Appendix 7.7 Outline Habitat Management Plan

Contents

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Appendix 7.7 Outline Habitat Management Plan

Introduction

Background

This Outline Habitat Management Plan (OHMP) has been prepared by ITPEnergised on behalf of the Applicant. It also incorporates comments received during the Environmental Impact Assessment (EIA) consultation process, including scoping responses and during stakeholder meetings.

This OHMP should be read in conjunction with EIA Report Chapters 6: Ornithology and 7: Ecology and Nature Conservation which collectively consider a complete suite of ecological receptors, including habitats and species. It should also be read in conjunction with EIA Report Chapter 10: Geology, Peat, Hydrology and Hydrogeology which considers impacts on a range of features relevant to ecology, notably peat. In addition, EIA Report Appendix 10.3: Peat Management Plan includes measures relevant to the OHMP, notably methods on how peat will be excavated and reinstated within the Proposed Development site.

The EIA Report specifies a range of mitigation measures to avoid or, where this is not practicable, reduce adverse effects on important ecological features. Where mitigation is not possible *in situ*, appropriate compensation measures are proposed instead. Enhancement measures are also specified to achieve benefits for biodiversity, in accordance with planning policy requirements and good practice.

Scope of this Document

The OHMP is intended as a precursor to a detailed Habitat Management Plan (HMP), which will be produced by the Applicant following grant of consent for the Proposed Development and agreed by The Shetland Islands Council (SIC) in consultation with Scottish Natural Heritage (SNH) and the Scottish Environment Protection Agency (SEPA). The aim of the OHMP is to establish the key objectives and principles by which key HMP areas will be managed to the benefit of biodiversity, which will then form the basis for the more detailed HMP. It is not the intention for this OHMP to provide all the details of the biodiversity management proposals, as certain details can only be established upon grant of consent for the Proposed Development.

The OHMP is intended to cover the management and monitoring of habitats and species during the operation of the Proposed Development (although some of these measures will commence during the construction period). Issues relating specifically to construction of the Proposed Development (e.g. preventing pollution of watercourses or disturbance of protected species) are not considered here. Further information about the ecological mitigation measures to be employed during the construction period are included in EIA Report Chapter 6: Ornithology, Chapter 7: Ecology & Nature Conservation and Chapter 10: Geology, Peat, Hydrology and Hydrogeology. Prior to construction commencing the Applicant will submit a Construction Environmental Management Plan (CEMP) to The Shetland Islands Council for their approval (in consultation with appropriate consultees). The CEMP will detail the methods and techniques to be employed across the whole of the Proposed Development to ensure compliance with legislation, construction best practice and the mitigation measures outlined within EIA Report Chapter 17: Schedule of Environmental Commitments. Proposed peat management measures are described in EIA Report Appendix 10.3: Peat Management Plan.

The spatial scope of the OHMP includes locations within the Proposed Development site boundary as well as elsewhere on Yell. HMP locations within the Proposed Development site boundary are described in the OHMP, whereas HMP locations outwith the site boundary are not detailed as their exact boundaries have not been confirmed at the present time.

Priority Features for Management Action

As described in EIA Report Chapter 6: Ornithology and Chapter 7: Ecology & Nature Conservation, the application site for the Proposed Development supports a range of habitats and species of conservation importance. The receptors which form the priorities for the OHMP have been determined through consideration of the relative importance of each receptor and the extent to which they may be affected by the Proposed Development as set out in the EIA Report. Taking the above into consideration, the aims and objectives of the OHMP relate to the following key features:

- blanket mire; and
- red-throated diver.

Other features of importance are identified in the EIA Report including otter, fish, and birds such as curlew, merlin, dunlin, golden plover, lapwing and snipe. However, it has been established through the EIA process that none of these are likely to be significantly affected by the Proposed Development in EIA terms, subject to the implementation of mitigation measures during the construction phase. Therefore these features are not priorities for management action in the OHMP. However, several of these species are likely to benefit from the proposed habitat management measures.

Aims and Objectives

The relative importance of the key features and, more importantly, the extent to which they could be affected by the Proposed Development, have been used to determine some of the specific aims and objectives of the OHMP. In the absence of the measures proposed in this OHMP, the Proposed Development could have a significant adverse effect on blanket mire and red-throated diver.

The broad aims and objectives for each key feature are as follows:

- Blanket mire:
  - Management and restoration of blanket mire habitat in borrow pit areas within the Proposed Development site boundary through use of excavated peat and control of grazing.
  - Management and restoration of blanket mire habitat on Yell, out with the application boundary of the Proposed Development site, through local slope-reprofiling, seeding, and control of grazing and peat cutting.
- Red-throated diver:
  - Enhancement of currently unoccupied lochans to increase their potential value to breeding red-throated divers.
  - Restoration of degraded lochans to provide suitable habitat for breeding red-throated divers.

Structure of this document

The OHMP is set out as follows:

- Following explanation of the scope and aims of the OHMP in the present section, the next section sets out key elements of its implementation;
- The subsequent sections address the two key features in turn – a summary programme for implementation of tasks and monitoring is provided as well as discussion of each; and
- The final section provides the document references used to compile this document.

Implementation

Roles and Responsibilities

The Applicant will be responsible for meeting the commitments made in the (detailed) HMP, which will be based on the objectives and principles set out in this OHMP. At this stage it is envisaged that these activities will be managed by contractors employed by the Applicant of the Proposed Development.

It is envisaged that the implementation of the final HMP will be a condition of the planning consent for the Proposed Development, following agreement of the (detailed) HMP post consent by SIC in consultation with appropriate consultees, notably Scottish Natural Heritage (SNH) and Scottish Environment Protection Agency (SEPA).

Management actions and monitoring results will be reviewed annually by the HMP Stakeholder Group. The precise remit and structure of the Stakeholder Group will be agreed post consent but at this stage it is considered that the following organisations are likely to be represented:

- Applicant;
- SNH;
- SEPA;
- Royal Society for the Protection of Birds (RSPB);
- Scottish Water (SW); and
- Shetland Amenity Trust (SAT).

Monitoring Objectives

This OHMP has been based on the guidance given by SNH in their publication: *Planning for development: what to consider and include in Habitat Management Plans* (SNH, 2016). This guidance states that the HMP should "*incorporate flexibility and be subject to periodic review. This will ensure that works/actions can be altered in response to monitoring results over time, evolving guidance or unexpected events. Any alterations would be subject to approval of the HMP steering group*."

In situations when habitat management activities are implemented in spite of uncertainties about their effects, monitoring is the process undertaken to measure and evaluate the effects of the management, and the results are used to inform future management decisions (Elzinga *et al*., 2001). In other words, relevant, appropriately timed monitoring is therefore important to enable the success of the HMP tasks to be determined and to identify opportunities for further development of habitat management tasks.

Monitoring objectives are outlined for each conservation feature in the sections below. Each monitoring objective will be 'SMART' (acronym explained below) and cost effective:

- S – Specifically address the feature;
- M – Measurable, i.e. quantified (for example, in terms of definitive numbers of individuals or proportionate growth of a population);
- A – Achievable;
- R – Relevant, and in compliance with, the overarching HMP aims (which encompass legal, policy and best practice requirements); and
- T – Time-based to ensure that success rates or alternatively remedial actions can be ascertained.

Monitoring results will be reported to the HMP Stakeholder Group. Reporting of monitoring results and the review of management prescriptions will be undertaken by suitably qualified and experienced ecologists. The HMP Stakeholder Group will be responsible for reviewing the results of the monitoring and agreeing amended management prescriptions if necessary.

Blanket Mire

Objectives

The objectives are as follows:

1. To restore and manage active blanket mire habitat in the nine borrow pits within the application site for the Proposed Development through re-use of peat excavated for the development and management of livestock grazing.
2. To restore and manage active blanket mire habitat in one or more locations on Yell, through local slope-reprofiling, seeding, and control of grazing and peat cutting.

Time Frame

The management of the blanket mire restoration area(s) will begin when construction works on the Proposed Development start. The management will then be ongoing for the life of the Proposed Development.

Background

As described in EIA Report Chapter 7: Ecology & Nature Conservation, a total of c1,499ha of blanket bog is present as M17 *Trichophorum caespitosum-Eriophorum vaginatum* blanket mire in the National Vegetation Classification (NVC) (Rodwell, 1991 *et seq*.) or as the dominant component in a range of mosaics, including bog pools. A total of c30.6ha of blanket bog is expected to be permanently lost to the Proposed Development, while a further c25.6ha may be subject to degradation.

Borrow pits

EIA Report Figure 1.2 shows the locations of the nine borrow pit search areas, denoted Borrow Pit Search Areas A to I, within the Proposed Development site boundary. As described in EIA Report Appendix 10.3: Peat Management Plan, they range from 4,160m^2 to 38,468m^2 in size and cover a combined area of 191,802m^2, or 19.18ha (excluding drains around the borrow pit search areas that account for an additional 3,600m^2, or 0.36ha).

As described in EIA Report Appendix 10.3: Peat Management Plan, up to a total of 203,193m^3 of peat will be excavated from the nine borrow pits. However, peat will be reinstated to a depth of 2m within the borrow pits, corresponding to 383,604m^3, of which 28,770m^3 is acrotelmic[1] peat and 354,834m^3 is catotelmic peat.

Management Areas out with the Proposed Development Site Boundary

Locations with degraded peat have been identified on Yell. The types of degradation vary, but most commonly results from peat cutting for fuel. Other factors include overgrazing and poaching by livestock, which has removed the vegetation and left the peat surface vulnerable to erosion. As described below, restoration management will focus on several of these areas in order to compensate for the loss or modification of blanket bog within the site. Three representative areas, denoted areas 1, 2 and 3, are described below.

The degraded section of Area 1 measures c500m x 500m. It is an active area of peat cutting and includes locations which have been cut recently and therefore have bare peat in the cut 'cell' floors. Elsewhere, the floors of the cut cells are being recolonised by peatland species, notably the bare peat coloniser common bog-cotton (*Eriophorum angustifolium*), but the vegetation has not developed the structure and diversity typical of mature peatland vegetation. The depth of the peat varies, but typically the cutover cells retain peat on the floors, with

[1] Peat can be separated into three main layers: Acrotelmic (the upper living layer), catotelmic (the middle to lower layer) and occasionally amorphous (lower layer) peat. Please see EIA Report Appendix 10.3: Peat Management Plan for a description of these layers. Distinct layers of amorphous peat were not observed on site, and catotelmic and amorphous peats are therefore treated as a single category.

the surrounding, uncut and drier banks being 1-1.5m above the floor of the cutover cells. A typical location within Area 1 is shown on Plate A.

Plate A: Area 1

The degraded section of Area 2 measures c250m x 250m and comprises peat which may have been cutover in the past, but which has also suffered high levels of grazing and poaching by livestock. Area 2 contains large areas of bare peat which are not clearly associated with cutover cells. A typical location within Area 2 is shown on Plate B.

Plate B: Area 2

The degraded section of Area 3 measures c250m x 250m and comprises peat which appears to have suffered high levels of grazing and poaching by livestock. The area abuts a small waterbody, c10m x 25m, and a larger lochan c125m x 225m. Area 3 contains large areas of bare peat which are not clearly associated with cutover cells. A typical location within Area 3 is shown on Plate C.

Plate C: Area 3

Management Measures

Broad principles for the restoration management are provided below. A detailed specification for the works, tailored to the specific conditions within individual management areas, will be agreed with the HMP Stakeholder Group following grant of the application for the Proposed Development.

The Proposed Development site is dominated by blanket mire, which accounts for 1499 ha of the site. Apart from a permanent loss of c.30.6 ha of blanket bog and the potential modification of a further c.25.6 ha, the blanket mire will be safeguarded during the operational life of the Proposed Development, with maintenance of the hydrology of the peatland being key to maintaining the structure and quality of the vegetation and for maintaining suitable conditions for species such as red-throated diver. Livestock grazing will be maintained at existing levels.

<u>Borrow pit restoration</u>

Acrotelmic, catotelmic and amorphous peat excavated during construction of the Proposed Development will be used in the borrow pit restoration. Catotelmic and amorphous peat will be considered together, as no clear basal layer of amorphous peat was recorded on the Proposed Development site. As described in EIA Report Appendix 10.3: Peat Management Plan, all of the peat excavated for the Proposed Development will be re-used within the development site boundary. No peat will be taken off site. The borrow pits are suitable receptor areas for excavated peat as they comprise excavations surrounded by peatland which can be built up using excavated peat to achieve a topography, which will mirror the surrounding, uncut peat and tie into the hydrology of the surrounding peatland. This is predicted to result in active peat formation within the restored borrow pits.

As described in EIA Report Appendix 10.3: Peat Management Plan, excavated peat will be separated during the excavation and temporarily stored in separate areas, before being reinstated in the same order within the nine borrow pits. The following principles will be followed:

- Areas of peat within the footprint of any excavation will have the top layer of vegetation stripped off as turf prior to construction by an experienced specialist contractor. When excavating areas of peat, excavated turfs will be as intact as possible, which will typically be achieved by removing large turves up to 500mm.
- Excavated soils and turves will be handled so as to avoid cross contamination between distinct horizons and ensure reuse potential is maximised. Excavated peat will be stored in separate horizons.
- Turves will be stored adjacent to the construction area in a way that ensures they remain moist and viable. Turves will be stored vegetation side up.
- Peat will be kept damp. The moisture content of stored/stockpiled peat will be monitored monthly and if it falls below 25% of that in surrounding, intact peat then it will be watered.
- Peat will be reinstated as soon as practicable following excavation.
- The amount of time any bare peat will be exposed will be minimised to preserve its integrity.
- The phasing of work will be carried out to minimise the total amount of exposed ground at any one time. By stripping turves and replacing as soon as possible after peat has been re-distributed there will be minimal areas of bare peat.
- Reinstatement will be done to a detailed plan, which will divide each borrow pit into smaller units.
- The height of the restored surface will match that of the adjacent peat.
- Any peat areas on steep ground or that remains partially bare will be covered using geotextile or a similar method to stop erosion.
- Any areas of bare peat, where vegetation is not re-growing, will be seeded with a seed mixture obtained from the existing habitat or commercial seeds of local genetic provenance.
- The re-vegetated areas will be monitored.
- Low ground pressure diggers will be used for both excavation and reinstatement of the peat to minimise the risk of peat compression and damage to vegetation.
- Livestock will be excluded during the establishment phase and controlled thereafter.

<u>Management Areas out with the Proposed Development Site Boundary</u>

Restoration of the three areas will focus on stabilising bare peat. This will be achieved through a variety of measures, which will be agreed with the HMP Stakeholder Group, but which are likely to including the following:

- Bare peat in flat or gently sloping (<35°) areas:
    - Use of geotextiles to stabilise the surface, where seeding is considered unlikely to achieve this on its own.
    - Seeding with blanket mire species of local genetic provenance. The potential need for a nurse crop will be agreed with the Stakeholder Group post consent.
    - Exclusion of livestock through fencing until the habitat is considered to have recovered sufficiently to tolerate impacts from livestock at which point numbers will be controlled.

- Hags:
    - Re-profiling to reduce slopes to <35° using low ground pressure diggers, with excavated material placed at the bottom of the slope.
    - Seeding and/or surface stabilisation with geotextiles of bare peat surfaces similar to the approach for bare peat above.
    - Exclusion of livestock through fencing until the habitat is considered to have recovered sufficiently to tolerate impacts from livestock at which point numbers will be controlled.

Monitoring

The objective of the monitoring will be to determine the effectiveness of the management and assess the need to alter management prescriptions, e.g. mechanical control of undesirable species, such as tall rushes, stabilisation of still eroding areas with geotextiles, or changes in the grazing regime.

During the first five years of operation of the Proposed Development, vegetation monitoring will consist of simple, assessments, which will be undertaken on a regular basis. This will include recording the percentage cover of indicator species, such as *Sphagnum* mosses, from within fixed quadrats. This will provide information on the nature of change, including vegetation establishment and development, as well as any ongoing problems of erosion. This is turn will inform the management, such that prescriptions can be altered quickly, if necessary. After year five, the need for continued monitoring will be evaluated in consultation with the HMP Stakeholder Group.

Dipwells will be installed within each of the restored borrow pits, with a control in adjacent intact peatland. These will monitor the water table level annually within the first five years of the HMP, after which the need for continued monitoring will be evaluated and agreed with the HMP Stakeholder Group.

Red-throated Diver

Objectives

The objectives are as follows:

1. To create conditions for red-throated diver in lochans not currently used by the species.

Time Frame

The enhancement of lochans will begin prior to and during the construction phase to allow time for enhancement measures to establish prior to operation of the Proposed Development. Monitoring will be undertaken during the first five years of operation of the Proposed Development, after which the need for additional monitoring will be confirmed. If monitoring identifies a need for additional/changed management prescriptions, this will be carried out in the season following the monitoring.

Background

A number of lochans >500m from the nearest proposed turbine locations that were included in bird surveys in 2016 or 2018 did not support breeding red-throated divers during the surveys. These include lochans and pool complexes within the site boundary: Several are present on and south of Hill of Vigon, in the triangle between Turbines 2, 6 and 7, and three lochans and several pool complexes are present south of Grud Waters and 500-800m west of Turbines 10 and 12. In addition, a lochan is present within HMP Area 3 as described in the previous section, out with the development site boundary for the Proposed Development. The sizes of these waterbodies vary; most are <1ha but two are up to 6ha in size. Locally, notably south of Hill of Vigon and south of Grud Waters, several former waterbodies have been lost or partially drained owing to the collapse of peat banks. The

result is a number of very shallow waterbodies or entirely drained areas of bare peat that are not suitable for use by nesting divers.

Bundy (1978) described lochans of less than 1ha as being most favoured by red-throated divers. Lochans greater than 5ha were the least favoured but in his study nevertheless had an occupancy rate of more than 50%. Bundy (1978) described breeding waters as needing to be sufficiently free of vegetation and deep enough (>70cm) to enable chicks to dive when disturbed. The banks must be easy of access, suitable for nesting and preferably grassy. He also concluded that there were no successful nests at sites where disturbance from both human beings and avian predators was considered high. He noted that whereas human disturbance on Yell was negligible, pressure from avian predators was probably heavier than ever before following a recent, very considerable increase in the numbers of moorland-breeding gulls (Laridae) and skuas (Stercorariidae). However, when divers were assigned a value of either 'shy' (an adult with chicks that readily leaves a loch at the approach of human intruders) or 'tame' (at least one adult remains with young during visits), it was apparent that of the successful pairs on both Yell and Unst, 33.8% were shy and 66.2% were tame, likely because predation by avian predators was reduced when adults remain near the nest.

There is scope for enhancing lochans, or locally for restoring degraded lochans in the areas identified above, to create waterbodies with the characteristics described by Bundy (1978).

Management Measures

Broad principles for the restoration management are provided below. A detailed specification for the works, tailored to the specific conditions within individual management areas, will be agreed with the HMP Stakeholder Group following grant of the application for the Proposed Development.

For a lochan to be suitable to breeding red-throated divers it should measure at least 20m x 15m and have a depth of at least 0.5m. That therefore defines the minimum conditions aimed for in the management, but larger waterbodies / potential waterbodies (up to 1ha) will often be more suitable to divers and will therefore be prioritised in the management.

<u>Restoration of degraded lochans</u>

Measures for restoring degraded lochans for divers will include the following:

- Strengthening or repairing lochan banks.
- Expanding degraded lochans by combining them with adjacent lochans. This will involve moving the separating peat banks, where this can be done safely and efficiently. Peat banks will be used to strengthen lochan banks elsewhere.
- Damming lochan outflows to raise water levels. This may include use of plastic or timber dams.

<u>Enhancement of existing lochans</u>

Measures for enhancement of lochans for divers may include one or more of the following:

- Creating floating peat islands or rafts – This will be done for larger (>5ha) lochans. Rafts will measure approximately 2m x 2m and will require at least three anchors.
- Expanding lochans by combining them with adjacent lochans. This will involve moving the separating peat banks, where this can be done safely and efficiently. Peat banks will be used to strengthen lochan banks elsewhere.

Monitoring

The objective of the monitoring will be to determine the effectiveness of the management and assess the need to alter management prescriptions, e.g. to repair failing dams.

Dam monitoring will consist of simple, qualitative assessments of installed dams to check their integrity. Evidence of erosion will be recorded. This will be done annually during the first five years of operation.

Red-throated diver surveys will be carried out prior to any restoration or enhancement works being implemented and in the first five years of operation. Methods will be agreed with SNH and other interested parties, such as RSPB, prior to commencement of any works and will follow industry standard best-practice guidance (SNH, 2009). Monitoring reports will include desk-study information, e.g. data from National bird census surveys, Shetland Bird Club, and SOTEAG reports, to enable comparison of survey data with population trends throughout Shetland as a whole. After year five of operation of the Proposed Development, the need for continued monitoring will be evaluated in consultation with the HMP Stakeholder Group.

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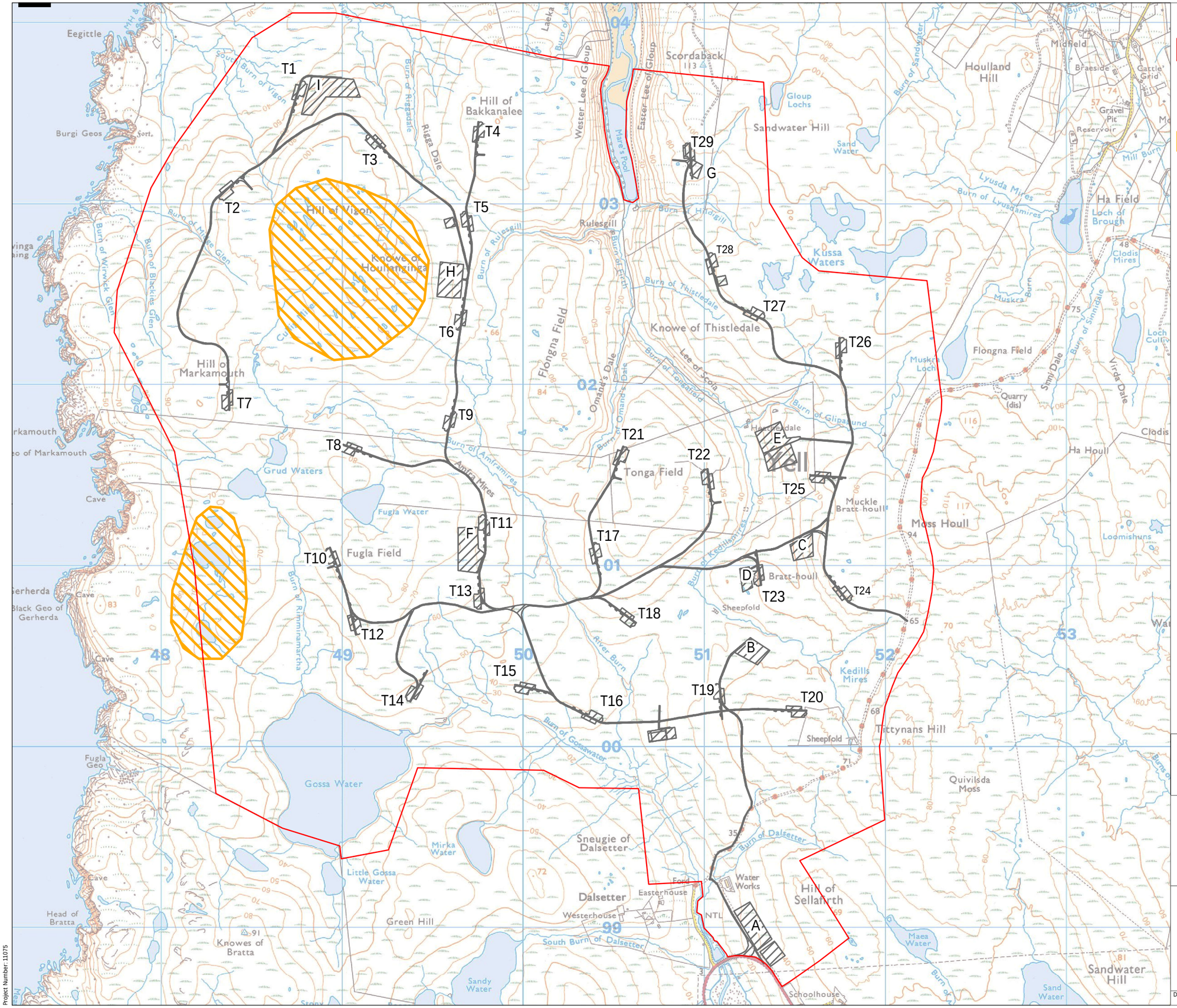

KEY

- Site Boundary
- T1 Turbine Identifier
- Proposed Development
- Zone Including Red-throated Diver Management Areas

0 0.5 1 km

Scale 1:20,000 @ A3

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Appendix 7.7 - Figure 1

Red-throated Diver Management Area

Date:	Drawn by:	Checked by:	Version:
09/04/2019	ST	MF	V1

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