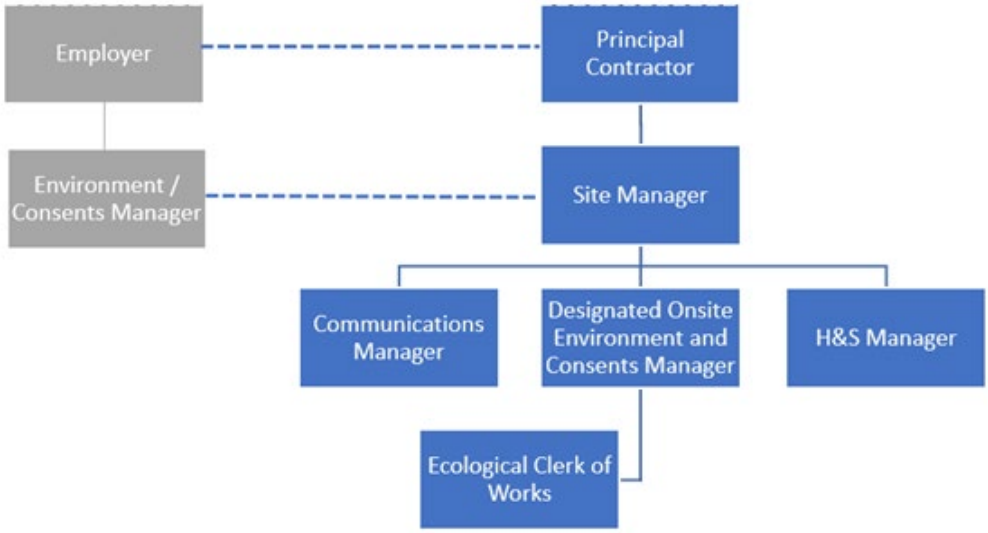


FIGURE 1 ENVIRONMENTAL ROLES AND RESPONSIBILITIES

1.2.1.2 **Employer:** The Employer fulfils the role of the commercial client, and as such has oversight of all construction work packages. The Employer ensures that project requirements are properly implemented, controlled and effectively documented. It is the Employer's responsibility to ensure that suitable processes and resources are in place to ensure the Principal Contractor complies with the health, safety and environmental obligations.

1.2.1.3 **Principal Contractor:** The Principal Contractor, has lead responsibility for practical construction of the Proposed Development, including the appointment of a competent Site Manager, Health and Safety (H&S) Manager, and sub-contractors, agreeing and setting construction environmental targets with the Employer, CEMPs and other associated reports and appendices. This contractor will be deemed to be the Principal Contractor for the purposes of the Construction (Design and Management) Regulations 2015 (CDM Regulations).

1.2.1.4 **Site Manager:** The Site Manager will have the overall day to day responsibility for the delivery of the Proposed Development and will oversee all operational aspects of the construction programmes. The Site Manager will be required to familiarise the contents of this document and liaise with the H&S Manager in order to deliver appropriate environmental awareness and guidance to operatives. It will be important for the Site Manager to establish a system for dealing with enquiries or complaints from the public, local authorities, or statutory consultees. Any complaints that may arise will be logged, reported and addressed and complaint close-out reports will be produced and submitted.

1.2.1.5 **H&S Manager:** The H&S Manager role is to oversee and enforce the implementation and adherence to all relevant health & safety provisions within the site. This role will have overall responsibility for maintaining and updating H&S provisions, and be on-site to advise, guide,

support and promote awareness of the on-site requirements to all personnel. The H&S role will be filled by an appropriately qualified and experienced staff member of the Principal Contractor.

1.2.1.6 **Designated On-site Environment and Consents Manager:** The client will appoint an appropriately competent person or persons (the Designated On-site Environment and Consents Manager) to undertake relevant environmental tasks and supervision as detailed in this document, prior to, during and upon completion of the Works. Together with the Employer's Environment and Consents Manager, the Client and their designated Ecological Clerk of Works (ECoW), and Consents Manager will monitor and oCEMP implementation through liaison with the H&S Manager, Site Manager, and other parties as appropriate.

1.2.1.7 **Ecological Clerk of Works:** A suitably qualified and experienced ECoW will be appointed and will be responsible for providing advice about ecological issues and helping to ensure that the measures specified in the Ecological Management Plan (EcMP) are implemented correctly and in line with industry guidance.

1.3 Site Description

1.3.1.1 A full description of the Proposed Development can be found in **Chapter 3: Development Description** or this EIAR.

1.3.1.2 Plans showing the extent of the Site is provided in Appendix A of this oCEMP.

2. AIMS AND OBJECTIVES

2.1.1.1 The oCEMP is intended to demonstrate measures that could be used during the construction phase of the Proposed Development to adequately protect environmental resources. Detailed proposals for such measures will be documented prior to construction and will provide the same or greater protection for the environment as those described in this oCEMP. The measures are proportionate to the risk and, where greater risk is highlighted at specific locations prior to construction, specific measures would be agreed for those locations.

2.2 Objectives

2.2.1.1 The objective of the oCEMP is to contribute to the successful delivery of the Proposed Development, achieved through a structured approach to good construction management taking into account information and research documented in the environmental reporting, whilst incorporating flexibility to account for unforeseen conditions and innovation.

2.2.1.2 A copy of the oCEMP and related files and reports will be kept in the site offices of the Principal Contractor for the duration of the work and will be made available for review at any time.

2.2.1.3 Upon completion of the work, the Principal Contractor will submit a complete copy of the final set of information to the Applicant for their records. This information will include electronic scans of all hard copy reports, data, field records and correspondence which are gathered over the course of the construction works, and all updates to the oCEMP.

2.2.1.4 It is intended that the oCEMP will be a live document that is regularly reviewed and updated to reflect conditions experienced on-site.

2.3 Review Process

2.3.1.1 Where the Principal Contractor has standard documents within their own Company or Corporate Environmental Management Plan which might cover a particular requirement of this oCEMP, this will be provided to the Applicant, and the relevant corresponding documents will be made available.

2.3.1.2 A checklist will be issued providing the Principal Contractor with a summary of the minimum information to be provided to the Applicant pre, during and post-construction. The Applicant will undertake review and acceptance of the Principal Contractor's provided information prior to commencement of construction works.

2.4 Legislation, Policy and Guidance

2.4.1.1 The legislation, policy and guidance set out below has been considered in the production of this document. Should relevant legislation, policy or guidance change this section, and the associated measures should be reviewed.

SEPA Pollution Prevention Guidelines (PPGs/GGPs)

- GGP 1: Understanding your environmental responsibilities – good environmental practices (2021);
- GPP 2: Above ground oil storage tanks (2021);
- GGP 3: Use and design of oil storage separators in surface water drainage systems (2022);
- GPP 4, Treatment and disposal of wastewater where there is no connection to the public foul sewer (2021);
- GPP 5: Works and maintenance in or near water (2018);
- PPG 6: Working at construction and demolition sites (2012);
- PPG 7: Safe Storage – The safe operation of refuelling facilities (2011);
- GPP 8: Safe storage and disposal of used oils (2021);
- GPP 13: Vehicle washing and cleaning (2021);
- GPP 21: Pollution incident response planning (2021);
- GPP 22: Dealing with spills (October 2018); and
- GPP 26: Safe storage – Drums and intermediate bulk containers (2021).

Best Practice guidance and Industry Standards

- 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[1];
- 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 (C650);

[1] BSI: BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise (2014)

  - The SuDS Manual (C697);
  - Site Handbook for the Construction of SUDS (C698); and
- Institute of Environmental Management and Assessment (IEMA) Practitioner Series No.11: Waste Management: A Guide for Business in the UK, September 2008.

Regulations

- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 ("CAR");
- The Water Environment (Controlled Activities) (Scotland) Amendment Regulations 2021;
- The Environmental Protection Act 1990;
- The Environmental Protection (Duty of Care) (Scotland) Regulations 2014;
- The Waste Management Licensing (Scotland) Regulations 2011;
- The Waste (Scotland) Regulations 2012; and
- The Waste Framework Directive.

Waste Guidance

- BSI (2020), BS 5930:2015+A1:2020 Code of practice for ground investigations;
- CIRIA (2015) Environmental Good Practice on Site (C741), 4th edition;
- IEMA (2008), Practitioner Vol. 11 Waste Management: a guide for businesses in the UK; and
- NIEA et al (2011) Site Waste – it's criminal. A simple guide to Site Waste Management Plan.

2.5 Environmental Policy

2.5.1.1 The Proposed Development should be delivered in accordance with good construction practice, both in its approach to the management of effects on the environment and in its support of local communities.

2.5.1.2 In doing so, the following approach has been developed and is delivered through the implementation of the oCEMP and associated plans and reports:

- The Applicant, along with the Principal Contractor, and other parties to the construction process (once appointed) will act collaboratively and cooperatively to achieve the best environmental outcomes;
- The works will progress in accordance with the requirements of the environmental reporting and methods agreed with the Council and Consultees;
- The Applicant undertakes the appointment of a contractor that is competent;

- The Applicant undertakes the appointment of a contractor that is experienced in delivering works in environments similar to those at the Site and in implementing mitigation works of a similar nature to those defined in this oCEMP and environmental reporting within the Environmental Appraisal;

- The Principal Contractor plans the work integrating from the outset the objectives of the Proposed Development and the environmental requirements defined in this oCEMP and environmental reporting within the Environmental Appraisal;

- The Principal Contractor programmes work in a manner that is safe and that the work and mitigation measures have the greatest opportunity to be effective;

- The Principal Contractor develops contingency plans for reasonably foreseeable events. The Applicant, Designer and other parties take reasonable steps to support the Proposed Development of the Principal Contractor's plans taking into account responsibilities;

- The Principal Contractor shall take reasonable steps to notify local communities of operations during the Proposed Development that may impact on domestic or business activity and will use appropriate methods to manage the impact; and

- In all operations, management of the environment and control of effects will be an integral part of the design, management and construction process.

3. ENVIRONMENTAL MEASURES

3.1 Introduction

3.1.1.1 Appropriate measures have been identified to manage potential effects on the receiving environment that may arise as a result of the construction phase of the Proposed Development. These have been outlined in **Table 3.1**.

3.1.1.2 These measures have been separated out by topic area with each measure aligned against the potential effect it was intended to mitigate and the receptor the effect would otherwise have impacted.

3.2 Public Liaison, General Enquiries and Complaints

3.2.1.1 In line with best practice at the time of writing, the following approach to communication will be adopted.

3.2.1.2 The Principal Contractor will have in place a plan covering community liaison, enquiries and complaints. Measures that will be adopted by the Principal Contractor as part of the construction of the Works include:

- The Site Manager will establish a system for dealing with enquiries or complaints from the public, local authorities or statutory consultees;
- Displaying an information board containing contact names, telephone numbers and addresses, and the helpline number at appropriate locations on the boundaries of the Site will be in place to inform the local community;
- Prior to commencing main construction activities, occupiers of premises in the vicinity of the Works will be notified by the Principal Contractor of the nature of the works, access restrictions, and provided with contact details to which any enquiries should be directed; and
- Any complaints that may arise will be logged, reported and addressed. The system will include measures to keep all relevant parties informed about the progress of complaints.

3.2.1.3 During construction, any external enquiries or complaints relating to an environmental and consents matter shall be reported to the Principal Contractor's Communications Manager, as well as the Environmental/Consents Manager, Ecological Clerk of Works (ECoW) and the H&S Manager.

3.2.1.4 The Communications Manager will then work with the on-site team to investigate, address and respond to the complaint accordingly. Environmental complaints will be recorded on the Principal Contractor's HSE system in accordance with HSE management procedures.

3.2.1.5 Records of complaints are regularly monitored by the Principal Contractor and Employer to check that an appropriate and timely response has been made, and to identify emergent trends which may require further investigation. Roles and responsibilities are defined further in Section 1.2 of this oCEMP.

3.3 Environmental Incident Response

3.3.1.1 Should, despite the measures outlined in **Table 3.1**, an environmental incident occur the following steps of notification will be taken. This will be included within the initial site induction for all operatives, by the appointed Principal Contractor:

- Any operative witnessing an incident must immediately report the incident to the designated Site Manager & H&S Manager; and
- Following this, the Site Manager/Assistant Site Manager shall implement remedial measures and notify the Applicant's Project Manager.

3.3.1.2 For a spillage, in addition to the above:

- If a spill has reached a surface water drain or watercourse, or soaked away in open ground, the Site Manager/Assistant Site Manager will contact SEPA immediately on the 24hr helpline; and
- If incidents do not fall into any precise category, and if there is any doubt, SEPA will always be contacted through the Site Manager/Assistant Site Manager.

3.4 Near Misses

3.4.1.1 Where observed, environmental 'near misses' will also be reported, i.e. situations or occurrences that could potentially lead/contribute to an environmental incident in slightly different circumstances e.g. no drip tray below plant when refueling, or inappropriately stored oils/chemicals. These will be logged by the Site Manager and reviewed by the Applicant's PM.

3.4.1.2 An outline Site Waste Management Plan (SWMP) and Outline Incident Response Plan are included in Appendices B and C. Full details of the responses to incidents are included in the Outline Incident Response Plan.

TABLE 3.1 ENVIRONMENTAL MEASURES

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
General		
All	Increase in general disturbance resulting in a change in the receiving environment	Core working hours are proposed to be between 07.00 until 19.00, Monday to Friday and 07.00 until 13.00 on Saturdays (unless in exceptional circumstances where need arises to protect plant, personnel or the environment). A start-up and close down period for up to an hour before and after the core working hours is proposed. This does not include the operation of plant or machinery that may cause a disturbance. If work is to be undertaken outside of daylight hours, lighting will be used for the works areas only and shall not be allowed to spill onto neighboring wildlife habitats, including trees, hedgerows, paths, woodlands and ponds. Any lighting required during works will be shielded or fitted with hoods to reduce light spill. Quieter construction activities at this time would be undertaken to reduce disturbance. Exceptional circumstances in the above context are defined as reasonably unforeseeable circumstances which would result in the curtailment of construction activity, causing an increase in health and safety risk to humans or other receptors as determined by a suitably qualified and experienced person. The Applicant, or the Principal Contractors appointed by the Applicant, will notify East Lothian Council of any situations changing the approved working hours before they are implemented.
		Site Inductions: will be held for personnel working on the Site on their first visit to the Site. This will include an introduction to all health and safety measures applicable on-site, as well as any Stage-specific environmental considerations. As a minimum, the following information will be provided to all inductees: • Health, Safety and Environment (HSE) Policy; • Significant environmental aspects and potential impacts of their work; • Objectives and Targets; • Submission of environmental improvement ideas, near misses and incidents; • The implications of not complying with environmental consent requirements; • Environmental site rules and requirements;

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• Species and / or habitat protection requirements; • Protocol for archaeological discoveries and watching brief; • Pollution prevention (e.g. silt mitigation and protection of the water environment); • Waste management practices; and • Environmental Incident and Emergency Response Procedures (EIERP). Stage-specific environmental constraints will be presented in the induction. This will include known sensitive areas, restricted working zones, watercourses and buffer zones, refueling (or refueling exclusion) areas, location of skips, etc. Where updates occur, all site personnel will be informed of the change via a Toolbox Talk (see below).
		Toolbox Talks: will be provided during construction, in order to provide on-going reinforcement and awareness training. Toolbox Talks and training are arranged by the Principal Contractor and delivered by specialist personnel on-site as required. The Principal Contractor submits a schedule for Toolbox Talks at least one week prior to commencement of construction. The proposed schedule, to be considered as a live document, is consistent with the programme; i.e., toolbox talks for specific environmental issues are scheduled in advance of when those issues are anticipated to be encountered during the construction programme, if possible. Additional Toolbox Talks are added as required, based on circumstances such as unforeseen risks, repeated observation of bad practices, perceived lack of awareness, pollution events, etc. Specifically, the Principal Contractor provides, as a minimum, environmental training on the following topics: • Training on the use of spill kits (on ground and in surface waters), provided on a regular basis (to account for staff/sub-contractor changes etc.); • Training on silt mitigation e.g. installation of silt fencing etc., silt mitigation measures to relevant construction / site staff; • Contaminated land; • Archaeology; • Buried infrastructure; and • Ecology.

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		A record of all training and Toolbox Talks, their content and the attendees are maintained by the Principal Contractor.
All	Incident arising from the construction of the Proposed Development resulting in an emergency or a threat to personnel or the Proposed Development itself.	Emergency Response Procedures will be contained within the Construction Phase Plan (CPP) written by the Principal Contractor. This includes evacuation procedures, emergency access and egress, muster points, location of first aid facilities and a list of emergency contact telephone numbers for key personnel and emergency services. Emergency arrangements will be documented on all site notice boards, and would include details of: • A map with route to nearest medical facilities; • Emergency contact number; • On-site team contacts; • Incident Notification; • First Aid Arrangements; • Fire Emergency Arrangements; • Environmental Incidents; and • Security Arrangements. All personnel will be made aware of and required to follow Site Emergency Protocols. This will form part of their induction process. Should an incident involving injury or damage to vehicles or plant take place, the Site should be left undisturbed as far as it is reasonably practicable (in accordance with personal health and safety). Where it is necessary to move equipment, materials or people to prevent or reduce environmental impact, photographs will be taken, wherever reasonably practicable (in accordance with personal health and safety), to allow easy reconstruction of the incident layout for any required investigative purposes. Both the Principal Contractor and Employer will be immediately notified of any incidents, and contact will be made with the relevant emergency services, if required. Consultation with the Scottish Fire & Rescue Services will be sought by the Applicant to develop an adequate emergency response in the event of a fire. The Applicant will provide the fire services with all of the necessary information and will provide updates during operation as required.

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
All	Risk of environmental damage as a result of the construction activities.	Environmental site inspections will be undertaken by the Principal Contractor's On-site Environmental and Consents Manager supported by the wider site team. In addition, throughout construction at a frequency to be agreed as appropriate to the construction activity underway at the time, inspections and audits will be carried out by the Employer's Environmental Manager. Health and Safety inspections will be undertaken by the Employer's H&S Manager. The results of these inspections will be fed back to both the Principal Contractor and the Employer. Evidence of good practices is highlighted and where issues are identified, remedial actions will be put in place.
All	Risk of fire at the Proposed Development as a result of construction activities.	Fire Prevention and Control: The office and welfare facilities associated with the Site will have in place appropriate plans and management controls to prevent fires in line with the Joint Code of Practice on the Protection from Fire on Construction Sites (9th ed.). A response plan, in the event of a fire breaking out, will be explained to personnel during site inductions. The Plan will be prepared by the Principal Contractor and will be specific to the Works being undertaken.
All	"	A good housekeeping policy will be applied at all times. As far as reasonably practicable, the following principles will be applied: • All working areas will be kept in clean and tidy condition; • Construction sites and working areas will be secured to prevent unauthorised access; • Open fires and the burning of rubbish will be prohibited at all times; • All necessary measures will be taken to minimise the risk of fire and the Principal Contractor will comply with the requirements of the local fire authority; • Adequate welfare facilities will be provided for site and construction staff; • Site waste will be stored securely to prevent wind blow; • Rubbish will be removed at frequent intervals; and • All reasonable steps will be taken to ensure mud, water and other loose material does not encroach onto the public highway, and if it does, steps will be taken to immediately address the concern.
Anthropogenic and ecological	Increase in light disturbance affecting	Control of artificial lighting is proposed to manage these potential effects. It is anticipated that artificial lighting will be required for security lighting, periods of reduced daylight, such as winter

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
	normal routine or use of environment	months, to supplement the availability of natural daylight and safely meet the working hours outlined above. The majority of work will be undertaken during natural daylight hours, however, where artificial lighting is required, it will comply with the following specifications. • Lighting will be kept to a minimum required for safe working; • Use motion-sensitive security lighting and avoid where possible the use of floodlighting; • Lighting will be directionally controlled and directed away from sensitive receptors (for example, wildlife habitats such as hedgerows, woodlands, paths and trees); • Lights will be fitted with 'hoods' or similar to control light spill beyond the horizontal plane; and • Avoid lighting with ultra-violet (UV) components in areas where lighting is required for public safety purposes as UV light can be disruptive to bat behaviour.
Anthropogenic and ecological	Pollution events associated with the use of plant, site vehicles or chemicals leading to adverse effects on local, sensitive receptors	Best Practice Construction Methods: During construction best practice methodologies will be employed across the Site to minimise the potential for negative effects to arise as a result of the construction phase. These measures will be refined further once the detailed design is known and will be recorded in a oCEMP which is a live document. In relation to general pollution prevention the following measures will be included, as a minimum: • Provide sufficient bunding of fuel storage (110% of content capacity) or COSHH items to limit dispersal of spills or construction materials; • Associated pipework for oil and fuel storage to be stored within the bund; • Oil and fuel storage to be located at least 10 m from any existing surface water drainage systems; • Mobile bowsers will be locked when not in use; • Mobile bowsers will be double-bunded; • Using appropriate measures (e.g., drip trays) when refuelling at all locations and providing spill kits with these at all working areas; • If required, construction plant will only be washed in designated areas; • Maintenance of vehicles, plant and other site equipment to reduce spills; • Use of 'plant nappies', or similar, to manage point source pollution;

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• Use of wheel washes and a jet-wash water bowser to manage and remove material arising or other substances off vehicle wheels; • Storage of fuels and other chemicals in appropriate containers within secure locations such as construction compounds; • Appropriate spill kits kept in accessible locations on-site; • Fuel delivery vehicles only allowed access to site so far as the construction compounds; • Storage tanks (above or below ground) should have sufficient strength and structural integrity to hold without leak or burst and bunded in accordance with guidance; • Storage containers should have a minimum design life of 20 years; and • All storage containers are closed and locked when not in use.
Air Quality		
Anthropogenic and ecological	Generation of fugitive dust leading to soiling of sensitive receptors	Control of fugitive dust: A risk assessment shall be undertaken and documented, prior to construction, in accordance with the latest IAQM guidance. This will inform the extent of further assessment necessary and the design of appropriate management measures once the detailed design is available. These measures could include: • The use of wheel washes or jet-wash water bowser where appropriate to prevent tracking of dust; and • Damping of arisings and construction materials during dry periods.
Anthropogenic and ecological	Generation of greenhouse gasses leading to localised effects on air quality	Control of local emissions: The Site is not situated within an Air Quality Management Area (AQMA) however, this section will cover mitigations on avoiding negative impacts to surrounding receptors: • Delivery times will typically be between 08:00 and 18:00 Monday to Friday and between 09:00 and 13:00 on Saturdays, with no deliveries on Sunday or Public Holidays; • Where possible, schedule deliveries to avoid the start and end of the school day (08:00-09:00 & 15:00-16:00). In exceptional circumstances, it may be required necessary to deliver during these times;

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• If mud or dirt arisings are anticipated through the programme of works, the Principal Contractor shall install and operate wheel washing facilities at the site entrance junction during construction and must remain in place for the duration of construction; • In the event of mud or any material arising's entering the public highway, the Principal Contractor must make use of road sweepers to remove any material arising's from the public highway; • All contractors must abide by the temporary warning signage and directional signage issued which will entail the proposed traffic management procedures, the correct route to the site for contractors and deliveries; and • Drivers of all deliveries will be made aware of the approved route to the Site and to avoid idling of their vehicles.
Contaminated Land		
Site personnel, general public and ecological receptors	Excavation of potential contaminated substrate leading to health impacts for anthropogenic and ecological receptors	Site-Specific Risk Assessment: The land is anticipated to have a low risk for land contamination given the current and historic land-uses. However, a site-specific contamination risk assessment will be undertaken prior to construction to identify specific remediation measures, should they be needed, in-line with the detailed design. Additionally, site staff will adopt a 'maintained vigilance' approach to working. Management of arisings: In the event mud, sediment, and other material arisings as a result of the construction process will be managed to minimise the potential for negative interactions with human and ecological resources. As a minimum, the following will be undertaken, with further management activities defined in the oCEMP once it is available following detailed design: • Arisings will be stored at a stable batter with bunding or other containment where appropriate; • Arisings will be stored away from areas where the public may encounter them; • Arisings will be damped down as needed during periods of dry weather etc.; • Arisings will be stored away from identified sensitive ecological receptors; and • Arisings will be re-used/redistributed on-site, where appropriate, or transported away from site in-line with current best practice methodology.

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
Site personnel, general public and ecological receptors	Spillage of oils and fuel resulting in contamination	The construction compound will have a bunded area and this area will be underlain by an impermeable ground membrane layer. The bund will have a capacity of 110% of the stored liquid containers, including fresh concrete. This will reduce the potential for accidental spillages to contaminate surface water or groundwater. Best practice guidance on the prevention of spillages of chemical outlines the following measures: • Areas where transfer and handling of chemicals is to occur should have impermeable surface; • Drainage systems on-site should be designed to enable the containment of spillages and appropriate disposal and treatment; • Emergency procedures are implemented for a spillage incident and leak detection measures (if appropriate); • Regular maintenance and inspection of chemical storage facilities to be conducted (may be carried out by on-site ECoW); and • Provision and training in the use of spill kits, as outlined below. Appropriately sized spill kit(s) will be provided, maintained, and located at strategic points across the Site. It is also recommended that all vehicles on-site have spill kits in the event of a spillage from a vehicle. This will contain materials, such as absorbent granules and pads, absorbent booms and collection bags. These are designed to halt the spread of spillages and will be deployed, as necessary, should a spillage occur elsewhere within the construction compound.
Surface water bodies	Contamination of, and transport via, surface water bodies leading to impacts on water quality and dispersal to receptors in the wider environment	Site-Specific Risk Assessment: The Site is anticipated to have a low risk for land contamination given the current and historic land-uses. However, a site-specific contamination risk assessment will be undertaken prior to construction to identify specific remediation measures, should they be needed, in-line with the detailed design. Additionally, site staff will adopt a 'maintained vigilance' approach to working. Management of arisings: Arisings as a result of the construction process will be managed to minimise the potential for negative interactions with water bodies. As a minimum the following

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		will be undertaken, with further management activities defined in the oCEMP once it is available following detailed design: • Arisings will be stored at a stable batter with bunding or other containment where appropriate; • Arisings will be damped down as needed during periods of dry weather etc.; • Major earthworks will not be undertaken during adverse weather; • Arisings will be stored away from surface water bodies and flood zones, in locations with no clear pathway for arisings to enter water bodies; • Appropriate pollution prevention measures will be implemented to manage site run-off, capturing sediment before it can be discharged to the wider environment; and • Arisings will be re-used/redistributed on-site, where appropriate, or transported away from site in-line with current best practice methodology.
Site personnel	Release of ground generating gasses leading to health impacts for site staff and risk of explosion	Site-Specific Risk Assessment: The Site is anticipated to have a low risk for land contamination given the current and historic land-uses. However, a site-specific contamination risk assessment will be undertaken prior to construction to identify specific remediation measures, should they be needed, in-line with the detailed design. Additionally, site staff will adopt a 'maintained vigilance' approach to working. Should it be necessary, site staff will wear appropriate Personal Protective Equipment (PPE).
Ecology and Biodiversity		
Ecological receptors	Damage to ecological receptors on-site due to construction activities	ECoW: There is a requirement for an ECoW to be appointed for certain periods of times in areas of sensitivity from commencement of construction to final commissioning of the Proposed Development, or end of the construction period, whichever is the latter. An ECoW is also likely required for certain periods prior to and / or during decommissioning. The scope of the work of the ECoW shall include, but not be limited to: • Monitoring compliance with the ecological mitigation works – including measures for the protection of water vole, nesting birds, bats, badger, and amphibians, (including great crested newt) plus mitigation measures for reptiles following the detailed presence/absence surveys; • Providing advice on adequate protection of nature conservation interests on-site;

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• Providing contractor tool-box briefings about legally protected species and their habitats; • Ensuring any required protected species licenses are in place and providing advice and monitoring compliance with the license conditions; • Ensuring visual checks on surrounding watercourses are carried out regularly to identify possible construction effects; and • To ensure sediment and chemical pollution prevention measures are employed correctly and replaced when required.
Habitats/vegetative assemblages	Destruction or damage to habitats on-site and adjacent to site leading to loss of habitat, species and biodiversity	Best Practice Construction Methods: Will be employed across the Site to ensure that habitats and vegetative assemblages will not be adversely affected through construction activities. These measures, include: • Areas outside the Site boundary are excluded from Proposed Development infrastructure, and any temporary works areas required for construction; • Proposed Development infrastructure will avoid all woodland areas, and a Root Protection Zone (RPZ) will be applied to trees within and adjoining the Site. The RPZ will be specified by a competent arborist or landscape professional. No works or vehicle movements will be permitted within the RPZ without written permission from the arborist or landscape professional; • Proposed Development infrastructure has been designed to be more than 5 m from hedgerows and more than 10 m from watercourses; and, • Mammal gates have been added to the periphery fence line to maintain badger passage within the Site. • Mitigation Register: The following mitigation register should incorporate mitigation measures for the Proposed Development which will inform construction practices. These will be refined at a detailed design stage but will include: – Minimum 30m buffer zones around setts and general mitigation for badgers on site; – An otter survey will be required of all watercourses within the Proposed Development and a 200 m buffer prior to the commencement of works; and • The LBMP, which incorporates wildflower grassland between and underneath panels, and in areas of the Site which do not have any infrastructure, enhancement of existing hedgerows, planting of a woodland block, and the addition of two hedgerows. This will

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		increase the floral diversity, pollen sources and foraging and resting habitat for variety of species including; badger, bats, birds and invertebrates.
Faunal assemblages including protected and notable species	Construction activities leading to disturbance, injury or mortality of protected or notable species	Species Specific Measures: The ecology surveys undertaken to date have provided specific recommendations for measures relating to specific species. These measures include: • Control of artificial lighting to minimise the potential for negative effects on nocturnal species including bat and badger. See 'control of artificial lighting' for specific details; • All staff will be briefed by suitably qualified ecologist (e.g., via toolbox talks) on the importance of protected species conservation (with reference to bats, badger, otter and breeding birds); • Any excavations deeper than 0.5 m should be covered, and if left exposed overnight will have a mammal ramp installed at an angle of no more than 45 degrees to allow trapped individuals to escape; • Vehicles and materials will be inspected prior to use each day to identify individuals which may have taken shelter. Any individuals identified will be able to leave the area naturally. Sightings of animals within these areas will be reported to the Project Ecologist (or appointed ECoW) has confirmed whether any additional mitigation is required; • The creation of large stockpiles of soil will be avoided as these may attract badger and / or other animals to establish new setts / burrows during construction phase. Should any new mammal burrows be identified, works in the area will cease and a Project Ecologist (or appointed ECoW) will be contacted for advice; • The removal of vegetation during the peak breeding season (March to August) will be avoided where possible or will be subject to a pre-construction check by the ECoW no more than 48 hours prior to works commencing. If any nesting birds are found to be present, an appropriate buffer zone will be required, within which works are excluded for the duration of the breeding attempt; • End caps will be added to cable or drainage tubes that are left on-Site to avoid mammals being trapped overnight; and • Building materials will be stored above ground pallets.

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
Aquatic ecology	Construction activities leading to negative impacts on aquatic ecology	Best Practice Construction Methods: Will be employed across the Site to ensure that aquatic ecology will not be adversely affected through construction activities. These measures include: • BAT measures to reduce the run-off of any potential contaminated surface water directly or indirectly into any watercourse or downstream receptor; • BAT measures will be implemented for the correct and appropriate storage of fuels and chemicals on Site; and • Infrastructure of the Proposed Development will be sited out to a minimum of a 10 m buffer from any watercourse to avoid pollution and run off and adhering to best practice guidelines.
Landscape and Visual Impact		
Residents and road users	Changes in visibility of site, including increased vehicle presence, lighting, and other construction activities, from the areas surrounding the Site leading to a reduction in visual amenity	Site Specific Measures: Site specific measures will be employed to manage the potential impacts on receptors in the receiving environment. These measures will be refined once the detailed design is known, however, they will include: • Proposed wildflower meadow beneath and between the panels and in areas of the Site which do not have any solar panels; and • The addition of some new hedgerows.
Noise and Vibration		
Residential, non-residential, other anthropogenic, and ecological noise sensitive receptors	Increase in disturbance through noise and vibration leading to a disruption of normal activity	Best Practice Construction Methods: The Principal Contractor will prepare a scheme of noise control and mitigation measures based on the final detailed construction plan. This can be submitted for approval in advance of works commencing, if required by the Planning Authority. As the Principal Contractor is yet to be appointed, the detailed construction plan has not been finalised at this stage. The Principal Contractor will observe BS 5228:2009+A1:2014+A1:2019 Code of Practice for Noise and Vibration Control on Construction and Open Sites (BS 5228) to inform noise control

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		measures during the construction of the Proposed Development, with an awareness of noise pollution legislation. In accordance with BS 5228 best practice; the Principal Contractor will establish a process for handling any noise-related complaints during the construction period. These will be recorded, and a log will be maintained that will include details of the response and any action taken. This will be available upon request for inspection to the Planning Authority. All enquires whether a query or a complaint will be dealt with in a timely manner. Any complaints with regards to noise will be investigated as soon as practicable, and will be logged, along with the action taken to prevent further exceedances. Any complaints received are to be recorded into the register within 24 hours. The interested party will be notified what action is being taken to address the enquiry/complaint as required. The good practice measures detailed below will be implemented to manage the effects of noise during construction operations, and will be required of all contractors: • Operations shall be limited to core working hours; • Deliveries of plant and materials by Heavy Goods Vehicles (HGVs) to Site shall only take place by designated routes and shall be limited to the core working hours or such other times as agreed with the Planning Authority; • The site contractors shall be required to employ the best practicable means of reducing noise emissions from plant, machinery and construction activities, as advocated in BS 5228; • Where practicable, non-tonal and / or directional reversing alarms should be used; • Where practicable, the work programme will be phased, which would help to reduce the combined effects arising from several noisy operations; • Where necessary and practicable, noise from fixed plant and equipment will be contained within suitable acoustic enclosures or behind acoustic screens; • The main contractor and all sub-contractors will be required through their contract to comply with all environmental noise conditions, as listed within any future planning permission(s); • Where practicable, night-time working will not be carried out. Residents shall be notified in advance of construction activities likely to take place outside of the normal working hours, and noise activities will be kept to minimum during such times;

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• Any plant and equipment required for operation at night (23:00 - 07:00) (e.g., generators or dewatering pumps) shall be silenced or suitably shielded to ensure that the night-time lower threshold of 30dB shall not be exceeded at the nearest noise-sensitive receptors. Core working hours are proposed to be between 07.00 until 19.00, Monday to Friday and 07.00 until 13.00 on Saturdays (unless in exceptional circumstances where need arises to protect plant, personnel or the environment); • Static plant will be located away from sensitive receptors; • When not in use the plant will be switched off; and • Loading and drop-off heights will be minimised.
Transport and Access		
Road users	Increase in baseline vehicle numbers by a total of 60 vehicles per day in the peak month on Bowshiel Solar and BESS Project	CTMP: A CTMP should be produced detailing specific measures to manage site traffic. Specific measures will include: • Provision of appropriate parking facilities for site vehicles, reverse only policy and located away from sensitive receptors; • A banksman should be employed to control access to the Site entrance junction ensure that it is clear at all times; • Wheel washing facilities will be implemented where necessary; • Arrangements for road maintenance and cleaning if required, e.g., road sweeping in the vicinity of site access points as necessary; • A sufficient turning area will be provided for HGVs within the site, all vehicles will enter and exit the site entrance in a forward gear; and • Any road closures will occur temporarily during daylight hours but outside of local peak periods.
Pedestrians	Increase in traffic volumes leading to negative interactions with members of the public	CTMP: A CTMP will be produced detailing specific measures to manage site traffic. Specific measures will include: • Pedestrians and site traffic to be segregated at all times through the use of barriers etc; • Provision of walkways and crossings where appropriate; • Ensure clear visibility on roads, especially at junctions; • Provision of appropriate turning heads or one-way systems; and

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• Deployment of appropriate signage indicating public rights of way and safe areas for pedestrians where appropriate.
Ecological and geological receptors	Access of site by large vehicles or vehicles carrying heavy loads or creation of temporary tracks leading to negative effects on ecological and geological receptors	Best Practice Construction Methods: The Site will comply with best practice construction methods at the time of construction. In relation to access the preservation of ecological and geological receptors these measures will comprise, as a minimum: • Track matting will be deployed where heavy loads must cross the Site out with fixed track ways to prevent rutting or other damage to ecological and geological receptors; • Monitoring of heavily trafficked areas of the Site will be undertaken, and track matting deployed ahead of serious degradation; and • Creation of new tracks will result in the generation of arisings which will be managed in-line with 'management of arisings'.
Soils		
Anthropogenic and ecological receptors	Loss or damage to soils due to construction activities	Best Practice Construction Methods: To minimise the risk of damage to soil structure, the following rules must be observed during all soil handling tasks: • No trafficking of vehicles/plant or materials storage to occur outside demarcated working areas; • No trafficking of vehicles/plant on reinstated soil (topsoil or subsoil); • Only direct movement of soil from donor to receptor areas (no triple handling and/or ad hoc storage); • Soil handling is to be determined based upon soil moisture content. Where practicable soil handling when soil moisture content is above the lower plastic limit (the moisture content at which soil begins to behave as a plastic material and the soil is deemed too wet to handle without causing damage to the soil structure), should be avoided; • Where soils are wet or damp, to minimise compaction, soils should be handled using excavators rather than dozers; • No mixing of topsoil with subsoil, or of soil with other materials; • Soil is only to be stored in designated soil storage areas;

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• All soil storage areas (stockpiles) must be planned appropriately and must have clear signage accordingly by the appropriate contractors to ensure no cross contamination occurs and ease of identification for reinstatement; • Topsoil stockpiles should not exceed 4 m in height and subsoil stockpiles should not exceed 5 m in height. However, if the soil to be stockpiled is dry, formation of higher stockpiles may be permissible, if required, as the soil is likely to remain dry in the core of the stockpile for the entire storage period. However, the appropriateness of higher stockpiles will need to be established on a location-by-location basis; • Upon the placement of soils into stockpiles has been completed, rainfall and soil moisture conditions are of lesser importance, providing they do not lead to erosion resulting in a loss of the soil resource and potentially a change in soil composition if fine material is lost leaving a greater proportion of stones. Stockpile erosion can also result in significant environmental impacts, such as discharges of sediment laden for pathways that could be susceptible to local receptors (roads, drainage systems and surrounding land); • Locations and footprints of each stockpile will be accurately recorded on a plan of appropriate scale by the Contractor(s). Marker posts will need to be provided in locations which have been surveyed and recorded (this should also occur if further soil surveys are required); • Plant and machinery only work when ground or soil surface conditions enable their maximum operating efficiency (i.e., when machinery is not at risk of being bogged down or skidding causing compaction or smearing); • All plant and machinery must always be maintained in good working condition to ensure that the soil is stripped correctly, for example to ensure that the depth of the strip can be accurately controlled, and to minimise the risk of contamination through spillages; • The size of the earthmoving plant to be used should be tailored to the size of the area to be stripped and the space available within the working area; and • If any soil or aggregate materials are imported as part of the construction, the materials should be subject to sampling and analysis to ensure it is suitable for its intended use from an environmental risk and waste management perspective. This process should be fully documented.

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
Materials Management	Management of soils on-site	Best Practice Construction Methods: Import, export (not anticipated) and reuse of material generated on-site will be undertaken in line with the requirements of the CL:AIRE Definition of Waste: Development Industry Code of Practice (version 2). No soils are expected to be generated that cannot be re-used on the Site. Any soils that cannot be re-used will be taken off site and disposed of in line with current waste disposal guidance. Further details will be included in the detailed oCEMP produced by the appointed contractor. Refer to Appendix B for the Outline SWMP.
Water Environment		
Anthropogenic and ecological receptors	Construction activities lead to increased surface water flows resulting in an increased flood risk for sensitive receptors on and off-site	Best Practice Construction Methods: The Site will employ best practice construction methods with respect to managing surface water run-off. These will include, as a minimum: • Installation of surface water management techniques to control runoff based on Rural Sustainable Drainage Systems ('RSuDS') • Installation of drainage measures within the temporary construction compound. This includes the installation of aggregate underlain by a permeable membrane which will be decommissioned before the operational phase of the Proposed Development is implemented; • Permeable surfaces will be implemented where possible, with new access tracks to comprise permeable surfaces (e.g., Type 2 aggregate); • The grounds surrounding and between the solar panel arrays will be planted with native species rich grassland and wildflower mix which will act as dripline planting, this will limit possible channelisation from surface water from solar panel arrays and promote interception and infiltration potential throughout the Proposed Development; and • Given the limited impermeable areas (e.g., substation and inverters) it is proposed that surface water management measures will be utilised to promote the interception and storage of surface water local to the impermeable infrastructure (e.g., bounded by permeable aggregate.

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
Anthropogenic and ecological receptors	Construction activities lead to increased surface water flows resulting in an increased need for drainage on the Site.	Best Practice Construction Methods: Drainage from the Site will include elements of RSuDS design as mentioned above, where appropriate. RSuDS replicate natural drainage patterns and have a number of benefits: • RSuDS will attenuate run-off, thus reducing peak flow and any flooding issues that might arise downstream; • RSuDS will treat run-off, which can reduce sediment and pollutant volumes in run-off before discharging back into natural drainage network; and • In addition, any installed drainage management system, where necessary, will be implemented to avoid any surface water run-off to public roads.
		Drainage for permanent or semi-permanent earthworks is required to control surface water run-off and discharge to appropriate outlets. Best practice earthworks drainage measures include: • Drainage ditches; • Sumps; and • Culverts. Prior to temporary access track and earthwork construction, site operatives will identify flush areas, depressions or zones which may concentrate water flow so that site drainage design will maintain hydrological connectivity. Details are provided in Appendix B: Outline Site Waste Management Plan (oSWMP). Trackside drainage ditches are to be constructed parallel to the access track and follow the same gradient as the access track. Image example of a trackside drainage ditch and cross drainage culvert.

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		 Water within channels should be allowed to flow and should not be stagnant, and tracks should be free from standing water through inclusion of camber or cross-fall. Sustainable drainage systems such as swales with vegetated channels are preferential and will be designed to intercept, filtrate and convey run-off.
		Sediment and drainage management: The use of soil stockpiles will be minimised by earthworks planning. However, where stockpiles are used, silt fences and silt mats will be employed to minimise sediment levels in run-off. All stockpiled material will be stored at least 50 m from watercourses in order to reduce the potential for sediment to be transferred into the wider surface water system and will be regularly inspected to ensure that erosion of the material is not taking place. Stockpiles must be

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		regularly monitored for holes, and they should also be fenced to ensure that they do not attract badger activity. Image example stockpile and drainage ditch  Water polluted by sediments are not allowed to leave the site untreated and the final discharge from the site must have acceptable levels of sediment (in line with baseline levels). The contractor will work under a wet weather working policy during construction. Works that could mobilise sediments and impact the water environment would be stopped during heavy precipitation events. Silt traps may be utilised to trap and filter sediment-laden run-off from excavation works at the Site, including foundations for the sub-station, temporary construction compounds and temporary access tracks. Silt traps and matting are to be installed at the following locations:

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• Within drainage ditches but will be sited to avoid slopes with a gradient greater than 1 in 20; • At the inlet (sump) or outlet side of culverts; and • At the outfall of settlement lagoons to filter sediment during times of heavy rainfall as shown in the image example below. Example image of silt matting combined with silt fencing  Silt fences are to be used as perimeter controls on the site at the downslope end of earthworks or disturbed soils. They should be used in conjunction with other sediment and water treatment solutions where required. To comply with best practice, they should be installed as follows: • Installed perpendicular to the gradient of the slope;

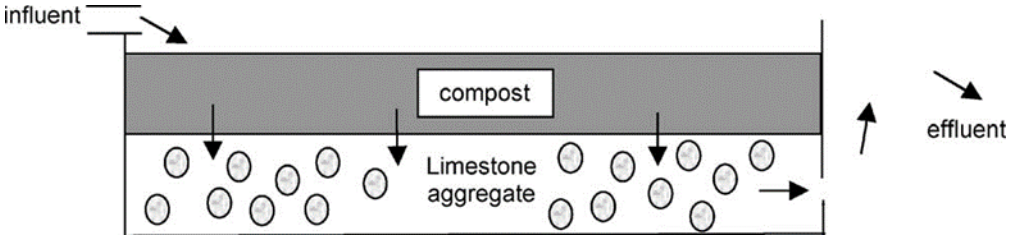
POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• Construct a trench on the up-gradient side; • Install stakes on the down-gradient side; and • Position with a curve to the end of the fence in the up-gradient direction to help capture surface run-off. Silt fences should not be installed in the following: • Within drainage ditches or channels; and / or • Running parallel to the direction of slope. • Silt fencing will be monitored by the ECoW and should be cleared regularly of sediment and silt build-up, and after heavy rainfall and storm events. Silt fencing will should be replaced, when necessary, as monitored by the ECoW. Example image of typical Silt Fencing

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		 Settlement lagoons allow for contaminated water to be retained to allow for the settlement of silt and sediments to an acceptable level prior to discharge to the water environment. They will be implemented where appropriate and take the form of large trenches dug into the ground and are often bunded. To avoid harm to wildlife, strong, badger-proof, fencing must be used around any lagoons to prevent animals from entering and drowning. Settlement lagoons should be installed so as to retain water long enough for silt to settle out. The length of time required will depend on the type of silt with finer silts and clays taking longer to settle. Further measures may include the use of flocculent to further facilitate the settlement of suspended solids. The appropriateness of flocculent use must be discussed with NatureScot

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		and the Scottish Environmental Agency (SEPA) prior to its introduction into settlement lagoons. Flocculants can be pollutants if the incorrect dosage is used. To comply with best practice, they should be installed as follows: • Install energy dissipation methods (e.g., rip-rap) at the inlet to minimise flow; • Install inlet pipe work vertically to dissipate energy of flow in; • Install a lined inlet chamber and outlet weir with materials such as geotextiles; • Install a long outlet weir; and • Install two or three lagoons in a series to increase silt retention and storage as shown in the example image below. Settlement lagoons should be inspected regularly by the ECoW to ascertain the functionality of the system. Settlement lagoon outflow discharge may be pumped, when required, for maintenance purposes. A 'Siltbuster' is a method of pumping excess silt-laden water and treated prior to discharge. Any pumping activities will be supervised and authorised by the Principal Contractor's Project Manager. Example Image of a settlement lagoon

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		
		Best Practice Construction Methods: Foundations and linear infrastructure such as roads, tracks and trenches can disrupt groundwater flow. If carried out in close proximity to GWDTE, construction activities can have adverse effects on these receptors. Measures to protect GWDTE are based on mitigation and good practice, similar to those outlined already in this document, as well as avoidance of GWDTE habitats during design. The following measures will ensure that water quality and the flow supply of groundwater and near-surface water are maintained during the construction and operational phase of the Proposed Development. Key measures include:

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• Silt traps may be deployed to trap and filter sediment-laden run-off throughout the construction phase of the Proposed Development; • Settlement lagoons may be constructed and actively managed to control water levels and ensure that any runoff is contained, especially during times of rainfall. The location and management of the settlement lagoons is essential and will not be sited within vulnerable wetland areas where they may cause drying out and direct loss of habitat; • Flush areas, depressions or zones which may concentrate water flow, will be identified in advance of construction and a suitable drainage design shall be developed to address each location, to ensure hydraulic connectivity; • Site drainage design will avoid any severance of saturated areas to ensure hydrological connectivity is maintained. Site drainage design will be produced in advance of construction; • The length of time excavations is kept open, and the duration of any dewatering will be minimised; • All excavations will be sufficiently dewatered before concrete pours begin and that dewatering continues while the concrete cures. However, construction good practice will be followed to ensure that fresh concrete is isolated from the dewatering system; and • Water from dewatering activities is generally treated by settlement lagoons and will be discharged onto vegetated surfaces, ensuring no net loss of water from the hydrological system. If ponding of water is observed during the discharge onto vegetated surfaces, additional measures may be employed.
Anthropogenic and ecological receptors	Groundwater Dependent Terrestrial Ecosystems (GWDTEs)	Dewatering may be required for excavations or construction of foundations. Based on the information provided within the Flood Risk Assessment, it is unlikely the excavations being carried out as part of this Proposed Development will encounter groundwater. Should groundwater be encountered, and dewatering is required, water will be pumped into settlement lagoons for treatment and discharged onto vegetated surfaces. Discharge of water as a result of dewatering must not cause further erosion and energy dissipation measures should be put in place.

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		Dewatering must consider the impact on other groundwater abstractions and groundwater dependent terrestrial ecosystems (GWDTE). Further information on the protection of GWDTE are provided above. Settlement lagoons may also be constructed with a composting layer also allow for the treatment of any ochre water before being discharged into the hydrological system. A schematic diagram is displayed below: Example Image of a Settlement Lagoon 
Water Environment	Dewatering for excavations or construction of foundations	Control of Foul Water: The Site will use serviced 'porta loo' type facilities to manage the generation of foul water on on-site. These facilities will be situated away from any sensitive receptors on and off site and will be emptied at appropriate intervals.
Water Environment	Watercourse Crossings	The crossing of watercourses is to be avoided in the design where possible. Existing culverts and watercourse crossings may be upgraded and anticipated to be replaced with suitable pre-cast culvert designs. Identification of ecological requirements and limiting factors (e.g., breeding birds and fish spawning) should be conducted prior to installation of a watercourse crossing. The ECoW should be consulted before watercourse crossing construction can commence. Watercourse crossings should not be installed in 'active' areas of a watercourse (e.g., meandering bends and depositional areas). Consideration should be given to the type of watercourse crossing acknowledging that hard engineering structures, such as concrete culverts, can make it more difficult to restore a site or

POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		decommission temporary structures (e.g., access tracks). Bottomless arched culverts will be used for the small-scale crossings. The use of in-situ fresh concrete in the construction of watercourse crossings will be avoided where possible by the use of pre-cast elements. Watercourse crossings will be installed perpendicular to the direction of flow. In accordance with best practice guidance, each watercourse crossing shall be designed on a case-by-case basis to be appropriate for the width of watercourse being crossed, and the prevailing ecological and hydrological situation (i.e., the sensitivity of the watercourse). A number of factors, both environmental and engineering will influence the selection of structure type and the design of the crossing: • The use of appropriate structures to carry access tracks across watercourses taking into account the scale of the watercourse, ecological value, sensitivity to construction activities, topography and construction methodology; • There is a preference to avoid construction in watercourses altogether through the use of arch culverts appropriately designed not to impede the flow of water and allow safe passage for wildlife, such as fish, water voles, otters etc; • When installing culverts, care will be taken to ensure that the construction does not pose a permanent obstruction to migrating species of fish, or riparian mammals (i.e. the crossings will make provision for fish and wildlife migration); • Culverts should be sized so that they do not interfere with the bed of the stream post construction, (i.e. the crossings will leave the watercourse in as natural condition as possible or permit re-establishment of substrate post construction); • Single culverts will be used in preference to a series of smaller culverts that may be more likely to become blocked with flotsam and create erosion (i.e. the crossings will not constrict the channel); • To minimise impacts on the breeding of any fish found, any in-stream works in these areas will be conducted during in the in-rover working window of the 15th of June to 30 September to avoid the fish spawning season, where possible; • Ease and speed of construction are important to minimise disruption to the watercourse and surrounding habitat; • Culverts and headwalls should be designed to last the operational life of the Proposed Development;

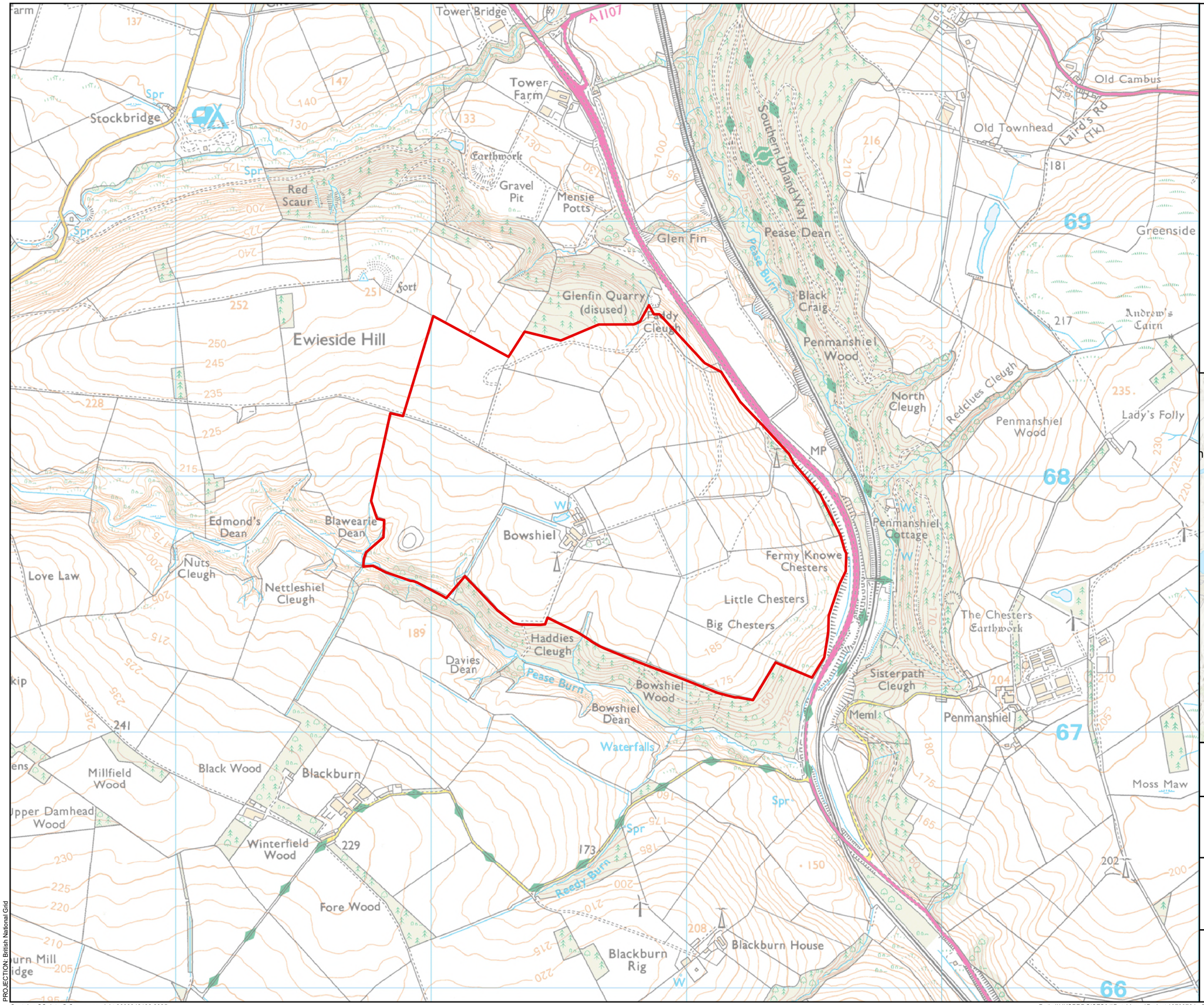
POTENTIAL RECEPTORS	PREDICTED CHANGES AND POTENTIAL EFFECTS	PROPOSED MEASURES
		• Designs should be low maintenance and where possible self-cleansing; and • Structures should be visually in keeping with the surroundings. Erosion to the bed and banks at a watercourse crossing as a result of scouring during high rainfall and storm events. Erosion can expose span structure foundations and/ or cause a drop forming at the outlet of the watercourse crossing. If this occurs, the inclusion of erosion protection measures may be required, such as baffles. The crossing should be reinstated and reinforced to allow for scour during higher flows. The crossing should be reinstated to allow for fish passage and continuity of the watercourse bed. If this is not possible, inclusion of a fish pass will be required.
Waste		
All	Construction activities lead to generation of construction waste which negatively impacts on and off-site receptors	Best Practice Construction Methods: The Site will comply, where possible, with the waste hierarchy in the management of waste arising as a result of construction activity. The hierarchy stipulates elimination, reduction, re-use, recycling and finally disposal. The detailed design will inform more detailed, site-specific measures however it is anticipated that these measures will include: • Identification of types of waste that might be generated and responsibility for management; • Implementation of waste minimisation strategies; • Implementation of re-use and recycling strategies; • Set-up of waste disposal facilities; and • Monitoring, auditing and reporting of waste on- site.

4. DECOMMISSIONING

4.1.1.1 A Decommissioning and Restoration Plan will be provided prior to the commencement of decommissioning.

4.1.1.2 Decommissioning activities will be undertaken in accordance with best practice at the time and agreed with the relevant consultees in advance of the works commencing.

APPENDIX A SITE LOCATION PLAN



Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel - Intro.aprx\0733784 - Bowshiel - Site Location Plan

APPENDIX B OUTLINE SITE WASTE MANAGEMENT PLAN

Introduction

This Outline SWMP is submitted as part of a planning application for Bowshiel Solar Farm and BESS, hereafter referred to as 'the Proposed Development' which includes associated soft and hard landscaping.

The aim of this Outline SWMP is to protect the environment through implementation of effective management plans which relate to the management of waste throughout the life cycle of the Proposed Development.

Prior to construction of the Proposed Development, the Principal Contractor will update this Outline SWMP to ensure it is a suitably detailed document. The Principal Contractor will take ownership of the Detailed SWMP and will adhere to the principles presented within it.

The Detailed SWMP is a key tool which is used to plan, implement, monitor and review waste minimisation and management during the construction, operation and decommissioning phases of the Proposed Development.

This Outline SWMP provides guidelines and details of the minimum requirements which the Principal Contractor shall include in their detailed SWMP. The Detailed SWMP will be put in place by the appointed Principal Contractor prior to commencement of the construction phase of the Proposed Development and will be implemented in conjunction with the Construction Environmental Management Plan (oCEMP) to ensure environmental effects on-site are reduced.

It is anticipated that all excavated materials will be utilised on-site as part of the permanent works and site restoration process resulting in no waste arising from these elements of the Proposed Development.

Any import, export (not anticipated) and reuse of material generated on-site will be undertaken in line with the requirements of the CL:AIRE Definition of Waste: Development Industry Code of Practice (version 2)[2]. As such, this Outline SWMP considers only the management of the waste arising from other imported construction materials.

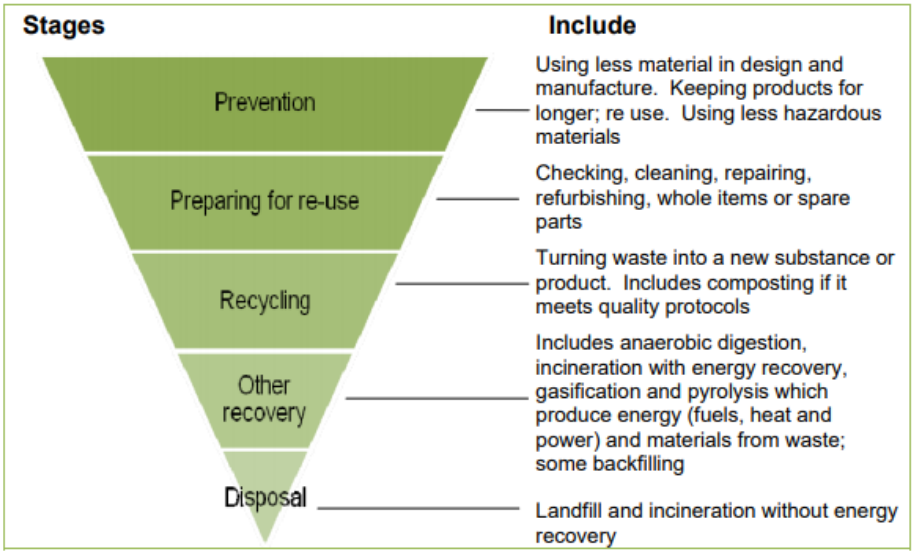
The Waste Hierarchy

The 'Waste Hierarchy' provides an outline approach of how waste management should be assessed within the Outline SWMP, see Plate 2. The Waste (Scotland) Regulations 2012[3] place a duty on all persons who produce, keep or manage waste to apply the 'Waste Hierarchy' in order to minimise waste production at every stage of the Proposed Development.

The 'Waste Hierarchy' promotes selection of the Best Practicable Environmental Option (BPEO) and preferred option for management of waste.

[2] Contaminated Land: Applications in Real Environments (2011): The Definition of Waste: Development Industry Code of Practice (Version 2)

Waste Hierarchy[3]



The core waste management principles of reduce, reuse, recycle, recover and disposal as defined in the 'Waste Hierarchy', are embedded within this Outline SWMP.

Waste Prevention

Minimisation of waste generation is achieved through careful design and creating a 'waste aware' culture on-site. All reasonable actions will be taken by the Principal Contractor to avoid the production of and/or minimise the volume of waste produced as a result of the Proposed Development. This can be through reducing consumption, using resources efficiently, and designing for longevity.

Waste Separation for Reuse and Recycle

Where possible, the separation of waste will be carried out at the source in order to maximise opportunities for reuse and recycling. Segregation of waste will require training, monitoring and enforcement.

Waste Storage, Disposal and Transportation

All areas used for temporary storage of waste on-site will comply with SEPA guidelines and will be clearly signed. Waste storage facilities will be provided at source using the best environmental options available. Any hazardous or special waste will be stored in separate, secure containers and clearly identified as such.

Disposal activities will also be carried out in accordance with the SEPA, Pollution Prevention Guidelines (PPGs[4]) in order to ensure compliance with current waste legislation.

[3] Defra (2011) Guidance on applying the Waste Hierarchy [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69403/pb13530-waste-hierarchy-guidance.pdf (Accessed 14/06/2023)
[4] Environment Agency (2014): Pollution prevention guidance (PPG) [Withdrawn] Available at: https://webarchive.nationalarchives.gov.uk/20140328090931/http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx (Achieved material accessed 14/06/2023)

A review plan for the PPGs is currently underway, replacing them with a replacement guidance series, Guidance for Pollution Prevention (GPPs[5]). GPPs provide environmental regulatory guidance for Northern Ireland, Scotland and Wales and environmental good practice guidance for the whole UK.

Waste transportation will take place at regular intervals to avoid the accrual of waste. Where possible, delivery vehicles will aim to remove waste materials on return trips.

Only registered waste carriers will be authorised to transport waste and a Waste Transfer Note (WTN) will be completed for each load of waste, which must contain a record of their waste carrier registration number. Copies of each WTN will be filed as an appendix to the SWMP and held for at least two years. The appropriate European Waste Catalogue (EWC) code will be established using updated Technical Guidance (WM3)[6] and will be noted on the WTN, in addition to how it is contained. All sites receiving waste must have an appropriate permit, licence or registration exemption, the details of which should also be recoded.

If required, SEPA will be advised in advance of any hazardous waste movements and Waste Consignment Notes (WCNs) will be purchased in advance for this type of waste transportation. These consignment notes will be held for at least three years.

Policy Context and Legislation

As of 2013, the production and implementation of a SWMP is no longer a legal requirement, however it is regarded as best practice[7]. Policy and legislation do dictate the management of waste and therefore, the following items have been considered when developing the SWMP:

- The Waste Management Licensing (Scotland) Regulations 2011.
- The Waste (Scotland) Regulations 2012; and
- The Waste Framework Directive.

Guidance

Several guidance documents were also used to develop this SWMP and include:

- BSI (2020), BS 5930:2015+A1:2020 Code of practice for ground investigations.
- CIRIA (2015) Environmental Good Practice on Site (C741), 4th edition.
- IEMA (2008), Practitioner Vol. 11 Waste Management: a guide for businesses in the UK; and

[5] NetRegs (2021): Guidance for Pollution Prevention (GPP) [Online]. Available at: Guidance for Pollution Prevention (GPP) documents | NetRegs | Environmental guidance for your business in Northern Ireland & Scotland (Accessed 14/06/2023)
[6] Environment Agency, Scottish Environment Protection Agency & Natural Resources Wales (2015) Waste Classification: Guidance on the classification and assessment of waste (1st Edition v1.1.GB) Technical Guidance WM3, EU Exit Update (Jan 2021) [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/948735/Waste_classification_technical_guidance_WM3.pdf (Accessed 14/06/2023)
[7] IEMA (2008) Practitioner Series No. 11, Waste Management: A Guide for Business in the UK. Institute of Environmental Management and Assessment.

- NIEA et al (2011) Site Waste – it's criminal. A simple guide to Site Waste Management Plan.

The above guidance on waste management will be used to ensure the following objectives are met through the Outline SWMP:

- Legal obligations of the Proposed Development
- Waste production is minimised
- Waste is recognised as a resource
- Project build costs are minimised
- A framework for continuous improvement and best practice is implemented and maintained, and
- Adverse environmental impacts associated with the production and management of waste materials are minimised

Anticipated Waste Streams

The list below provides an indication of the expected waste streams; however this list is not exhaustive and additional streams may be added as the works progress:

- Waste from welfare facilities
- Waste chemicals, fuels and oils
- Packaging
- Waste metals, and
- Wastewater
- Waste from Welfare Facilities

Temporary welfare facilities will be provided during the construction phase. These facilities will include toilets, washing and drinking water. This could include a connection to the public mains water supply, and a cess tank that would be periodically emptied and taken off-site by a licensed operator. All on-site welfare facilities will be clearly signposted and maintained.

Where excess surface water occurs from the area of the buildings, this would be collected and treated in a Sustainable Urban Drainage System (SUDS), prior to discharge.

<u>Toilet Facilities</u>

During the construction phase, 'Porta-loo' type facilities, or equivalent, will be used and emptied by an approved waste contractor, therefore minimising potential effects on drainage ditches and watercourses.

Other Domestic Refuse

Collection facilities for refuse will be provided to segregate waste. These facilities will be clearly marked, positioned in appropriate locations and protected from the weather and animals.

Waste Chemicals, Fuels and Oils

All fuel and oil will be stored within designated area and contained by a small bund constructed from material sourced on-site and lined with an impermeable membrane in order to prevent any contamination of the surrounding soils, vegetation and water table, in accordance with SEPA. Any contaminated run-off within the bund will be disposed of at an appropriate waste management facility.

Any used (contaminated) spill kits, absorbent granules, sheets or fibres must be disposed of in accordance with the COSHH Regulations[8] and amended workplace limits for exposure to COSHH materials[9] and in accordance with the spill management plan.

Packaging

Construction waste generated is expected to be restricted to general construction waste (e.g., off cuts of timber, timber pallets, cardboard, wire, cleaning cloths, paper, etc.) which will be sorted and either recycled or disposed of off-site to an appropriately licenced landfill by the Principal Contractor.

Packaging will be separated at the source of generation on-site, where practical. This approach uses the Waste Hierarchy by encouraging reuse and recycling of materials, such as plastic, wood and paper.

Waste Metals

It is likely that this will be produced from excess steel (e.g., from the solar panel mounting structures or cuttings from underground cabling). Any waste metal would be recycled as appropriate.

Wastewater

Dewatering of Excavations

Based on the information provided within the Flood Risk Assessment accompanying the Solar Farm Planning Statement, it is unlikely the excavations being carried out as part of this Proposed Development will encounter groundwater.

Should groundwater be encountered, and dewatering is required, water will be pumped into settlement lagoons for treatment and discharged onto vegetated surfaces. Details of such activities are included in the Outline CEMP.

Alkali (limestone) may be added to the base of dewatering pits to buffer acidic water, should intrusive site investigations indicate the presence of acid mine water in near surface groundwater. Settlement lagoons may also be constructed with a composting layer also allow for the treatment of any ochre water before being discharged into the hydrological system. A schematic diagram is displayed below:

[8] Health and Safety Executive (2002) Control of Substances Hazardous to Health 2002 (COSHH)
[9] Health and Safety Executive (2020) EH40/2005 Workplace exposure limits. Containing the list of workplace exposure limits for use with the Control of Substances Hazardous to Health Regulations 2002 (as amended)

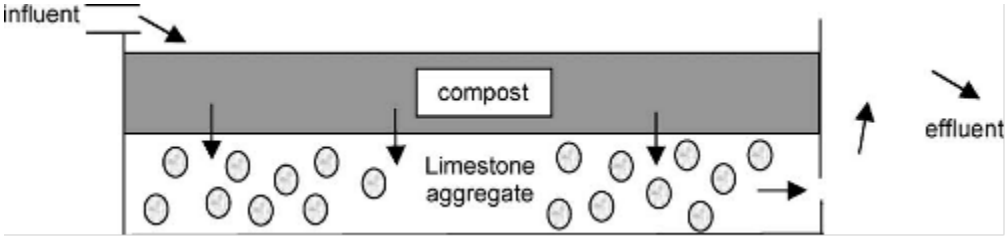


Diagram taken from Johnson & Hallberg 2005[10].

Cleaning Activities

A vehicle washing facility or designated jet-wash water bowser will be in the construction compound or other designated area, if necessary. The sump water will either be pumped to a licenced carrier and disposed of offsite or discharged to vegetated surfaces if the water quality meets SEPA requirements.

[10] Johnson & Hallberg (2005) Acid mine drainage remediation options: a review [Online] Available at: Acid mine drainage remediation options: a review - ScienceDirect (Accessed 14/06/2023)

APPENDIX C OUTLINE INCIDENT RESPONSE PLAN

Introduction

An Incident Response Plan will be implemented throughout the construction and operation of the Proposed Development.

Prior to the commencement of construction, the lead principal contractor shall set up an emergency response plan/procedure, in order to ensure that this plan is adequate for the nature and lifetime of the project and the environment in which works are being undertaken.

The Incident Response Plan will include emergency contacts who will coordinate response activities in the event of a pollution incident.

This Incident Response Plan will include an outline procedure similar to that set out below:

1. **Make the situation safe:** Do not compromise the health and safety of site personnel in controlling a pollution incident. Ensure that appropriate Personal Protective Equipment (PPE) is available to use where necessary.

2. **Stop the source of the pollution incident:** Identify the cause of the emergency or incident and act immediately to prevent further pollution.

3. **Contain the pollution incident:** Once the source of the pollution has been stopped, act to prevent the pollution that has already taken place from spreading. Ensure that appropriate materials are available in appropriate quantities to use where necessary. For example, absorbent materials and booms to soak up the pollution are required to deal with spillages of liquid contaminants. For example, an excavator may be used to dig containment facilities or bunds where containing large volumes of pollutants.

4. **Notify the pollution incident:** Any emergency or incident will be reported as soon as possible after the above initial control measures have been implemented detailing the nature, cause and location to ensure that appropriate action is taken. Where appropriate, the site team should refer the incident to a specialist clean up Contractor. Where pollution is serious, or containment has failed, it may be necessary to contact the Local Authority (Scottish Borders Council), Scottish Environment Protection Agency (SEPA) and/or NatureScot as relevant to the incident.

5. **Monitor the pollution incident:** Once the pollutants are contained, the site of the pollution should be monitored on an ongoing basis until the pollutants and contaminated materials are successfully removed and if necessary, further action taken to contain the pollutants. Where it is possible that pollution has spread, the surrounding water bodies and watercourses should be inspected and monitored on an ongoing basis to identify the extents of the pollution. In the event of pollution due to sedimentation of watercourses, those watercourses should be checked during periods of high rainfall or during construction activities with the potential for significant run-off.

6. **Clean up the pollution incident:** Once the pollution incident has been stopped, contained and the full extents defined, a strategy for cleaning up should be developed. All waste generated by clean-up activities should be disposed of in accordance with current legislative requirements and the site waste management plan and copies of all transfer notes retained.

7. **Learn from the pollution incident:** Ensure that any lessons from the incident are communicated to all relevant staff and appropriate action taken elsewhere on-site if

necessary. Update all relevant Method Statements and Toolbox Talks, and ensure new information is communicated to site staff.

Environmental Incident Protocol

In the event of an environmental incident occurring, the following protocol (or similar) will be adopted:

- The appropriate notification protocols shall be implemented immediately following a planning or environmental spillage or incident, followed by immediate notification of the Site Manager. Should a serious environmental incident occur, SEPA should also be notified;
- The Site Manager will investigate the incident, with inputs from specialist advice as to appropriate measures to remedy or mitigate any potential pollution arising from the incident;
- Assuming the issue arose from the failure of a control system, the issue shall be rectified at the earliest opportunity;
- The response action shall be recorded on the Environmental Complaints/ Spills/ Incidents Report by the Site Manager or ECoW;
- A log of all environmental spills/ incidents and follow-up actions should be kept and made available for inspection; and
- All complaints received from the public or other interested parties as a result of the installation works must be recorded on the Environmental Complaints/ Spills/ Incident Form.

Reporting of Environmental Incidents

All accidents, incidents and near misses (including spills, dust, noise pollution etc) will be reported to the Site Manager immediately, these will be recorded and investigated by the Site Manager and if there is legitimate concern for the surrounding flora and fauna after the incident, then an ECoW will be contacted for advice.

Details which will be recorded on the report will include:

- A description of the incident;
- Contributory causes;
- Adverse effects;
- Measures implemented to mitigate adverse effects; and
- Effectiveness of measures implemented to prevent pollution incidents.

Emergency Contact Details

A notice displaying emergency contact details will be displayed in a prominent location within the site accommodation / office, including emergency spill response team details.

Internal Emergency Pollution Response Team.

The details of at least two lead members of staff with responsibility for emergency pollution response will be included in this section, as well as the details of the ECoW during construction:

- Primary emergency contact;
- Secondary emergency contact; and
- Ecological Clerk of Works.

External Organisations

This section will be populated with contact telephone numbers for organisations to be contacted following a pollution incident (contact details are specifically excluded to ensure that the final version of the oCEMP includes the most up to date details). Examples of the types of organisations/call lines to be included are:

- SEPA
- NatureScot