


TECHNICAL APPENDIX A14.6 VIKING WIND FARM ADDENDUM ENVIRONMENTAL STATEMENT		 viking energy Harnessing Shetland's natural resources
SITE ENVIRONMENTAL MANAGEMENT PLAN (SEMP)		
TECHNICAL SCHEDULE No. 7 EXCAVATED MATERIALS & REINSTATEMENT PLAN		
Document No.	TS7	

SITE ENVIRONMENTAL MANAGEMENT PLAN


VIKING WIND FARM

TECHNICAL SCHEDULE 7

EXCAVATED MATERIALS & REINSTATEMENT PLAN


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Document was also reviewed by all consultants involved in preparation of the Addendum ES. SEPA were also consulted and provided feedback which has been incorporated into this document.			

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1 INTRODUCTION

1.1 Scope and Objectives

- 1.1.1 The information contained herein forms Technical Schedule (TS7), Excavated Materials & Reinstatement Plan (EMRP), of the Viking Wind Farm Site Environmental Management Plan (SEMP).
- 1.1.2 During construction works, the *Contractor* will reinstate and re-profile the site in line with current best practice in wind farm construction and in accordance with current legislation, published guidance documents and the methods detailed in this Technical Schedule.
- 1.1.3 This EMRP provides outline proposals for the environmental management aspects related to the excavation and reinstatement of materials on site, including outline proposals for decommissioning of the wind farm.
- 1.1.4 The principal objective of this EMRP document is to provide a benchmark for best practice such that excavation, handling, storage and reinstatement of excavated materials is undertaken in such a manner as to avoid or minimise environmental impacts, including disturbance and excavation of peat and generation of waste.
- 1.1.5 This Technical Schedule TS7 should be read in conjunction with Technical Schedules: TS2, Pollution Prevention Plan; TS3, Site Waste Management Plan; and TS4, Drainage Management Plan.

1.2 Environmental Statement Context

- 1.2.1 This document provides clarification on issues raised by both SEPA and SNH in their formal consultation responses. Specifically, SEPA raised several points of clarification in relation to storage and use of peat in their letter of 16 July 2009, and SNH raised similar points in paragraph 8.2 of their letter of 24 July 2009.
- 1.2.2 This document should be read in conjunction with **Technical Appendix A14.4** of the Viking Wind Farm Addendum ES, which provides a supplementary and updated review of the preliminary peat excavation and reuse volume estimates provided in the original ES Appendix 14.4, "Estimated Peat Extraction Volume and Potential Reuse Options".
- 1.2.3 The updated peat volume estimates provided in Technical Appendix A14.4 have been revised to take into account the amendments to the wind farm layout made following submission of the original ES. Technical Appendix A14.4 also provides further clarification (as requested by SEPA) on the reuse options (on-site uses), dimensions and other assumptions used to generate these conservative and preliminary volume estimates.

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1.3 Glossary of Terminology

1.3.1 For clarification the following term definitions apply to their use within this report:

1.3.2 Reinstatement involves placement of subsoil, topsoil and turves as required:

- i) On any areas of disturbed ground or any areas of soil or rock exposed during the construction works;
- ii) In borrow pits;
- iii) Alongside tracks (including embankments and batters of cut and fill and floating tracks;
- iv) Around turbine bases and hard standings; and
- v) Upon completion of use of construction compounds and other temporary works areas and redundant features (settlement ponds etc) which may not be required as part of the permanent works.

1.3.3 Re-profiling describes the placement of reinstated materials such that the required final landform (slope angle etc) is achieved.

1.3.4 Landscaping describes the final placement of surface materials and replacement and regeneration of vegetation.

1.3.5 Side casting describes the operation of immediate placement of excavated materials within one arms reach of the excavator (as a temporary stockpile).

1.3.6 Backfilling describes the replacement of materials excavated from a temporary excavation (e.g. cable trenches, temporary diversion ditches, settlement ponds etc).

1.4 Contractor Requirements

1.4.1 The SEMP, incorporating any subsequent revisions required under planning conditions, will form part of the main civil engineering construction Contract and will be made available to those tendering for construction works.


1.4.2 Prior to commencement of works, the appointed *Contractor* will prepare environmental plans and method statements, including a detailed EMRP, to support and supplement the SEMP.

1.4.3 No on site construction will be allowed to proceed without agreement and acceptance of the *Contractor's* EMRP by the Employer and the Ecological / Environmental Clerk of Works (ECoW).

1.4.4 As a minimum, the *Contractor's* detailed EMRP will include:

i) A Programme of Excavation and Reinstatement Works

Separate programmes may require to be produced for discrete phases of works

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or for particular construction areas of the site. Each programme will indicate the intended timescales for excavation, temporary storage and reinstatement works for that particular phase or area of the site.

ii) **Method Statement for Excavation and Reinstatement Works**


For each programme of works provided, a Method Statement will be provided with details on the following:

- Expected excavated material type(s), their physical description and method of on-site classification;
- Estimated volumes of each type of anticipated excavated material;
- Intended end-use(s) for each type of excavated material;
- Proposed excavation methods for all temporary and permanent features;
- Proposed temporary storage solutions. Where a specific storage location is identified, details will be provided on the intended haulage and deposition method, volume to be stored at any location, intended pollution mitigation, engineering and drainage control measures required at the storage location; and
- Proposed methods for reinstatement of materials in landscaping and re-profiling of: track verges; turbine bases; construction compounds; borrow pits; cable trenches; other disturbed areas and redundant construction features (such as drainage ditches, settlement ponds or other sediment control measures, concrete wash out pits and other features which may not be required as part of the permanent works). Reinstatement proposals will provide details on methods proposed for replacement of turves and re-seeding where appropriate.

iii) **Plans and Drawings to Support Excavation and Reinstatement Works**

The following plans and drawings will be provided to support the Programmes and Method Statements for Excavation and Reinstatement Works. All plans and method statements will be supported where necessary by detailed scale drawings and maps cross-referenced to national grid reference.

- **Indicative Track Construction Drawing**, illustrating:
 - Proposed sections of upgrades to existing tracks, cut and fill construction and floating road;
 - maximum working widths for specific sections of track including sections to be widened, locations of double and single tracks and position of indicative passing places; and
 - Details on the anticipated track footprint and ground disturbance,

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including specification and dimensions of supporting geotextile materials and cabling at the edges of the track.

- **Infrastructure Construction Drawings**, to include:
 - Plans and details relating to design and maximum working areas for construction of turbine bases, hardstandings, construction compounds and all other infrastructure as required by the Contract.
- **Temporary storage details**, including plans showing:
 - Location, dimensions and pollution prevention control measures required for any temporary storage sites or side cast stockpiles of excavated materials adjacent to tracks or other excavation areas.

1.4.5 All plans and method statements will consider the characteristics and specific handling requirements for the anticipated excavated materials, taking into account all available site investigation information, including detailed ground investigation data obtained as part of the Environmental Impact Assessment process and any subsequent surveys undertaken during the pre-construction planning phase.

1.4.6 The *Contractor* will consider all potential options for minimising excavation volumes and also specific requirements for handling, storage and reinstatement of peat and mineral soils with a high propensity for generation of silt and potential instability issues. Consideration will also be given to the methods required for excavation, storage, maintenance and reinstatement of all forms of turf (including peat and all other turves and vegetation covers likely to be encountered at the site).

1.4.7 All plans and method statements will be accompanied by justification of the final design and / or construction methods identified by the *Contractor*, including reasons for discounting alternative methods. This is required in order to demonstrate that all avenues for avoiding hydrological disruption and reducing the disturbance and excavation of peat have been considered.

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2 EXCAVATION

2.1 General Requirements for Excavations

- 2.1.1 All reasonably practicable measures will be taken to avoid or minimise excavations as far as is practical and feasible within the engineering and environmental constraints of a particular location.
- 2.1.2 The aim to be considered prior to any excavations is to minimise disturbance to peat, peatland habitats and hydrology. In order to achieve this, the following objectives will be considered during the detailed engineering design for all elements of wind farm infrastructure:
- Minimising the construction footprint and ground / habitat disturbance wherever possible;
 - Minimising waste production;
 - Restoring vegetation and habitats as early as possible;
 - Minimise disruption to major hydrological flow paths;
 - Avoidance of any adverse impact on peat stability;
 - Reducing run off from exposed areas; and
 - Minimising the visual impacts of the construction works.
- 2.1.3 The *Contractor* will take all measures possible to ensure that the depth, extent and duration of excavations are minimised as far as is reasonably practical during the construction works.
- 2.1.4 All construction works involving excavation of rock, mineral soil, peat or topsoil will be flexible and adaptable to take account of changing conditions, particularly in relation to weather and ground conditions that may be encountered during the works.
- 2.1.5 Adequate drainage control and pollution prevention control measures will be implemented prior to excavation in any area of the site such that potential impacts on the water environment or sensitive habitats and species are not significant.

2.2 Engineering Design and Construction Methods

- 2.2.1 Where practical, the excavation footprint, extent of ground disturbance and volume of excavated material will be minimised. Examples include: the use of micro-siting to avoid deeper peat; maximising batter angles in cuttings (without adversely affecting the stability of the exposed face); and the use of floating track or piled solutions where practical.

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2.2.2 In general, floating track construction is preferred in areas where peat depth is greater than 1m deep and gradients are 1:10 or less. Cut and fill track construction is preferred in areas where peat depth is less than 1m deep or gradients are greater than 1:10, or ground conditions are otherwise unsuitable for floating track construction (e.g. on cross slopes).

2.2.3 The *Contractor* will provide a rationale for the foundation design proposed for each turbine. Piled foundation engineering may be preferred in areas where peat depth is greater than 3m and micro-siting is not practical.

2.2.4 All infrastructure and associated surface drainage requirements will be designed to minimise disruption to the local hydrological regime through use of appropriate drainage controls and mitigation and prevention of preferential subsurface flow pathways (refer to Technical Schedule TS4, Drainage Management Plan).

2.3 Micrositing

2.3.1 Micrositing will be carried out where reasonably practical to:

- Avoid areas of potential ground instability and unsuitable founding materials;
- Minimise ground disturbance and excavation volumes; and
- Mitigate adverse impacts to water courses and groundwater, sensitive habitats or species and cultural heritage sensitivities.


2.3.2 Micrositing up to 50m will be undertaken with the approval of the Employer, ECoW, Geotechnical Clerk of Works (GCoW) and Archaeological Clerk of Works (ACoW) as appropriate. Approval from the relevant authority for micrositing between 50 and 100m is required. No micrositing will be undertaken any greater than 100m from the consented infrastructure position.

2.3.3 Additional peat probing and / or other ground investigation techniques will be employed as necessary prior to and during the works in order to inform micrositing requirements.

2.3.4 Once micrositing, engineering design and final layouts have been agreed on site, track routes and other infrastructure will be pegged out a minimum of 100 m in advance of construction operations to the satisfaction of the ECoW.

2.3.5 Should unexpected risks associated with ground conditions or other environmental sensitivities arise during construction in any area of the site, either the ECoW, GCoW or ACoW may instruct work to cease until an agreed alternative solution is identified and the risks are avoided or minimised to an acceptable level.

2.3.6 Where unstable ground is encountered, construction in the immediate area will cease with immediate effect. If micro-siting within agreed limits is possible and acceptable then construction may recommence along the newly agreed alignment


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2.4 Working Areas

- 2.4.1 Ground disturbance around excavation will be kept to the minimum practical area. Working areas will be carefully planned to encompass the minimum area necessary to facilitate good working practices and to achieve suitable gradients for reinstatement, landscaping and restoration purposes.
- 2.4.2 The working areas must be clearly defined on site using marker posts or other agreed method. Working areas are to be defined in agreement with the Employer, ECoW, GCoW and ACoW (as appropriate and depending on pre-identified environmental sensitivities in the vicinity of the proposed working area).
- 2.4.3 Access routes should be clearly marked / identified. Access during construction to any working areas will be restricted to specified routes. These will comprise existing roads, established made-up tracks, or a variable working corridor of an appropriate width (as agreed by the Employer, ECoW, ACoW or GCoW as required) to avoid any particularly sensitive areas.
- 2.4.4 The *Contractor* is required to provide appropriate plant for undertaking all reinstatement works such that no unnecessary disturbance of the ground surface occurs. In order to minimise disturbance and damage to the ground surface, any mobile plant required for reinstatement and landscaping works will be positioned on constructed access tracks, hard standing areas or existing disturbed areas wherever possible. The use of a long reach excavator for excavations and reinstatement works is preferable as it enables sufficient room to allow initial side casting and subsequent pulling back of turves over reinstated peat or soil.
- 2.4.5 Some occasional work off access tracks, hard standing or disturbed areas will be needed (e.g. excavation of drainage diversion channels). This will include work on peat and wet heath habitats. The *Contractor* will utilise appropriate temporary surface protection or supply suitable low ground pressure mobile plant to do such work. The mobile plant, location of access on to and from sensitive habitats, together with working procedures, must be approved in advance by the ECoW, ACoW and GCoW.


2.5 Handling and Classification of Excavated Material

- 2.5.1 At this site it is anticipated that the material to be excavated will comprise predominantly peat (which may be sub-divided into catotelmic, acrotelmic and turf) with some mineral soils (subsoil and topsoil). Classification of excavated materials will depend on their identified re-use in reinstatement works. All excavated material will be reused on site.
- 2.5.2 Preliminary volume estimates for peat to be excavated and reused at the site are provided within Appendix A14.4 of the Addendum ES. This report estimates that, based on a design scenario of constructing floating roads where peat depths generally exceed 1.0m, the total excavated volume of peat has been estimated to be around 742,000m³. Of this around 434,000m³ will be required for reuse in reinstatement and restoration of infrastructure, while the remaining 308,000m³ will be required for restoration of borrow pits. Assuming all remaining material is utilised, the

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restoration depth within the borrow pits may be within the region of 1.7m.

- 2.5.3 Any material that is not immediately suitable for a predetermined use without the requirement for treatment may be classed as waste and requires to be dealt with in accordance with the *Contractor's* developed Site Waste Management Plan (refer to TS3, Site Waste Management Plan for further information).
- 2.5.4 Geographical locations and timescales for both temporary and potentially longer term (decommissioning) storage areas have not been identified to date. These will be considered post-consent when methods, programme and phasing of construction works will be defined.
- 2.5.5 Specific means of treatment (whether mechanical, physical or other) for catotelmic material have not been specified to date as this will depend on a number of factors as well as final volumes and in some cases variability in the physical behaviour of the material once it is excavated. Treatment processes will be defined by the *Contractor* and agreed with SEPA.
- 2.5.6 Appendix A14.4 estimates that potentially 217,000m³ of excavated material may be catotelmic peat. This material may be unsuitable for reuse without prior treatment and therefore may be classed as waste. Treatment and subsequent reuse will be undertaken in compliance with relevant waste management legislation.
- 2.5.7 In order to complete his required Programme and Method Statement for Excavation and Reinstatement Works, prior to commencement of a particular phase of works or in a particular area of the site, the *Contractor* will undertake an assessment of:
- The likely excavated material types and method of on-site classification (refer to TS3 (Site Waste Management Plan) for further information on classification of materials and list of the anticipated types of excavated material at this site);
 - Estimated volumes of each type of anticipated excavated material; and
 - Intended end-use(s) for each type of excavated material.
- 2.5.8 The above assessment will involve a review of existing ground investigation data and potential further survey of the principal habitat types and existing depth of soil / peat horizons. The area to be encompassed by such an assessment will be determined by the construction works programme, phasing of the works and available ground investigation data for any particular area.
- 2.5.9 Where possible, excavation of soils will be undertaken in such a manner as to avoid cross contamination between distinct horizons.
- 2.5.10 During and after excavation, storage, haulage and reuse of excavated material will be planned to minimise material movement around the site.
- 2.5.11 Turves will be stripped and handled with care such that damage to the living vegetation mat is prevented or minimised as far as possible.

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3 STORAGE

3.1 General

- 3.1.1 The design of any excavated materials storage areas will be agreed with the ECoW and Geotechnical Consultant / Geotechnical Clerk of Works prior to works commencing.
- 3.1.2 If any longer term storage is proposed (e.g. associated with material required for decommissioning of the wind farm) the detailed proposals will be agreed with the ECoW and Geotechnical Consultant / Geotechnical Clerk of Works (GCoW) and SEPA. Potential waste management licensing controls may apply.
- 3.1.3 Geographical locations and timescales for both temporary and potentially longer term (decommissioning) storage areas have not been identified to date. These will be considered post-consent when methods, programme and phasing of construction works will be defined.

3.2 Temporary Storage

- 3.2.1 Stripped materials will be stored in appropriately designed and clearly defined separate piles.
- 3.2.2 In order to reduce the need for temporary storage, reinstatement of soils and turves around infrastructure, and in restoration and landscaping works on areas of excavated / disturbed ground, will be carried out during the construction phase or as soon as is practical after the completion of the works in any one area of the site.
- 3.2.3 Where possible, reinstatement and re-profiling of track side verges will commence upon completion of each 400m of constructed track or otherwise as agreed with the ECoW.
- 3.2.4 Where material is not required for immediate reinstatement, temporary storage may be required. To minimise handling and haulage distances, where possible excavated material will be stored local to the site of excavation and/or local to the end-use site where it is required for re-profiling and landscaping purposes.
- 3.2.5 All environmental risks (including stockpile instability and increased risk of peat slide from storage on peatland) will be considered prior to excavation works commencing.
- 3.2.6 Temporary storage locations will be appropriately located and designed to minimise impact to sensitive habitats and species, prevent risks from material instability (particularly in peatland areas) and run off into watercourses. Specific locations for temporary storage will be determined and agreed with the ECoW and GCoW following detailed walkovers and localised ground surveys (topography, peat depth and stability etc).
- 3.2.7 Distinct horizons of soil (subsoil and topsoil) or peat (catotelmic, acrotelmic and


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turves) will be stored in separate stockpiles. A record will be kept for each stockpile based on origin, soil depth and habitat type. Stockpiles will be formed avoiding excess consolidation during placing and with naturally stable side slopes. Stockpiles will be isolated from any surface drains and a minimum of 50 m away from watercourses, unless otherwise agreed with the ECoW.

- 3.2.8 Turves must be stored turf side up and must not be allowed to dry out. During periods of dry weather a mobile water bowser may require to be mobilised for watering of stored turves. The condition of stored turves will be monitored by the *Contractor* and the ECoW.

3.3 Temporary Borrow Pit Storage

- 3.3.1 Where the excavated material is identified to be required elsewhere in restoration works, although re-use is not imminent, specified areas within working borrow pits may provide suitable temporary storage locations. However, the handling of the stored material must be kept to a minimum and appropriate drainage, pollution prevention and material stability measures must be designed prior to the temporary deposition of the material to ensure material is maintained in a suitable condition for future use.
- 3.3.2 The *Contractor* will ensure that any temporary control measures (bunds, drainage etc) required in order to use borrow pits as temporary storage areas will also be compatible with the final re-profiling proposals for the borrow pits.

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4 REINSTATEMENT & RE-PROFILING

4.1 General Reinstatement Requirements


- 4.1.1 Reinstatement will incorporate re-profiling and landscaping of track verges, cable runs (where plough methods are not employed), turbine bases, temporary construction compounds, temporary hard standings (as required), borrow pits, temporary drainage control measures (e.g. settlement ponds and extra ditches, which may only be required for construction run-off control), concrete wash out pits and any other features which are not required as part of the permanent works.
- 4.1.2 All excavated material will be re-used (reinstated, landscaped and re-profiled) as part of the site works in a timely manner. Only materials won during the construction works will be reinstated on site and utilised in re-profiling or landscaping works.
- 4.1.3 Any reinstatement and re-profiling proposals will consider, and mitigate against all identified significant risks to environmental receptors. In particular, in areas of replaced peat, water management will be considered in the *Contractor's* plans and method statements to ensure that as far as possible an appropriate hydrological regime is re-established within areas of disturbance. Particular attention will be paid to maintaining hydrological continuity and preventing creation of preferential subsurface flow paths (for instance within backfilled cable trenches).

4.2 Locality & Timing

- 4.2.1 Reinstatement of all excavated materials will occur as close to the site of excavation as possible. As far as is reasonably practical and achievable, excavated material horizons will be replaced in sequence and depths similar to those recorded prior to excavation or similar to the surrounding undisturbed ground at the point of reinstatement.
- 4.2.2 Excavated peat from cut and fill sections of access tracks will be used for dressing the side slopes of floating track sections. No mineral soil should be used for dressing the side slopes of floating road sections to prevent silt run off onto adjacent peatland.
- 4.2.3 Where practical, reinstatement and re-profiling of, and around, infrastructure and borrow pits will be carried out during the construction phase, or as soon as is practical after the completion of the works themselves. Early reinstatement and re-profiling is required to minimise visual impact and temporary storage / stockpiling of soils and to promote vegetation and habitat reinstatement as early as possible.

4.3 Vegetation


- 4.3.1 Re-profiling and landscaping will allow for sympathetic restoration of the ground surface and ground profile to reduce the visual impact of new infrastructure, facilitate turf establishment and vegetation re-growth and reduce scour and erosion of bare surfaces prior to vegetation establishment.

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- 4.3.2 The preferred method for restoration of excavated or disturbed areas is to replicate, where practical, the principal grassland, heath and bog communities found within the project area. In order to achieve this, as far as is reasonably practical, excavated material horizons (e.g. mineral subsoil, topsoil, peat and turves etc) will be replaced in sequence and depths similar to those recorded prior to excavation or similar to the surrounding undisturbed ground at the point of reinstatement.
- 4.3.3 Reinstatement of vegetation will be focused on natural regeneration utilising peat or other vegetated turves or soils stripped and stored with their intrinsic seed bank. To encourage stabilisation and early establishment of vegetation cover, where available, peat turves (acrotelmic material) or other topsoil and vegetation turves in keeping with the surrounding vegetation type will be used to provide a dressing for the final surface.
- 4.3.4 Peat turves should be replaced on all disturbed areas, including constructed roadside drainage channel embankments where possible. In low flow drains, anchored peat turves may be utilised to trap fine silt and reduce flow velocity, and hence scour / erosion of the channel. In the long term, once the drainage system is well bedded in, this may also encourage establishment of aquatic / bog vegetation in lower flow sections of the drainage network.
- 4.3.5 Where there are insufficient turves for top dressing, hydro-seeding may be an acceptable method of vegetation reinstatement. Proposals for hydro-seeding, including specification for seed mixes and application methods, will be agreed with the ECoW and relevant external consultees and stakeholders (e.g. Scottish Natural Heritage, the planning authority, land owners, estate managers etc) where appropriate.


4.4 Tracks and Other Constructed Infrastructure

- 4.4.1 Platforms and turbine base areas may include raised banking of up to 1m to create a visual screen, depending on local requirements. This is likely to be required on the down-slope side in order to provide a screen when viewed upslope.
- 4.4.2 To prevent scour and run off and facilitate vegetation re-establishment, any down-slope embankments will be graded such that the slope angles are not too steep and that embankments blend with the surrounding ground profile.
- 4.4.3 Double tracks will be restored to single track width upon completion of construction works where material to further reduce the visual impact and reinstate some ecologically beneficial habitat. This will be undertaken providing that sufficient excavated material is available for this purpose and that the ecological benefits and intended reinstatement method is agreed by the ECoW.
- 4.4.4 Provided ecological or other landscape benefits can be demonstrated, excavated peat may be utilised for restoration of spur tracks out to borrow pits where these are not required post-construction. This will be considered at the detailed design stage.

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4.5 Borrow Pits

- 4.5.1 Unless otherwise required by planning conditions, or in agreement with landowners and relevant consultees, borrow pit restoration and re-profiling will be undertaken such that the final landform is sympathetic to the adjacent / existing landform type. Re-profiling will be undertaken using material won from the excavation area (e.g. borrow pit overburden) or excavated elsewhere on the site during the works.
- 4.5.2 Restoration and re-profiling of borrow pits will be necessary following completion of aggregate extraction and any required use of the borrow pits as temporary storage areas. This is required to reduce the visual impact, mitigate against residual health and safety risks arising from deep excavations and exposed rock faces, and restore habitats as far as is practical and achievable.
- 4.5.3 The broadly indicative worked profiles and restoration profiles of each borrow pit are illustrated on Figures A14.16a to A14.16m. The actual depth and restoration profile for each borrow pit will be dependant on the final worked profile which is not possible to determine with any degree of accuracy without detailed ground investigations.
- 4.5.4 Outline design proposals for borrow pit re-profiling, including details on reinstatement material origin and classification, placement method, final ground profiles and surface dressing will be submitted by the *Contractor* and approved by the ECoW prior to commencement of construction.
- 4.5.5 Re-profiling of the borrow pits will be achieved using excavated material won as part of the construction works. This material may comprise the original borrow pit overburden, locally excavated material, extracted rock which is not utilised for construction of roads or other infrastructure on site, and excavated material not required for reinstatement activities elsewhere at the original site of excavation.
- 4.5.6 The final profile will be designed to minimise any residual risks to environmental receptors or end users of the site. The restored surface should be designed to be safe for animals, livestock and humans to walkover. In this regard, where peat is being used for borrow pit restoration particular consideration will be given to the suitability of this material.
- 4.5.7 Where material is unsuitable for use in its extracted form without pre-treatment, this material will be classed as waste and treatment of the material prior to reuse may be required; in this case appropriate waste management licensing requirements will apply (refer to Technical Schedule TS3, Site Waste Management Plan).
- 4.5.8 Comprehensive records must be maintained of the location, depth and volumes of all materials used in restoration of the borrow pits.
- 4.5.9 As noted earlier, provided ecological or other landscape benefits can be demonstrated, excavated peat may be utilised for restoration of spur tracks out to borrow pits.

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5 DECOMMISSIONING

- 5.1.1 Detailed decommissioning proposals will be established and agreed with relevant authorities prior to commencement of decommissioning activities.
- 5.1.2 It is anticipated that upon decommissioning it will be preferable to leave buried structures and equipment such as foundations and cables in situ. Furthermore, it is anticipated that the majority of access tracks and constructed water course crossings would be left in-situ for amenity or landowner access requirements. Attempting to remove and reinstate the tracks is likely to result in minimal benefit which will be outweighed by the ground disturbance involved in removing the tracks.
- 5.1.3 Where infrastructure is to be retained, ownership and responsibility for upkeep of the tracks and water course crossings etc will pass to the landowner. Agreement on maintenance requirements would be essential to prevent detrimental effects such as flooding caused by the blockage of crossings not being maintained, or blocked cross drains or subsidence on floating road sections causing disruption of hydrological flows etc.
- 5.1.4 During the decommissioning works the activities on site and the subsequent potential impacts will be similar to those during construction, therefore similar mitigation measures would be implemented. Mitigation measures would also take into consideration any future improvements and developments in “good practice”.
- 5.1.5 On decommissioning, reinstatement of some infrastructure is likely to be required (e.g. control room and substations, turbine bases and hard standings), and therefore in order to restore ground and habitats to as near to natural conditions as is possible reinstatement of surface cover material will be required. This reinstatement will mirror surrounding ground depth and material profiles as near as possible. Hydrological conditions will be maintained where possible.
- 5.1.6 It is preferable that previously ‘disturbed’ soil and peat is used for reinstatement and landscaping required at decommissioning stage, as opposed to disturbing virgin peatland. Disturbed peat will be retrieved from previously reinstated infrastructure borders and verges. Where additional material is required, this will be obtained from restored borrow pits or other restored areas providing that: no ecologically sensitive receptors have since established in these areas; the extraction of the material is done in a sensitive manner with minimal visual impacts; and there are no significant risks to environmental receptors.
- 5.1.7 Any aggregate removed from decommissioned infrastructure will be put back into borrow pits and covered with an appropriate layer of peat. This is likely to be a volume neutral exercise as the aggregate removed would be replaced by peat used to reinstate the residual surface and vice versa.
- 5.1.8 Turbine bases and their adjacent hard standing areas represent the largest potential area for reinstatement, requiring a significant volume of soil/peat for their restoration.

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During construction, appropriate storage of material for decommissioning reinstatement will be identified and a rationale for the storage method chosen provided by the *Contractor*. In determining the preferred storage option for reinstatement material, the Contractor must consider the impacts of double handling and the availability of suitable storage locations. All proposals for storage of material for use at decommissioning will be agreed with SEPA.