Nisthill Wind Farm

Supplementary Environmental Information Report

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1. Introduction

1.1 Background

Nisthill Wind Farm Limited (hereafter referred to as "the Applicant") is proposing a renewable energy development, Nisthill Wind Farm (hereafter referred to as the "Proposed Development") on a site 5 km east of Birsay immediately west of the Loch of Swannay, Orkney. A planning application was submitted to Orkney Islands Council (OIC) on 26th August 2022 for the Proposed Development, described as:

"Erect four wind turbines (maximum height of 180 metres, maximum generation capacity 26.4 MW total), a substation and maintenance building, create an access, and associated infrastructure including access tracks, underground cabling, crane hardstandings and borrow pit | Hundland Hill (Land Near), Birsay, Orkney".

The planning application (reference 22/320/TPPMAJ) was supported by an Environmental Impact Assessment (EIA) Report prepared in accordance with The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. The planning application was validated by OIC on 21st September 2022.

The site location and site boundary, and the proposed site layout, are shown in **Figure 1.1 and Figure 1.2**, Volume 2 of the EIA Report. For ease of reference, these figures are also appended to this Supplementary Environmental Information (SEI) Report as **Figure 1.1 and Figure 1.2**.

1.2 Purpose of the Supplementary Environmental Information Report

OIC, as the planning authority, has received and reviewed consultation responses from various consultees and its own Council departments, to the planning application. OIC provided a summary of the responses received, with a request for additional information to respond to or address the comments made, in a letter dated 8th February 2023.

This SEI Report has been produced to provide additional information to OIC as per the request dated 8th February 2023. **Table 1.1** summarises the additional information requested by OIC and indicates where in this SEI Report each point is addressed.

Table 1.1 – Summary of Orkney Islands Council's Additional Information Request

Item No.	Request	Addressed in Section
1	Provision of information to identify potential unacceptable environmental impacts on groundwater abstractions and Groundwater Dependent Terrestrial Ecosystems (GWDTE): a) Maps clearly showing the extent and depths of all proposed excavations, (excavations should also include all insertions and foundations overlain with GWDTE in order for the potential impacts to GWDTE to be fully assessed). This should include cross sections through excavations. b) For proposed infrastructure within 250 metres of GWDTE where excavations are deeper than 1m, a detailed site specific qualitative and/or quantitative risk assessment needs to be submitted which demonstrates that the proposals will not have a significant impact on the groundwater flow and groundwater quality feeding identified sensitive receptors through the proposed design, construction and operation of the	Section 2

Item No.	Request	Addressed in Section
	infrastructure. The detailed site-specific assessment should be carried out in accordance with our LUPS Guidance Note 31 (Section 3.15 onwards). c) Mitigation measures are put forward to protect the GWDTE and ensure hydrological connectivity.	
2	Historic Environment Scotland (HES) indicates that the proposal has the potential to affect the integrity of the setting of scheduled monuments: ➢ Hundland Hill, enclosure 500m NE of Nisthouse (SM13451) ➢ Nisthouse, burial mound 270m ENE of (SM1318) ➢ Park Holm, artificial island and causeway, Loch of Swannay (SM1362) ➢ Stoney Holm, crannog, Loch of Swannay (SM1394) The proposal also has the potential to have a significant negative impact on the Outstanding Universal Value of the Heart of Neolithic Orkney World Heritage Site (HONO WHS). Additional visualisations for the Stones of Stenness and Maeshowe are required to be able to make a fully informed decision on the proposal's impacts on historic environment interests. The following supporting information is required: ➢ For Stenness, the provision of a photomontage to be produced from a location inside the stone circle close to the southern-most standing stone (around HY 30682 12497). This would give a sense of how the development would appear in the distance with the three northern-most standing stones in view. ➢ For Maeshowe, the provision of a photomontage to be produced from the path leading to the site (HY 31721 12647). Provision of any additional information relating to Hundland Hill, enclosure 500m NE of Nisthouse (SM13451), Park Holm, artificial island and causeway, Loch of Swannay (SM1362) and Stoney Holm, crannog, Loch of Swannay (SM1394) to enable Historic Environment Scotland and the Island Archaeologist to make a fully informed decision on the planning application.	Section 3
3	Assess and report on the effects of wind shadowing on the existing wind turbine situated in the application site.	Section 4
4	Provide construction details and maintenance schedules for all proposed surface water drainage, together with details of how potential migration of ground water along tracks and buried cable routes would be prevented and update the EIAR reporting as required.	Section 2
5	Action is required through the provision of additional baseline information, assessment and mitigation with reference to the Water Environment and Cultural Heritage. With regards to Ornithology, it is acknowledged that Supplementary Environmental Information was submitted in October 2022 which included the results and assessment of further baseline surveys undertaken by the applicant. The current advice provided by NatureScot	Water Environment: Section 2 Cultural Heritage: Section 3

Item No.	Request	Addressed in Section
	and RSPB Scotland does not consider this additional information and as such, pending further review by these consultees, it may be that further action is required from the applicant, including additional information, assessment or mitigation.	Ornithology: Section 5
6	A Peat Management Plan should include details of local storage of peat, if local storage is intended.	Section 2
7	Provide an assessment of flood risk with respect to overland water flow and provide details of sustainable drainage provision.	Section 2
8	Revisit Chapter 12 (Hydrology, Geology, Hydrogeology and Peat) in line with the comments of SEPA.	Section 2
9	Provide a clearly differentiated future baseline for Chapter 14 (Economics and Tourism).	Section 6
10	The cumulative assessment should consider the proposed development with respect to planning reference: 22/081/SCO West of Orkney Wind Farm; or qualify why this is not required.	Section 7
11	Appropriate reference should be made to the St Magnus pilgrimage route.	Section 8
12	Prepare updated EIAR reporting and Non-Technical Summary to reflect the additional assessment requested.	See note below.
Clarification	In addition to the recommendations above, to further ensure the robustness of the EIAR the following clarification is sought. The recommendation below is considered 'best practice', although is not an explicit requirement of the EIA Regulations: ➢ Confirm the reasoning for scoping out the West of Orkney Windfarm proposal from the cumulative assessment and deviation from the Council's scoping opinion.	Section 7

Note in relation to Point 12: This SEI Report provides a compiled record of the relevant additional environmental information arising from the post-submission consultation process and requested by OIC, as described above. There has been no change to the Proposed Development description, design or layout, with the exception of a proposed increased micrositing limit of 100 m for turbine T4 and its hardstanding and access track (see Section 1.3 below). Much of the information reported in the submitted EIA Report is unchanged. It is considered that provision of an updated version of the full EIA Report would therefore be unwarranted and unnecessary.

Although this SEI Report supersedes certain elements of the previously submitted EIA Report, it should be read in conjunction with the submitted EIA Report. It is made clear in the sections below where any aspect of the submitted EIA Report is superseded by this SEI Report.

A Non-Technical Summary of this SEI Report is provided separately, in accordance with the Town & Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.

1.3 Micrositing

As noted in Paragraphs 3.3.2 to 3.3.4 of the submitted EIA Report, the location of the Proposed Development infrastructure has been determined through an iterative environmental based design process. However, there is the potential for the exact turbine and infrastructure locations to be altered through micrositing

allowances prior to construction, to allow some flexibility in the event that, for example, pre-construction surveys identify unsuitable ground conditions or unforeseen environmental constraints that could be avoided by relocation.

The submitted EIA Report indicated that a micrositing allowance of 50 m in all directions was sought for T1, T2 and T4 and associated site infrastructure, with an increased micrositing allowance of up to 125 m being sought for T3 to mitigate potential adverse effects on an identified telecoms link (refer to Chapter 13 of the submitted EIA Report).

Further to consultation feedback from SEPA regarding the desire to site T4 and associated infrastructure outwith an area of habitat identified by the National Vegetation Classification (NVC) survey as M27, it has been determined that this M27 habitat could be avoided by micrositing T4 approximately 80 to 100 m north. Although the EIA did not identify significant adverse effects arising from the construction of T4 at its proposed location, it is understood that SEPA considers that the M27 community at this location should be avoided, and will object to the development if this cannot be achieved.

It is therefore proposed that an increased micrositing allowance is applied to T4 and its associated infrastructure, which would allow the turbine and hardstanding to be sited outside the M27 area.

The micrositing allowances being proposed are therefore: 50 m in all directions for T1 and T2; 125 m for T3; and 100 m for T4.

As noted in the submitted EIA Report, no micrositing will be undertaken that results in an increase in the significance of adverse effects. An increase to the micrositing allowance for T4 would therefore not result in any material change to environmental effects as assessed and presented in the EIA Report.

Further discussion on SEPA's consultation response and micrositing of T4 is given in Section 2.

1.4 SEI Project Team

The Applicant can confirm that this SEI was undertaken by the ITPEnergised Environmental Planning team and other technical specialists as shown in **Table 1.2**.

Table 1.2 – SEI Project Team

Person	Role	Expertise
Emma Bathgate (ITPEnergised)	EIA Project Manager	BSc (Hons) Environmental Management, MSc Sustainability and Environmental Studies. 4 years' experience in the renewable energy industry.
Jenny Hazzard (ITPEnergised)	EIA Project Director & Geology, Peat, Hydrology & Hydrogeology Lead	BSc (Hons) Geological Engineering, MSc Engineering Geology, PIEMA. 20 years' experience in environmental consultancy.
Allan Taylor (ITPEnergised)	Ornithology and Ecology lead	BSc (Hons) Geography, MSc Environmental Management. Over 7 years' experience in environmental consultancy.
Tom Lovekin (AOC Archaeology)	Archaeology and Cultural Heritage Lead	BSc (Hons) English History and Landscape Archaeology, MA

Person	Role	Expertise
		Landscape Archaeology and MA Town and Country Planning. 20 years' experience as an archaeologist.
Graeme Blackett (BiGGAR Economics)	Socio-Economics Lead	BA (Hons) Economics, MIED, MEDAS. 25 years' experience as an applied economist.
Jo Phillips (OPEN)	Cumulative Assessment	A (Hons) Landscape Architecture, MSs Urban Design, PGC Climate Change Management Over 15 years' experience in landscape architecture.

1.5 Availability of the SEI

Electronic copies of the SEI Report, including all figures, appendices and accompanying documents are available to view on the project website www.nisthillwindfarm.co.uk.

Electronic copies of the SEI Report can also be accessed at https://www.orkney.gov.uk/

A physical copy of the SEI Report is available for viewing at Birsay Community Hall.

Hard copies of the NTS are available free of charge from the Applicant (info@nisthillwindfarm.co.uk). The cost of a hard copy of the SEI Report is £250. In addition, for anyone who has difficulty accessing the information online, a USB copy can be made available on request by emailing info@nisthillwindfarm.co.uk. The price of the hard copy reflects the cost of producing all of the graphics and visualisations at the recommended size. As such, a DVD/USB version is recommended.

1.6 Representation to the SEI

Any representation to the application should be made by email, directly to OIC at:

planning@orkney.gov.uk

2. Geology, Peat, Hydrology and Hydrogeology

2.1 Introduction

This section covers points 1, 4, 6, 7 and 8 from **Table 1.1**.

Those points (1, 4, 6, 7 and 8) from the OIC request for additional information are based on consultation responses from SEPA and from internal Council departments, as set out in the sub-sections below.

2.2 SEPA Comments on Groundwater Abstraction and GWDTE

2.2.1 Summary of SEPA's Consultation Response

SEPA's consultation response to OIC, dated 13th October 2022, stated:

"*We have object [sic] to this application due to lack of information to identify potential unacceptable environmental impacts on groundwater abstractions and GWDTE and will consider removing this objection when the information detailed in Section 1.7 of the attached Appendix has been submitted for our review*."

The information detailed in Section 1.7 of the Appendix to SEPA's consultation response letter is that which is reproduced in Point 1 of **Table 1.1** above.

SEPA also noted the following: "*We highlight that if SEPA does not consider revised mitigation measures put forward after the detailed assessments are carried out, SEPA may object in principle in order to protect the sensitive receptor. It is noted at present that Turbines T3 and T4 are located within potential GWDTE, and the applicant should consider modification of the site layout as a mitigation measure to avoid potential unacceptable impact on these*."

SEPA additionally requested that a number of conditions be attached to any future planning consent.

Further Response

Further to the above consultation response, and additional information provided by the Applicant in draft to SEPA in March 2023, SEPA provided a further response dated 5th April 2023. This indicated that, following review of the draft information provided (essentially the text of as set out in Section 2.2.2 below and associated Figure 2.1), SEPA continued to have a concern regarding the impact of the construction of T4 on the hydrology within the M27 fen community, which is adjacent to and identified as being in hydrological connectivity with the M19 and M17 blanket bog communities which are designated features of the adjacent SSSI and SPA.

SEPA indicated that they would maintain their objection to the development and that "serious consideration" be given to moving T4 and associated infrastructure off the M27 community, which if possible would be considered by SEPA to be "acceptable mitigation".

SEPA indicated that, if this modification was possible, then potentially an extended micrositing allowance could be sought, to enable this without a revision of the design layout. Proposed wording for a planning condition is provided in SEPA's letter, to secure this modification.

2.2.2 Applicant Response

Background

Chapter 12 of the submitted EIA Report provides information on identified areas of potential GWDTE. Paragraph 12.6.33 states, "*The Phase 1 Habitat and NVC Survey results identified several areas of potential GWDTE, based on Appendix 4 of SEPA Land Use Planning System Guidance Note 31* [LUPS-31]. *The Ecological National Vegetation Classification Survey report (Appendix 7.2) concluded that although a number of*

potential GWDTE communities were recorded within the survey, none are considered to be truly groundwater dependent and do not require any specific mitigation during either the constructional or operational phases." Paragraph 12.6.35 further states, "*With respect to groundwater sensitivity, despite the identification of areas of potential GWDTE on site, further analysis of the hydrogeological regime has identified no major aquifer, with only potential for localised perched groundwater within superficial materials or upper weathered bedrock*."

Further discussion is given in Appendix 7.2 of the submitted EIA Report, as referred to in the above paragraph. Appendix 7.2 is the NVC survey reports, prepared by Rory Whytock ACIEEM of Whytock Ecology Ltd. The discussion on GWDTE within Appendix 7.2 states, "*Although there are several communities that are listed as having GWDTE potential, none were considered to be truly groundwater dependent. There was no single source (such as a spring head) that fed into any of the potential GWDTE communities. Botanically diverse communities such as M27 mires contain some plant species that require base-rich conditions; however, this is considered to be from where water flows over mildly calcicolous rock rather than a groundwater source.*"

Although the submitted EIA Report identified that the areas noted as potential GWDTE based on surveyed NVC communities were unlikely to actually be groundwater dependent, SEPA's consultation response indicates that they consider that insufficient information had been provided to justify this conclusion.

Groundwater Sensitivity and the Water Framework Directive

SEPA notes that the low likelihood of a significant aquifer being present does not necessarily mean there would be no significant effect to GWDTE as a result of the Proposed Development. SEPA identifies that GWDTE could be fed by a minimal amount of groundwater, including perched groundwater within superficial materials and upper weathered bedrock.

We agree that there is potential for terrestrial habitats to be fed by perched groundwater within superficial materials, and upper weathered bedrock. However, we would maintain that the protection afforded to GWDTEs arises from the EU Water Framework Directive (WFD) (2000/60/EC) and aims to protect the quality and quantity of groundwater (i.e. protecting the underlying aquifer from pollution or contamination and/or abstraction). The botanical interest of indicator NVC communities is not inherently particularly ecological valuable or sensitive, and the potential presence of shallow, perched, discontinuous groundwater should not equate to the local groundwater at that location being considered highly sensitive.

Technical Report 8: *Technical Report on Methodologies Used for Assessment Groundwater Dependent Terrestrial Ecosystems* specifically notes that analysis should, "*identify those groundwater bodies for which there are directly dependent terrestrial ecosystems…*" with further analysis to be undertaken, "*if a groundwater body is at risk of failing the WFD's objectives with respect to these GWDTE*". The aim is clearly to ensure protection of groundwater bodies. The NVC communities identified in LUPS-31 as being potentially groundwater dependent are indicators to the potential presence of a groundwater body, and their presence therefore requires further consideration of whether such a groundwater body is indeed likely to be present, as well as its sensitivity. We maintain that, at the Proposed Development site, the absence of any significant aquifer, i.e. the likely presence only of shallow/perched/discontinuous groundwater, means that the groundwater resource at the site is of low sensitivity and that no specific mitigation is required to avoid or reduce potential impacts on groundwater from the construction and operation of the Proposed Development.

Classification of Groundwater Associated with West Mainland Moorland SSSI

SEPA highlighted in their response that there was potential hydrological connectivity with the West Mainland Moorlands Site of Special Scientific Interest (SSSI), stating: "*Furthermore, the underlying geology is the same as an adjacent designated site where there is floristic interest due to the groundwater influence as contained in the SSSI Citation for West Mainland Moorland SSSI (with emphasis to GWDTE underlined)…*"

The response continued to quote directly from the SSSI citation, highlighting the following: "*…Tall herb communities occur in the open moorland where nutrients are carried in groundwater from the calcareous underlying Old Red Sandstone. This groundwater has given rise to a variety of flushes which are rare in northern Scotland and support plants such as alpine meadow-rue* Thalictrum alpinum *and black bog rush* Schoenus nigricans."

EIA Report Chapter 7: Ecology, Technical Appendix 7.2: *Survey National Vegetation Classification (NVC)* provides the full descriptions of the NVC communities recorded at the site and presents these (including sub-communities, where possible) in Figure 2 contained therein. Of the two species highlighted within the SSSI citation, one was recorded within the Study Area; black bog rush. Black bog rush was recorded and described as follows: "*One stand of M15 located in the west of the survey area was not assigned to sub-community level as it did not fit into one. It was quite degraded in nature due to a combination of drainage and grazing activities but did contain small amounts of* Schoenus nigricans *which indicates that the area may be quite diverse if allowed to recover*."

The description of this community does not align with that of those supporting the species as cited within the SSSI habitats and is also assessed as being modified and of a generally poor condition. This area of M15 mire is located within the outer survey buffer to the west of the site entrance, away from proposed infrastructure as well as separated by existing public carriageway. In consideration of these factors, it is thought unlikely that this community is aligned with that of those described within the SSSI citation.

The SEPA response also quotes the SSSI citation in support of aligning with the area of M6d *Carex echinata–Sphagnum fallax/denticulatum* sub-community mire (see Figure 2 of EIA Report Technical Appendix 7.2*)*: "*…The predominant habitats include extensive areas of blanket bog, acid grassland, wet and dry heath, acidic raised-mire and calcareous valley mire. Acid conditions predominate but botanically rich alkaline flushes occur*."

The M6d mire found within the Study Area is described within Technical Appendix 7.2 as being: "*…defined by the dominance of Sphagnum species such as* S. fallax, S. cuspidatum *and* S. palustre. *As the water within the community flows to the loch shore, it increases in base richness as the peat layer becomes thinner and more rock becomes exposed.*"

Sphagnum mosses require acidic ground conditions to thrive. Given the reference to dominant *Sphagna* within this area of M6d community and noting the lack of evidence of alkaline flushes or associated vegetation typical of this type of flush being present, it is inferred that this area is not hydrologically supplied by any alkaline flush/water source.

Further Information and Detailed Risk Assessment

Regardless of the above, this SEI Report section and associated **Figures 2.1 and 2.2** are provided in response to SEPA's request for further information. The specific information requested has been set out in Paragraph 1.7 of the Appendix to SEPA's consultation response letter, in three parts (a to c). These are noted in turn below.

a) SEPA Comment: Maps clearly showing the extent and depths of all proposed excavations (excavations should also include all insertions and foundations overlain with GWDTE). This should include cross-sections through excavations.

   Response: Please see attached ***Figure 2.1****, providing a map of the extent of proposed infrastructure. A buffer of 100m is shown around all proposed excavations of less than 1m depth, and a buffer of 250m is shown around all proposed excavations of more than 1m depth (the latter comprising only the turbine bases and borrow pit). Identified areas of potential GWDTE are shown, differentiating between those identified NVC communities which, based on LUPS-31, are potentially highly or potentially moderately groundwater dependent.*

   A schematic cross-section of proposed T1 and hardstanding, in the context of the hydrogeological baseline, is provided in ***Figure 2.2****.*

b) SEPA Comment: For proposed infrastructure within 250m of GWDTE where excavations are deeper than 1m, a detailed site specific qualitative and/or quantitative risk assessment needs to be submitted, which demonstrates that the proposals will not have a significant impact on the groundwater flow and groundwater quality feeding identified sensitive receptors through the proposed design, construction and operation of the infrastructure.

Response: ***Table 2.1*** *provides additional information including details of the habitats recorded by Phase 1 Habitat Survey and NVC survey, recorded peat depths, geology from British Geological Survey (BGS) mapping, topography and other features which may inform the likelihood of groundwater being present at or near the surface.*

Each identified potential GWDTE area has been given a reference as shown on ***Figure 2.1****. Those at which the recorded NVC communities indicate potentially high groundwater dependency (based on LUPS-31) are labelled H1, H2 etc. and those at which the recorded NVC communities indicate potentially moderate groundwater dependency are labelled M1, M2 etc.*

Table 2.1 *goes on to provide a summary of assessed groundwater dependency or otherwise for each potential GWDTE area, consideration of the magnitude of impact (based on what, if any, infrastructure is proposed within the potential GWDTE area or relevant buffers), and an overall assessment of risk.*

The habitat, NVC, peat depth and geology information summarised in ***Table 2.1*** *is all illustrated in the relevant submitted EIA Report figures, namely Figures 7.3, 7.4, 12.3, 12.4 and 12.5.*

Table 2.1 – Detailed Risk Assessment for Identified Potential GWDTE Areas

Ref	Proposed infra within buffers	Geology/ Peat	NVC and Phase 1 Habitat	Topography and Other Considerations	Risk Summary
Habitats identified as potentially highly groundwater dependent, from NVC survey					
H1	Track, substation and part of T1 hardstanding (all shallow excavations) within this area. T1 c.25m to east, construction compound c.40m to west.	Peat depth 19 to 22cm in probes within this area. Onto hard rock. Mapped geology = no superficial over Upper Stromness Flagstone Formation	Habitat = B4 Improved grassland NVC code = M23b Rush pasture. NVC survey identified this as Ph1 habitat code B5 – marsh/marshy grassland	On slope downward to the west. OS mapping shows a well (not identified as currently being in use) in the northeast part of this area (higher end) and a drain/watercourse leading west downslope from the well location. There are also surface water drains to the northwest. There is potential shallow groundwater in superficial materials or weathered bedrock to be feeding this habitat, and some potential for groundwater to be emerging from a fissure or similar. However, it is also likely that surface water runoff shedding from the slope is ponding here. The pattern of potentially moderate GWDTE can be seen down the slope from the summit on Hundland Hill; considered unlikely to be groundwater emergence all the way up the slope and to	Assessed as GW and SW dependent, moderate sensitivity. Moderate impact (excavations actually within the area but not deep ones) therefore moderate risk. Mitigation and monitoring set out below this table.

Ref	Proposed infra within buffers	Geology/ Peat	NVC and Phase 1 Habitat	Topography and Other Considerations	Risk Summary
				the summit, but more likely rainwater shedding and ponding at the base, around the drain which is where the slope starts to flatten out.	
H2	Just inside 150m buffer around T3 and T4. Assessed as not groundwater dependent.	Peat generally 25-50cm thick overlying rock. Mapped geology is till in the centre, peat around NW and E edges, over Upper Stromness Flagstone Formation.	Habitat is E.1.6.1 = Blanket bog. NVC code = M23 dominant (rush pasture) with M23b (rush pasture) and M25a (mire – mod dependency) sub-dominant. The NVC survey identifies the habitat as B5/E1.7 = marsh/marshy grassland/wet modified bog.	This is a sloping area, where the slope starts to bottom out and is likely where rainwater runoff is shedding and ponding.	With peat cover and bog habitat this is very unlikely to be groundwater dependent – likely to be ombrogenous. Negligible sensitivity. Low impact due therefore negligible risk.
H3	Within 250m of T4; within 100m of track and T4 hardstanding.	Peat depth 25 to >100cm. Mapped geology peat at western edge, no superficial across the rest, over Upper Stromness Flagstone Formation.	Habitat is E.1.6.1 = Blanket bog. NVC code = M6 dominant (mire) with M6d (mire) and M25c (mire – mod dependency) sub-dominant. The NVC survey identifies the habitat as E2.1/E1.7 = acid/neutral flush/wet modified bog.	Area at the base of the slope, adjacent to the loch. Very likely to be SW ponding/shedding rather than GW emergence.	Acid habitats suggests fed by shallow water in peaty soils rather than emergence of deeper groundwater which would be expected to be alkaline. Assessed as not groundwater dependent. Negligible sensitivity. Moderate impact but still negligible overall risk.
H4	T3 is right on the edge, within ~10m outside boundary of this area. Also within ~70m of borrow pit. T3	Peat depth 25 to 100cm. Mapped geology peat over Upper Stromness Flagstone Formation.	Habitat is D6 = wet heath/acidic grassland mosaic.	Area on downslope, towards the loch. Immediately below an existing track which is likely to have	Acid habitats suggests fed by shallow water in peaty soils rather than emergence of deeper groundwater which

Ref	Proposed infra within buffers	Geology/ Peat	NVC and Phase 1 Habitat	Topography and Other Considerations	Risk Summary
	hardstanding and small bit of track within the area. Within 100m of compound.		NVC code = M23 dominant (rush pasture) with M23b (rush pasture) and M25a (mire – mod dependency) sub-dominant. The NVC survey identifies the habitat as B5/E1.7 = marsh/marshy grassland/wet modified bog.	modified/concentrated surface water runoff. Very likely to be SW ponding/shedding rather than GW emergence.	would be expected to be alkaline. Assessed as not groundwater dependent. Negligible sensitivity. High impact but still negligible overall risk.
H5	T3 is c.60m to east; borrow pit is partly within this area. Small section of track also within the area. Adjacent to compound, within 100m of T3 hardstanding.	Peat depth 22 to 100cm. Mapped geology peat except NW corner which is no superficial, over Upper Stromness Flagstone Formation.	Habitat is D6 = wet heath/acidic grassland mosaic. NVC code = M23 dominant (rush pasture) with M23b (rush pasture) and M25a (mire – mod dependency) sub-dominant. The NVC survey identifies the habitat as B5/E1.7 = marsh/marshy grassland/wet modified bog.	Area on downslope, towards the loch. Very likely to be SW ponding/shedding rather than GW emergence.	Acid habitats suggests fed by shallow water in peaty soils rather than emergence of deeper groundwater which would be expected to be alkaline. Assessed as not groundwater dependent. Negligible sensitivity. High impact but still negligible overall risk.
H6	T3 is c.215m to east; borrow pit is partly within this area. Small section of track also within the area.	Peat depth 25 to 50cm. Mapped geology peat in south, no superficial in north, over Upper Stromness Flagstone Formation.	Habitat is D6 = wet heath/acidic grassland mosaic. Except at far northern edge it is I2.1 = quarry. NVC code = M23 dominant (rush pasture) with M23b (rush pasture) sub-dominant. The NVC survey identifies the	Area on downslope, immediately adjacent to an existing track, likely to be causing ponding/ concentration of surface water runoff. Very likely to be SW ponding/shedding rather than GW emergence.	Acid habitats suggests fed by shallow water in peaty soils rather than emergence of deeper groundwater which would be expected to be alkaline. Assessed as not groundwater dependent. Negligible sensitivity. High impact but still negligible overall risk.

Ref	Proposed infra within buffers	Geology/ Peat	NVC and Phase 1 Habitat	Topography and Other Considerations	Risk Summary
			habitat as B5 = marsh/marshy grassland.		
H7	T3 is c.185m to west. Small section of track and part of T hardstanding within 100m.	Peat depth 25 to 50cm. Mapped geology peat in west, no superficial in east, over Upper Stromness Flagstone Formation.	Habitat is D6 = wet heath/acidic grassland mosaic except the far southern extent is E1.6.1 = blanket bog. NVC code = M6 dominant (mire) with M6d (mire) sub-dominant. The NVC survey identifies the habitat as E2.1 = acid/neutral flush.	Area on downslope, where it flattens out adjacent to the loch. Very likely to be SW ponding/shedding rather than GW emergence.	Acid habitats suggests fed by shallow water in peaty soils rather than emergence of deeper groundwater which would be expected to be alkaline. Assessed as not groundwater dependent. Negligible sensitivity. Low impact, negligible overall risk.
H8	T3 is on the boundary of this area (down-gradient), borrow pit is adjacent west (up-gradient). Track is adjacent on the west (up-gradient) and compound is within the area. T3 hardstanding and more track within 100m.	Peat depth 18 to 50cm. Mapped geology peat except far northern extent which is no superficial, over Upper Stromness Flagstone Formation.	Habitat is D6 = wet heath/acidic grassland mosaic. NVC code = M23 dominant (rush pasture) with M23b (rush pasture) and M25a (mire – mod dependency) sub-dominant. The NVC survey identifies the habitat as B5/E1.7 = marsh/marshy grassland/wet modified bog.	Area on downslope, towards the loch. Immediately below an existing track which is likely to have modified/concentrated surface water runoff. Very likely to be SW ponding/shedding rather than GW emergence.	Acid habitats suggests fed by shallow water in peaty soils rather than emergence of deeper groundwater which would be expected to be alkaline. Assessed as not groundwater dependent. Negligible sensitivity. High impact but still negligible overall risk.
H9	T2 is c.200m south (down-gradient). Track is adjacent north – existing track. Also c.65m from proposed new	Peat depth 17cm. Mapped geology peat over Upper Stromness Flagstone Formation.	Habitat is B4 = improved grassland. NVC code = M23 dominant (rush pasture) with M23b (rush pasture) sub-dominant.	Area on downslope, immediately below an existing track which is likely to have modified/concentrated	Acid habitats suggests fed by shallow water in peaty soils rather than emergence of deeper groundwater which

Ref	Proposed infra within buffers	Geology/ Peat	NVC and Phase 1 Habitat	Topography and Other Considerations	Risk Summary
	track to W/SW of the area (similar contour level).		The NVC survey identifies the habitat as B5 = marsh/marshy grassland.	surface water runoff. Very likely to be SW ponding/shedding rather than GW emergence.	would be expected to be alkaline. Assessed as not groundwater dependent. Negligible sensitivity. Moderate impact but still negligible overall risk.
H10	Outside all relevant infrastructure buffers.				
H11	T2 is c.165m NNW (up-gradient). No other infra within relevant buffers. .	Peat depth 16 to 50cm. Mapped geology is till in SE, no superficial in NW, over Upper Stromness Flagstone Formation.	Habitat is B5 marsh/marshy grassland in east = ; B4 in west = improved grassland. NVC code = M23 dominant (rush pasture) with M23b (rush pasture) sub-dominant. The NVC survey identifies the habitat as B5 = marsh/marshy grassland.	Area on downslope, where slope is flattening out and surface water runoff is likely to pond. Very likely to be SW ponding/shedding rather than GW emergence.	Acid habitats suggests fed by shallow water in peaty soils rather than emergence of deeper groundwater which would be expected to be alkaline. Assessed as not groundwater dependent. Negligible sensitivity. Low impact, negligible overall risk
Habitats identified as potentially moderately groundwater dependent, from NVC survey					
M2 M3 M4 M8 M9 M10 M11 M19 M20	Construction compound and short stretch of track within <20m, at and up-gradient.	Peat depth not recorded due to being outside site, however nearest probes recorded shallow peat (<20m). Mapped geology is till in the E, alluvium in the W, peat in the far NW. Bedrock is Upper Stromness Flagstone Formation.	The NVC survey identifies the habitats as the following, which are noted in SEPA guidance as potentially being moderately groundwater dependent: M15 (wet heath) in the west, with mire habitats (M27c, M28a and M25a) across the rest of the area. The far eastern section (potential GWDTE ref. M4) is	Area on lower section of a downslope where the topography flattens out and surface water runoff is likely to pond. Enclosed by surface water drains and roads. Very likely to be SW ponding/shedding and habitats fed by SW drains rather than GW dependent.	Acid habitats suggests fed by shallow water in peaty soils rather than emergence of deeper groundwater which would be expected to be alkaline. Assessed as not groundwater dependent. Negligible sensitivity. Low impact, negligible overall risk.

Ref	Proposed infra within buffers	Geology/ Peat	NVC and Phase 1 Habitat	Topography and Other Considerations	Risk Summary
			recorded as a mosaic of mire (potentially moderately groundwater dependent) and M19a (not groundwater dependent).		
M1 M5 M14 M15	T1 and part of hardstanding within this area near the NW edge. Substation c.60m W of the NW corner of this area. Track along the N and E boundaries of this area and across the SE corner. T2 and hardstanding within c.40m of this area to the S/SE.	Peat depth generally 0.25 to 0.5m across much of this area, shallower around the perimeter and in the east-central section. Mapped geology across most of this area shows bedrock at or near surface. Peat in the east-central area. Till in a small section at the far western edge.	Recorded habitats comprise B4 (improved grassland) in the N and SW, B5 (marsh/marshy grassland)in the W-centre, and D2 (wet dwarf shrub heath) in the SE. The NVC recorded the following habitats, which are noted in SEPA guidance as potentially being moderately groundwater dependent: MG10a (rush-pasture) across the W, SW, NE and far SE; MG10a/U5a (rush pasture which is potentially moderately groundwater dependent/grassland which is not groundwater dependent) in the centre and east-centre, and U6c (grassland) in the SE.	Wide area on the slopes down from the summit of Hundland Hill. Given the extent of the area from the summit across slopes in all directions, down to roads or field boundaries, it is considered unlikely that groundwater is near the surface or emerging across this area.	Assessed as not groundwater dependent. Negligible sensitivity. High impact but still negligible overall risk.
M12	T2 adjacent to the west, part of hardstanding slightly encroaching into the area. Borrow pit approximately 25m NE (down-gradient).	Peat depth generally 0.25 to 0.5m across the east, shallower across the west. Mapped geology shows peat in the east-central and	The Phase 1 Habitat Survey recorded the habitat as B4 (improved grassland). The NVC recorded the habitat as MG10a rush-pasture),	Wide area on the E/SE slope down from the summit of Hundland Hill. Given the extent of the area from the summit, across the E and SE	Assessed as not groundwater dependent. Negligible sensitivity. Moderate impact but still negligible overall risk.

Ref	Proposed infra within buffers	Geology/ Peat	NVC and Phase 1 Habitat	Topography and Other Considerations	Risk Summary
	T3 c.220m NE (down-gradient). Track along the northern boundary of the area and within 100m to the W and NE.	northern areas, with little or no superficial material above bedrock across the rest of the area.	noted in SEPA guidance as potentially being moderately groundwater dependent.	flanks of the hill, it is considered unlikely that groundwater is near the surface or emerging across this area.	
M7 M16 M21	T3 just inside the western edge of this area, part of hardstanding and track inside this area. Borrow pit c.70m W (up-gradient). Construction compound c.35m W (up-gradient).	Peat depth generally 0.5 to 1.0m across the centre and north, 0.25 to 0.5m across the south and northeast. Mapped geology shows	The Phase 1 Habitat Survey recorded the habitat as D6 (wet heath/acid grassland). The NVC recorded the habitat as the following, noted in SEPA guidance as potentially being moderately groundwater dependent: M27c (mire) in the north; M15b (wet heath) in the south-central, and M25a (mire) in the southeast.	Area on downslope, where it flattens out adjacent to the loch. Very likely to be SW ponding/shedding rather than GW emergence.	Acid habitats suggests fed by shallow water in peaty soils rather than emergence of deeper groundwater which would be expected to be alkaline. Assessed as not groundwater dependent. Negligible sensitivity. High impact but still negligible overall risk.
M6 M18	T4, hardstanding and track within this area.	Peat depth generally 0.5 to 1m across the centre and south, 0.25 to 0.5m across the north and west. Mapped geology shows peat across most of the area; till in the far southwest and little or no superficial cover over bedrock in the far east.	Phase 1 habitat survey recorded the habitat as E1.6.1 (blanket bog). NVC survey recorded the habitat as M27c (mire), noted in SEPA guidance as potentially moderately groundwater dependent.	Area on downslope, where it flattens out adjacent to the loch. Very likely to be SW ponding/shedding rather than GW emergence.	With peat cover and bog habitat this is very unlikely to be groundwater dependent – likely to be ombrogenous. Assessed as not groundwater dependent. Negligible sensitivity. High impact but still negligible overall risk.
M13 M17	Outside all relevant infrastructure buffers.				

c) Mitigation measures to protect the GWDTE and ensure hydrological connectivity.

Response: Only one potential GWDTE area (H1) is assessed as potentially having some element of true groundwater dependency based on this detailed analysis. Turbine T1 and associated hardstanding are located within this area, therefore mitigation measures to minimise potential adverse effects on groundwater quality and quantity at that location are therefore set out in ***Table 2.1****. Given the extent of other technical and environmental constraints at the site, including the requirement for suitable turbine spacing and buffering from sensitive receptors, it is not feasible to relocate T1 outside this area, and due to the limited spatial extent of the area, lack of connectivity with other GWDTE, and the overall low sensitivity of the groundwater resource at the site, it is considered proportionate and reasonable to stipulate mitigation as noted below rather than diminishing the project's potential renewable energy generation by removing T1.*

Mitigation

As can be seen from the above detailed assessment of potential groundwater dependency and associated risk to the quality and quantity of groundwater within potential GWDTE areas, only the area identified as H1, in the north-west of the Proposed Development site, is assessed as potentially being truly groundwater dependent – although still likely to be at least partly fed by surface water.

As discussed in the Groundwater Sensitivity and the Water Framework Directive section of this document, above, given the low sensitivity of the groundwater resource at the site, specific mitigation is not considered to be required to reduce any adverse impact on groundwater at the H1 location. However, based on a precautionary approach, the following measures are set out, to minimise potential adverse effects on the quality and quantity of even the localised, shallow groundwater interpreted to potentially be present at this location.

Pre-construction site investigations will include targeted groundwater monitoring at this location, to establish the presence and level of groundwater and any discrete seepage locations. The findings from pre-construction investigations and groundwater monitoring will inform micrositing, to be overseen by the Environmental Clerk of Works (ECoW), seeking to ensure that the turbine base is sited away from localised seepages or locations where groundwater is at or near the surface and may require substantial dewatering during excavation.

The excavation formed for the turbine base will be completed as quickly as possible to ensure that any dewatering required, and associated localised groundwater level drawdown, is limited in duration.

Depending on findings from the pre-construction site investigations, if it is considered appropriate to minimise potential of concrete leaching into local groundwater, the Principal Contractor will give consideration to protective measures such as inclusion of an impermeable lining at the base of the excavation prior to pouring concrete. Ongoing advice will be provided by the ECoW.

Groundwater monitoring will carry on through construction and for an agreed period post-construction. A water monitoring plan, to include groundwater, will be prepared and agreed with the local planning authority, in consultation with SEPA, prior to commencement of construction.

Specific Notes on Mitigation Requirements in SEPA Consultation Response

SEPA's consultation response letter provides some specific comments on mitigation considered to be required to address potential impacts on GWDTE.

In particular, SEPA notes that consideration should be given to micrositing of T3, T4 and associated tracks and infrastructure, to avoid specific habitats.

We note that T3 is located just inside the western edge of the mapped M27 community. It is likely that it will need to be microsited to the south, to avoid conflict with a telecommunications link, as noted in Chapter 15 of the EIA Report and summarised in the micrositing section of Chapter 3 of the EIA Report. This is likely to have the effect of moving T3 fully outside the M27 community.

With respect to T4, we note that suitable spacing between turbines will need to be maintained for safe and efficient operation, and with T3 likely to move southward, micrositing T4 to the north further reduces turbine separation and has the potential to detrimentally affect efficiency of performance. However, in light of SEPA's further consultation response dated 5th April 2023, this potential has been further explored, and it is considered feasible to microsite T4 and its associated infrastructure approximately 80 to 100 m to the north, avoiding the M27 community. The precise final location would be assessed and confirmed during pre-construction investigations and detailed design (including detailed drainage strategy), and during construction with oversight of the ECoW. The Applicant therefore confirms agreement with the proposed planning condition as set out in SEPA's letter dated 5th April 2023, or similarly worded condition to be agreed with OIC.

2.2.3 Conclusion

In response to SEPA's consultation response, further information and analysis on GWDTE and potential impacts on groundwater have been provided in this SEI Report section and **Figures 2.1 and 2.2**.

It is maintained that effects on the groundwater resource are not assessed as being significant, however precautionary mitigation has been set out as committed to by the Applicant. These measures can be captured within the detailed Construction Environmental Management Plan (CEMP), to be agreed with the local planning authority (in consultation with SEPA) prior to commencement of construction. This can be secured by way of an appropriately worded planning condition.

The other planning conditions requested by SEPA, relating to GWDTE-related considerations to be included within the finalised CEMP, peat management, a detailed Habitat Management Plan are considered reasonable and the Applicant is happy to commit to them.

Furthermore, although the Applicant maintains that the proposed T4 location would not result in significant adverse environmental effects, it has been determined that increasing the micrositing allowance for T4 and associated infrastructure to 100 m would allow the identified M27 community in this area to be avoided, and the Applicant is therefore seeking this increased micrositing allowance.

2.3 Surface Water Drainage and Groundwater Migration

OIC has requested the following: "*Provide construction details and maintenance schedules for all proposed surface water drainage, together with details of how potential migration of ground water along tracks and buried cable routes would be prevented and update the EIAR reporting as required*."

2.3.1 Surface Water Drainage

As outlined within the submitted outline Construction Environmental Management Plan (oCEMP) included as Appendix 3.1 to the submitted EIA Report, prior to construction a detailed Drainage Strategy, site drainage plan and further detailed Sustainable Drainage System (SuDS) design will be submitted and agreed with OIC prior to construction. Provision of detailed construction details and maintenance schedules will require input from the Principal Contractor, who will not be appointed until post-consent. However, additional outline information on proposed surface water drainage is set out below.

Immediately prior to earthworks operations, pre-earthworks drainage will be installed. Pre-earthworks drainage is required to ensure clean surface water is kept separate from runoff from earthworks, preventing additional sedimentation and erosion. This drainage will be installed surrounding infrastructure, including access tracks, to include trackside drainage, swales and retention ponds where required. Surface water drainage will likely be installed by tracked excavator plant on-site to follow the site drainage plan. Clean water drains will be installed upslope of access tracks and infrastructure to prevent surface water run-off upslope being directed to open excavations. Drainage will also be installed downslope of excavations to collect potentially silty water run-off. Installed drainage ditches will be constructed to follow topography and to be of uniform depth, to prevent standing water. Clean and silty water will be directed to swales, sumps or settlement lagoons to allow settlement of any potential sediments. Pre-earthworks drainage will be reinstated following construction, unless it is to be used as operational phase drainage.

Runoff during earthworks will be directed by trackside drains to sumps or settlement lagoons to allow settlement of any silty runoff. Diversion measures will be placed upslope of construction disturbed areas. Cross-drainage pipework or culverts will be installed at regular intervals. Drainage ditches will have outlets at regular intervals to prevent build up and erosion within the channel. All surface water drainage will be installed to accommodate larger volumes of water in the event of heavier rainfall events. Where water collected is discharged to vegetation for dispersion or infiltration, this will not occur at areas assessed as being GWDTE.

To prevent surface water drainage infilling with sediment and leading to reduced storage capacity, the drainage will be regularly inspected for build up by site operatives. This will be led by the ECoW who will perform weekly visual checks of surface water drainage. To prevent sediment build up, the contractor will remove sediment from the sumps and lagoons regularly by tracked excavators. In the event of increased erosion within drains, additional settlement lagoons and check dams can be installed to slow water flow.

2.3.2 *Groundwater Migration*

Areas of infrastructure can impact groundwater flow by redirecting preferential migration pathways. The groundwater underlying the site is described to be "*perched, localised groundwater within the thin superficial materials at the site, with low potential for any more substantial groundwater resource within the bedrock".* Limited near-surface groundwater is therefore considered to follow topography and onsite will flow downslope from the topographic high at the centre of the site.

To prevent disruption to flow paths and therefore migration of groundwater, hydraulic connectivity is to be maintained upslope and downslope of access tracks and buried cables. Embedded mitigation in the design of the Proposed Development, has included limiting the requirement for new track as far as practicable and incorporating existing tracks.

During construction and operational phases, careful drainage design will ensure these flow paths are maintained. Buried cables and access tracks will be constructed with slightly permeable materials, allowing minor flow of near-surface groundwater. Cross carriage drainage pipes at regular intervals along access tracks will also maintain hydraulic connectivity. Where interception and diversion of upslope clean water is required at earthworks, these will be culverted and released downslope as close to point of interception as practicable to maintain soil moisture regimes. As groundwater at the site will be largely shallow and follow topography, it will largely correspond with surface water flow and catchments. Watercourse crossings (limited to three crossings of minor drains/ditches) will therefore be designed to maintain connectivity upslope and downslope of linear infrastructure at existing drainage ditches. Installations of cross carriage drainage pipes, culverts and watercourse crossings will be maintained throughout the operational phase so there will be no long-term disruption to groundwater flow and level.

As outlined within Section 12.7, Chapter 12 of the submitted EIA Report, pre-construction intrusive site investigation works will be undertaken and will include targeted monitoring and assessment of groundwater levels and flows. This will include surrounding linear infrastructure of tracks and buried cable routes.

2.4 Local Storage of Peat

OIC has noted: "*A Peat Management Plan should include details of local storage of peat, if local storage is intended.*"

Appendix 12.2 of the submitted EIA Report provided an outline Peat Management Plan (PMP). The outline PMP identified the likely requirement for some excavation of peat to construct the Proposed Development, although this requirement has been minimised as far as practicable with consideration of other constraints.

Page 7 of outline PMP includes a section on Temporary Storage. The following text is reproduced from that section:

Peat storage will only be required where reinstatement is not immediately possible, and all stored peat will be reinstated at the end of the construction phase. To ensure that the storage locations are suitable in terms of environment, construction practicality and safety, the precise location of temporary peat stockpiles should

be determined at a site level following consideration and assessment of suitable areas by the Environmental Clerk of Works (ECoW), Geotechnical Engineer and contractor using the guiding principles below:

- *Peat turves should be stored in wet conditions or irrigated to prevent desiccation (once dry, peat will not rewet);*
- *Stockpiling of peat should be in large volumes to minimise exposure to wind and sun but with due consideration for slope stability;*
- *Excavated peat and topsoil should be stored to a maximum of 1m thickness (unless otherwise agreed by the Geotechnical Engineer);*
- *Stockpiles of peat should be isolated from any surface drains and a minimum of 50 m from watercourses, and stockpiles should not be located on areas of deep peat, in order to avoid increasing peat slide risks associated with additional loading;*
- *Stockpiles should include appropriate bunding to minimise any pollution risks where required. Excavated topsoils would be stored on geotextile matting to a maximum of 1 m thickness;*
- *Stores of non-turf (catotelm) peat should be bladed off to reduce the surface area and desiccation of the stored peat; and*
- *Monitor areas of steep peat/storage during period of wet weather, or during snow melt, to identify early signs of peat instability.*

Additional information on good practice to be followed for temporary storage around infrastructure is given in the subsequent section of the outline PMP.

It is submitted that the above information, as contained in the outline PMP submitted as part of the EIA Report, is appropriate and sufficient for describing how local storage of peat will be managed during construction and reinstatement. It is considered that specific details of any local peat storage locations cannot reasonably be confirmed at the EIA stage (Stage 1 PMP as defined by the relevant guidance[1]), but would be identified as part of the detailed, Stage 2 PMP (post-consent/pre-construction) and/or the Stage 3 (construction) phase PMP. It is expected that requirement for submission and agreement of a detailed (Stage 2) PMP can be secured by way of an appropriate worded planning condition.

2.5 Flood Risk and Sustainable Drainage

OIC has requested the following: "*Provide an assessment of flood risk with respect to overland water flow and provide details of sustainable drainage provision*."

As set out in Paragraphs 12.6.28 to 12..30, Chapter 12 of the submitted EIA Report, SEPA's online flood mapping indicates that no areas of the site are expected to be at risk of river, coastal or surface water flooding, and the overall receptor sensitivity of the site and the local area with respect to flooding was assessed as low. It is noted that SEPA concurred through the Scoping process that a detailed flood risk was not required. However, the following further discussion of overland flow is provided in response to the query raised by OIC.

The site is underlain by moderate permeability, thin superficial deposits, therefore rainfall will dissipate through infiltration to superficial deposits and through surface water runoff. Overland flow is anticipated to follow topography from the centre to the boundaries of the site, towards flat lying areas to the north and south, and Loch of Hundland to the west and Loch of Swannay to the east.

The installation of infrastructure may disrupt overland flow paths by creating a barrier to flow, however, surface water drainage will be designed and implemented to maintain hydrological connectivity upslope and downslope of infrastructure. The installation of hardstanding is not considered to substantially increase risk of pluvial flooding with the installation of sustainable drainage.

[1] Scottish Renewables, SEPA (2012). *Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste*, Version 1.

A committed drainage design, which will comply with CAR General Binding Rules (GBR), will be prepared and agreed with OIC prior to construction. This will include best practice measures to maintain connectivity. This will include culverts and cross drainage pipework at regular intervals to ensure regular discharge of runoff as close as possible to interception. Mitigation measures will ensure hydraulic connectivity is maintained and there is no effect on downslope soil moisture regimes. These measures of cross drainage pipework, culverts and watercourse crossings will be maintained throughout the operational phase to provide long-term sustainable drainage for the Proposed Development.

2.6 Conclusion – Hydrology, Hydrogeology, Geology and Peat

The above additional information has been provided to address queries and comments raised by SEPA and by OIC.

Based on the further, detailed assessment of potential GWDTE set out above, only the area identified as H1, in the north-west of the Proposed Development site, is assessed as potentially being truly groundwater dependent – although still likely to be at least partly fed by surface water. Given the low sensitivity of the groundwater resource at the site, specific mitigation is not considered to be required to reduce any adverse impact on groundwater at the H1 location. However, based on a precautionary approach, additional mitigation has been set out, to minimise potential adverse effects on the quality and quantity of even the localised, shallow groundwater interpreted to potentially be present at this location. This additional mitigation comprises: targeted groundwater monitoring as part of pre-construction site investigations at this location; micrositing as appropriate (advised by the ECoW) to site the turbine base away from localised seepages or locations where groundwater is at or near the surface; consideration of protective measures such as inclusion of an impermeable lining at the base of the excavation if appropriate; and groundwater monitoring during construction and for an agreed period post-construction. A further mitigation measure, to avoid infrastructure being sited on the M27 community in the south-east of the site, is to request an increased micrositing allowance of 100 m for T4 and its associated infrastructure.

The detailed assessment of potential GWDTE, and the other additional information set out above, does not result in any changes to the assessed significance of potential effects or residual effects as reported in the submitted EIA Report. The summary of effects table relating to hydrology, hydrogeology, geology and peat (Table 12.5, Chapter 12 of the submitted EIA Report) is reproduced below, with the only change being the addition of further precautionary mitigation measures relating to potential GWDTE in a discrete area in the north-west of the site (H1 on **Figure 2.1**), and increasing the micrositing allowance for T4 to 100 m.

Table 2.2 – Summary of Hydrology, Hydrogeology, Geology and Peat Effects (Updated to Include Additional Precautionary Mitigation)

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction					
Pollution/ sedimentation of watercourses (construction)	Moderate	Adverse	➢ Appropriate drainage and watercourse crossing design. ➢ Implementation of CEMP to prevent silt-laden runoff entering watercourses. ➢ Design working platforms (if applicable) to drain away from watercourses. ➢ Maintenance of pollution control system, especially during wet weather, suspension of sensitive construction operations when extremely wet conditions are forecast.	Negligible (not significant)	Adverse
Chemical contaminated runoff to watercourses (construction)	Moderate	Adverse	➢ Implementation of CEMP to ensure appropriate storage and management of oils and chemicals, spill response and contingency measures.	Negligible (not significant)	Adverse
Soil compaction (construction)	Minor-Moderate	Adverse	➢ Implementation of CEMP to delineate working areas and ensure appropriate earthworks methods. ➢ Tracks to be constructed by stripping topsoil and subsoil to a substrate of firm till or rock. Stripped soils to be stored in temporary windrows, to be used in forming soft verges to roads.	Negligible (not significant)	Adverse
Impact on the integrity of banking (construction)	Minor	Adverse	➢ Detailed design of watercourse crossings in line with relevant guidance and best practice, to be agreed with SEPA and regulated under the CAR licensing regime. ➢ Implementation of CEMP to ensure appropriate earthworks and construction methods.	Negligible- Minor (not significant)	Adverse

Description of Effect	Significance of Potential Effect		Mitigation Measure	Significance of Residual Effect	
	Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Impact on the groundwater quality and flow regime (construction)	Minor	Adverse	➢ Pre-construction intrusive site investigations to aid in detailed foundation design and micrositing. To include groundwater monitoring and permeability testing, specifically with targeted groundwater monitoring at the identified area of potential GWDTE (H1 on **Figure 2.1**). ➢ Implementation of CEMP to minimise dewatering requirement through efficient excavation and concrete pouring. ➢ Micrositing T1 as appropriate (advised by the ECoW) to site the turbine base away from localised seepages or locations where groundwater is at or near the surface, subject to pre-construction site investigation findings. ➢ Consideration of protective measures for T1 such as inclusion of an impermeable lining at the base of the excavation if appropriate. ➢ Increased micrositing allowance of 100 m for T4 and associated infrastructure, to allow M27 community adjacent to the off-site SSSI and SPA to be avoided. ➢ Groundwater monitoring during construction and for an agreed period post-construction.	Negligible-Minor (not significant)	Adverse
Erosion or drying out of peat during construction	Minor	Adverse	➢ Pre-construction intrusive site investigations to fully characterise ground conditions and aid micrositing. ➢ Avoidance of thick peat by iterative design process.	Negligible	Adverse
Operation					
Impact on the drainage and groundwater flow (operation)	Minor	Adverse	➢ Pre-construction intrusive site investigations to aid in detailed foundation design and micrositing. ➢ Appropriate drainage and watercourse crossing design.	Negligible-Minor (not significant)	Adverse

3. Archaeology and Cultural Heritage

3.1 Introduction

This section covers Point 2 in OIC's Additional Information Request dated the 8th of February 2023,as well as the the planning consultation responses that were received from Historic Environment Scotland (HES) on the 8th of December 2022 and the current Orkney Islands Archaeologist (OIA), Paul Sharman, on the 24th of November 2022.

3.2 Scope and Methodology of EIA Report Chapter

All AOC Environmental Impact Assessments (EIA) follow a standard process which has been developed gradually in consultation with both HES and Scotland's county archaeologists over the course of the past 15 years. This methodology has been designed so as to accord with legislation, planning policy and HES guidance as well as the Standards and Guidance of the Chartered Institute for Archaeologists, of which AOC is a Registered Organisation. In accordance with these practices AOC consulted with both HES and the former OIA, Julie Gibson on the 8th of February 2022. Standard letters were issued to both consultees, although the wording of the letter that was issued to the OIA was amended slightly to reflect her additional responsibility for non-designated buried archaeological remains. Both letters outlined the proposed scope of the assessment for the Proposed Development, which included a 10km study area for all Scheduled Monuments and Category A Listed Buildings, and additional consideration of the Heart of Neolithic Orkney World Heritage Site (HONO WHS), the component monuments of which all lie beyond the 10km study area. The proposed scope was then set out in detail in the Applicant's March 2022 EIA Scoping Report[2] which was prepared with input from AOC.

The Scoping Report set out a sequence of five concentric study areas:

- A 'core study area' which encompassed all the land within the site boundary which would be assessed in detail in order to identify any archaeological remains that could potentially be directly impacted.
- A 1km study area for all known heritage assets and known previous archaeological interventions in order to help predict whether any similar hitherto unknown archaeological remains are likely to survive within the site.
- A 5km study area for the assessment of potential effects on the settings of all designated heritage assets.
- A 10km study area for the assessment of potential effects on the settings of all nationally important designated heritage assets, which in the case of the Proposed Development applies to Scheduled Monuments and Category A Listed Buildings.
- A 15km study area for the assessment of potentially effects on the settings of the internationally important HONO WHS.

The Scoping Report went on to detail the sources that AOC intended to consult and the proposed EIA assessment methodology, including the tables that were ultimately used in the EIA Report. AOC have evolved this methodology gradually over a number of years, often making amendments to reflect consultation responses from HES and other stakeholders. AOC believes that it reflects professional practice, and note that an earlier version of the methodology, which employed the same concentric study areas, was used to assess the three OIC Community Wind Farm developments (all now consented).

AOC's February 2022 consultation letters to HES and the former OIA included a list of 12 Scheduled Monuments which the Applicant proposed to prepare visualisations for. This list included the four Scheduled

[2] https://planningandwarrant.orkney.gov.uk/online-applications/files/74E9A7A1D722FF601D98CBE6268412A7/pdf/22_080_SCO-Scoping_Report-403909.pdf

Monuments that lie either within or in proximity to the site boundary; the Hundland Hill enclosure (SM13451), the Nisthouse burial mound (SM1318), the Park Holm artificial island and causeway (SM1362) and the Stoney Holm Crannog (SM1394) as well as the four individual components of the HONO WHS; Skara Brae (SM90276), the Ring of Brodgar (SM90042), the Stones of Stenness (SM90285) and Maes Howe (SM90209).

HES responded to AOC on the 23rd of March 2023 suggesting 'in the first instance' visualisations from the Hundland Hill enclosure, the Park Holm artificial island, the Hundland settlement mound (SM1284) and Vinquin Broch (SM1477), all of which had been on the Applicant's list. The former OIA responded via email on the 9th of February 2022, requesting consideration of two additional Scheduled Monuments; the Knowes of Trotty (SM1316) and the Linga Fields mounds (SM1348), the latter of which lies beyond the 10km study area. Examination of the ZTV established that there is no potential for visibility from the Knowes of Trotty, due to intervening hills, although the submitted EIA Report does include a visualisation from the Linga Fields mounds (Figure 9.29). The former OIA also commented on the presence of the St. Magnus Way within the area. Neither HES nor the former OIA commented on the proposed 10km study area and neither requested that its scope be extended to 20km. OIC issued a Scoping Opinion on the 27th of May 2022 which includes individual scoping responses from both the former OIA and HES, neither of whom commented on the proposed 10km study area or requested that it be extended to 20km. Indeed as OIC note in their summary of the scoping responses "*Historic Environment Scotland Advice confirms that that the proposed scope of the cultural heritage assessment is agreed*"[3].

Following receipt of the Scoping Opinion AOC proceeded to prepare the EIA Report Chapter 9 in accordance with the agreed scope and methodology.

The planning application was submitted to OIC on the 26th of August 2022 and the former OIA retired in October 2022; the consultation response to the application was therefore written by her successor, the current OIA, shortly after he had taken up the post. In his response, the current OIA raises a number of concerns about the scope of the EIA Report chapter, most notably the use of 10km and 15km study areas, which he argues contradicts OIC's 2017 Supplementary Guidance: Energy[4] . The OIA notes that this guidance states that '*a minimum radius of 20km should be considered for windfarm developments over 125m in height*'[5]. AOC have reviewed this document and in particular Development Criterion 4 which is concerned with the historic environment (OIC, 2017, 25-26). Criterion 4 makes no reference to study areas of any size, nor does it make any reference to turbine heights, indeed it does not make any direct reference to wind energy developments. A 'find on page' search of the Supplementary Guidance uncovered a single reference to '20km' contained within Table 2 which forms part of the discussion of Development Criterion 2 – Landscape and Visual Impact. With regards to '*Large, Very Large and Wind Farm*' developments Table 2 notes that "*the LVIA will be detailed with a ZTV map covering a radius of a minimum of 20km in the case of medium/large, large or very large turbines*" (OIC 2017, 20). The submitted EIA Report contains a dedicated Landscape and Visual Impact Assessment (LVIA) prepared by a specialist consultant (Chapter 6 of the submitted EIA Report). This includes a wide range of figures, including Figures 6.2 -6.5, which between them record the Zone of Theoretical Visibility (ZTV) for both blade tip and hub heights at distances of 20km and 45km. In addition to this, the cultural heritage chapter (Chapter 9 of the submitted EIA Report) contains mapping up to 10km (Figure 9.5) and 15km (Figure 9.6) which illustrates the relationship between the ZTV and those heritage assets that fall within the scope of the 5km, 10km and 15km study areas. It is therefore considered that the submitted EIA Report is compliant with OIC's 2017 Supplementary Guidance on energy.

[3] Orkney Islands Council, 2022, Hundland Hill (Land Near), Birsay, Orkney, Scoping Opinion, 22/080/SCO, 15

[4] Orkney Islands Council, 2017, https://www.orkney.gov.uk/Files/Planning/Development-and-Marine-Planning/Adopted_PPA_and_SG/Guidance_for_the_Plan/Energy_Supplementary_Guidance.pdf

[5] Orkney Islands Council, 2022, 22/320/TPPMAJ, Orkney Islands Archaeologist Consultation Response, 15 November 2022.

3.3 Potential Effects on Scheduled Monuments

OIC's response to the Applicant notes that HES are concerned that the Proposed Development has the potential to affect the integrity of the setting of four Scheduled Monuments that are located either within the site boundary or in close proximity to it, namely:

- Hundland Hill, enclosure 500m NE of Nisthouse (SM13451)
- Nisthouse, burial mound 270m ENE of (SM1318)
- Park Holm, artificial island and causeway, Loch of Swannay (SM1362)
- Stoney Holm, crannog, Loch of Swannay (SM1394)

The reference to integrity relates to Paragraph 145 of Scottish Planning Policy (Scottish Government 2014), which was in place when the application was submitted. The paragraph stated that "*where there is potential for a proposed development to have an adverse effect on a scheduled monument or on the integrity of its setting, permission should only be granted where there are exceptional circumstances*" (2014, 35). In accordance with AOC's established EIA methodology the assessment as set out in the submitted EIA Report considered adverse effects on integrity of setting to relate to: whether a change would seriously adversely affect the asset's key attributes or elements of setting which contribute to an asset's significance, to the extent that the setting of the asset can no longer be understood or appreciated. This is test is different from the EIA threshold of significance as it does not necessarily follow that an adverse effect to the setting of a Scheduled Monument will automatically cause harm its integrity. Any assessment of adverse effects upon the integrity of the setting of Scheduled Monuments is qualitative and largely dependent upon whether the effect predicted would result in a major impediment to the ability to understand or appreciate the heritage asset and therefore reduce its cultural significance.

With this in mind, the assessment, as reported in Chapter 9 of the submitted EIA Report, predicted Moderate significant EIA effects upon the settings of all four of the above Scheduled Monuments. However, in all four cases is was concluded that the predicted effects would not affect the integrity of the setting of the assets as the contribution that their placement within the landscape makes to their cultural significance would remain clearly legible (refer to Paragraphs 9.9.10 to 9.9.20, Chapter 9 of the submitted EIA Report).

The Scottish Government adopted National Planning Framework 4 (NPF4) in February 2023, superseding Scottish Planning Policy. With regards to development proposals that could affect Scheduled Monuments, Policy 7(h) of NPF4 states that:

"*Development proposals affecting scheduled monuments will only be supported where:*

i. *direct impacts on the scheduled monument are avoided;*

ii. *significant adverse impacts on the integrity of the setting of a scheduled monument are avoided; or*

iii. *exceptional circumstances have been demonstrated to justify the impact on a scheduled monument and its setting and impacts on the monument or its setting have been minimised.*" (Scottish Government, 2023, 46).[6]

In this context, the key distinction between the former SPP and the new NPF, is that NPF4 raises the threshold of concern when considering whether a proposal has the capacity to affect the integrity of the setting of a Scheduled Monument from '*adverse effect*'[7] to '*significant adverse impacts*'[8] . Given that the submitted EIA Report concluded that the predicted Moderate significant effects upon the settings of the four Scheduled Monuments would not have an adverse effect upon the integrity of their settings, it follows that the new higher test of a significant adverse impact on the integrity of setting would not be met either. AOC therefore

[6] Scottish Government 2023, National Planning Framework 4 https://www.gov.scot/publications/national-planning-framework-4/
[7] SPP 2014, Para 145
[8] NPF 4 2023, Policy 7(h)i

considers that the Proposed Development accords with NPF4 with respect to the predicted effects upon the settings of these four Scheduled Monuments.

3.4 Potential Effects on Heart of Neolithic Orkney World Heritage Site

HES note that they consider that the Proposed Development "*has the potential to have a significant negative impact on the Outstanding Universal Value (OUV) of the Heart of Neolithic Orkney World Heritage Site (HONO WHS)*"[9]. The HONO WHS comprises four key Scheduled Monuments all of which are located within West Mainland; Skara Brae, Maeshowe, the Stones of Stenness and the Ring of Brodgar. The submitted EIA Report was supported by visualisations illustrating the predicted extent of visibility from each of these monuments, Photomontages were prepared for the Ring of Brodgar and Skara Brae (Figures 9.25 and 9.28), whilst wirelines were prepared for Maeshowe and the Stones of Stenness (Figures 9.26 and 9.27). The assessment as reported in Chapter 9 of the submitted EIA Report predicted Minor non-significant effects upon the settings of all four monuments when they were considered individually (Paragraphs 9.9.41 to 9.9.56, Chapter 9 of the submitted EIA Report), whilst it considered that the overall effect upon WHS (OUV) would not be significant because:

"*Although the Proposed Development would be visible, at least to a degree, from each of HONO's individual components, this visibility would fall considerably outwith the core settings of all of them, and the underlying wider topography would remain readily legible. The ability to appreciate the location and setting of each monument, along with the interrelationships that they retain with each other, with other monuments on West Mainland or with their geographical setting (HES et.al.2016, 65), would not be materially compromised and the OUV of the WHS will therefore remain intact*." (Paragraph 9.9.61, Chapter 9 of the submitted EIA Report).

3.4.1 Additional Photomontages

HES note in their response that "*based on the information supplied with the application, alongside our own observations made on our site visit on 17 November 2022, we are content that Skara Brae would not experience significant impacts as a result of the proposal*". They did however request that additional photomontages be submitted to show predicted visibility from both the Stones of Stenness and the path which leads to Maeshowe. These photomontages have been prepared by a separate specialist and are included in **Appendix 3.2**. Copies were issued in advance to both HES and the OIA on the 15th of February 2023, along with an additional visualisation showing the predicted visibility from the immediate north of the mound at Maeshowe. The Maeshowe visualisations confirmed that there will be no visibility of the Proposed Development at ground level from either the circumference of the mound or the approach path to it. Following the submission of these requested views, HES agreed at a meeting held with AOC and the Applicant on the 6th of March 2023 to remove their concerns with regard to Maeshowe.

3.5 Community Engagement Programme

As noted above, four Scheduled Monuments are located either within the site boundary or in close proximity to it. None of these monuments are currently interpreted, whilst the Hundland Hill enclosure has only been recently discovered and is arguably poorly understood. The Applicant is keen to increase public awareness of these assets as part of the development and therefore a community engagement programme is proposed. Suggested options could include geophysical survey, topographical survey and potentially limited test excavations focussed on the Scheduled enclosure, in order to better understand it, the installation of interpretation panels on the site, and further engagement with the local community. AOC have discussed the principle of these proposals with both HES and the current OIA and the proposals are explored in greater detail in a separate document in **Appendix 3.1**.

[9] HES letter to OIC 08 December 2022, case ID 300056534

4. Wind Shadowing

The existing turbine within the Proposed Development site is operated by Constantine Wind Energy (CWE)> A commercial arrangement between the applicant and CWE is currently ongoing and as such no wind shadow assessment is therefore considered to be necessary. CWE are expected to formally remove their objection once this agreement has been reached.

5. Ornithology

5.1 Introduction

As noted in Section 1.1, the planning application for the Proposed Development was submitted in August 2022. The EIA Report submitted with the planning application included assessment of 18 months of bird survey results from September 2020 to March 2022, namely two wintering seasons and one breeding season. The assessment also included analysis of the breeding territories for wading birds from the second breeding season.

It was anticipated that NatureScot and the Royal Society for the Protection of Birds (RSPB) would consider that two full years of bird survey work would be required to appropriately inform the assessment. Bird survey work was continuing at the time of the planning application submission, up until August 2022, to record a second full breeding season and therefore complete a full two years of survey. This additional survey data and associated commentary on the assessment of effects on ornithological receptors was provided to OIC in October 2022. However, relevant consultees had by that time already begun their review of the EIA Report and it was therefore considered by OIC that, rather than publicising that additional survey data as Supplementary Environmental Information at that time, it would be preferable to wait for all consultee responses to be received, so that consolidated Supplementary Environmental Information could be prepared and submitted to address all consultee queries and comments raised.

Consultee responses from NatureScot and RSPB have since been received, as briefly summarised below:

- NatureScot:
  - Requested a second year of breeding season survey work;
  - Requested further information on flight activity data that concerns flights to/from the Orkney Mainland Moors Special Protection Area (SPA) – noting, "*flights were not recorded commuting to/from the SPA by species associated with the site. It is not clear from the information provided if these were observed but not shown on the supporting maps or they were not seen during survey work. Further clarification on this therefore required to fully assess the impacts to the SPA*";
  - Requested further evaluation of cumulative impacts on SPA species;
  - Requested further information to determine whether the proposal is likely to have a significant effect on red-throated diver as a qualifying species of the North Orkney SPA – noting, "*The proposal lies within foraging range for red-throated diver and activity by this species was recorded during survey work for this proposal. It is possible that divers using the wind farm site also use this SPA at least during part of the year. From the information provided, it is not clear if connectivity with this SPA was considered and what the justifications may have been for ruling it out for further assessment*".
- RSPB
  - Raised concerns about the robustness of the assessment being based on only 18 months of survey data instead of a full two years.
  - Raised concerns relating to the avoidance rate used in collision modelling for red-throated diver and great skua, although it is acknowledged that both the NatureScot recommended

avoidance rates and alternative, higher avoidance rates (considered more appropriate although still precautionary, as set out in Chapter 8 of the submitted EIA Report) had been used and both resultant collision risk values had been reported for each species.

- Raised concerns that collision risk modelling had not been carried out for species for which less than 500 seconds of 'at risk' flight time had been recorded during 18 months of surveys.

Sections 5.2 to 5.5 of this SEI provide an updated assessment of the ornithological effects of the Proposed Development based on information gathered during the additional surveys between April 2022 and August 2022. Section 5.6 summarises the conclusions of the Habitat Regulations Appraisal, which has been similarly updated. Section 5.7 provides additional commentary to specifically address the above-noted comments from NatureScot and RSPB.

The information set out below is intended to be read in conjunction with the submitted EIA Report; the assessment procedure used in this report follows that set out in Chapter 8 of the submitted EIA Report. Reference is made to the submitted EIA Report Chapter 8, associated technical appendices and figures where the original remains applicable. Where any information in the EIA Report is superseded by the information presented in this SEI Report, this is made clear. Where identified impacts and significance of effects on Important Ornithological Feature (IOFs) remain unchanged, this is stated and no updated assessment is required.

The baseline conditions are considered to remain unchanged apart from recorded ornithological activity as identified from the additional survey work.

The survey methods remain consistent with those adopted for the first 18 months of the ornithology surveys and described in Chapter 8 of the submitted EIA Report.

5.2 Updated Potential Effects

5.2.1 Flight Activity Surveys

Between April and August 2022, a further 36 hours of survey effort was completed at each of Vantage Point (VP) 1 and VP2, thus meaning a full 72 hours was completed at each VP in Year 1 and Year 2. The survey timings and weather along with the results of the surveys are shown and discussed in Appendix 8.1.

Please note that appendix numbering has been retained as per the submitted EIA Report, with each of Appendices 8.1, 8.2 and 8.3 being updated to take account of the additional survey data).

A comparison of the results after 18 months and after the full two years is shown in Tables 5.1 and 5.2 below:

Table 5.1 – Summary of Target Species Flight Time (September 2020-March 2022)

Species	Flights	Number of Birds	Sum of Duration (Seconds)	Total In site	Sum HB1 (<20m)	Sum HB2-HB5((20 ≥ < 200 m)	Sum HB3 (>200m)
Arctic skua	3	3	192	148	24	124	-
Great skua	29	33	1,495	1,288	202	1,086	-
Hen harrier	50	50	6,154	4,980	4,944	36	-
Peregrine	4	4	1,023	460	0	460	-
Red-throated diver	9	10	1,534	983	58	925	-
Short-eared owl	13	13	1,424	1,353	1,040	313	-
White- fronted goose	1	13	323	0		0	-
Whooper swan	1	3	112	52		52	-

Table 5.2 – Summary of Target Species Flight Time (September 2020-August 2022)

Species	Flights	Number of Birds	Sum of Duration (Seconds)	Total In site	Sum HB1 (<20m)	Sum HB2-HB5((20 ≥ < 200 m)	Sum HB3 (>200m)
Arctic skua	5	6	265	209	24	185	-
Great skua	43	47	2,036	1,743	244	1,499	-
Hen harrier	67	67	8,373	6,790	6,852	38	-
Merlin	1	1	10	10	10	0	-
Peregrine	4	4	1,023	460	0	460	-
Red-throated diver	12	13	2,179	1,258	58	1,200	-
Short-eared owl	20	20	2,887	2,778	2,397	381	-
White- fronted goose	1	13	323	0	-	0	-
Whooper swan	1	3	112	52	-	52	-

The key findings from the additional VP survey was the reduction in flight activity for a number of key species, including red-throated diver (eight flights between April and August 2021 and three in 2002) and great skua (29 compared to 14). Hen harrier and short-eared owl flights remained relatively consistent, and the flight activity remained at low levels and not considered at risk of collision with the proposed turbines. A slight increase was noted in Arctic skua flights and a single merlin flight was recorded.

5.2.2 Collision Risk Modelling

Initially two species were taken forward for collision risk modelling and included in the EIA, great skua and red-throated diver but following the consultation response from the RSPB (See Section 5.1 above), a further two species, peregrine and short-eared owl, were included. Red-throated diver and great skua are only present on inland areas such as the site during the breeding season and as such the collision risk values included in the EIA were modelled using data from only predicted one breeding season, in 2021. With the additional flight data, as discussed in Section 5.2.1 above and shown in Appendix 8.1, a second breeding season of survey data was obtained meaning a second breeding season's value for collision risk was calculated for 2022. The second year of data can help account for variations between breeding years and can help reduce the impacts of, for example, a poor breeding season, to give a more reliable figure for collision risk. The full workings for the collision risk across both the 2021 and 2022 breeding seasons are included with the updated version of Appendix 8.2.

As mentioned above, peregrine and short-eared were not initially included in the collision risk calculations and these figures have now been added to Appendix 8.2 and the additional results included in Table 5.3 below.

For all four species the flight activity across the site was lower in 2022 than in 2021 and this is reflected in the results, as summarised below.

Table 5.3 – Summary of Updated Collision Risk Modelling

Species Name	Year 1 Collision Rate	Year 2 Collision Rate	Average Collison rate	Collisions - Scheme Lifetime (using notional 25 years for comparison)	Years per collision
Great skua (breeding - season only)	0.077	0.033	0.055	1.385	18.047
Peregrine	0.018	0.001	0.009	0.233	107.071
Red-throated diver (breeding -season only)	0.075	0.024	0.050	1.238	20.202
Short-eared owl	0.032	0.007	0.019	0.485	51.493

In the process of updating the Year 2 collision risk modelling a small error was identified in the calculations for the Year 1 calculations, the calculations have been corrected and the full details of the calculations are shown in Appendix 8.2. The collision rate for great skua in 2021 is calculated as 0.08, rather than the 0.04 rate reported in the EIA Report. The flight activity for great skua reduced in 2022 dropping to a predicted collision rate of 0.03. The calculated average collision rate across the two surveyed breeding seasons is therefore 0.06.

The updated collision risk modelling for red-throated diver in 2021 has resulted in a calculated collision rate for 2021 of 0.07, rather than the 0.08 rate reported in the EIA Report (see Appendix 8.2). Similarly to great skua, the predicted collision risk for red-throated diver dropped in 2022 due to reduced flight activity, to a calculated rate of 0.02 in 2022. The average predicted collision risk across the two surveyed breeding seasons is therefore 0.05.

The average collision risk values for each as outlined in Table 5.3 above would lead to the following impacts on each species as follows.

Great skua: update to section 8.8.80 of EIA Report Chapter 8:

The CRM calculations result in an estimate of 0.06 collisions potentially occurring during the breeding season, equating to 1.39 collisions over the notional 25 years of operation of the Proposed Development. The great skua breeding population on Orkney is estimated at 1,868 pairs (Wilson *et al.*, 2015). The modelled collision rate over the notional 25 years represents 0.05 % of the Orkney population. This very small increase in baseline mortality is therefore predicted to result in an impact that is considered to be long-term and of negligible magnitude, resulting in an effect that is **negligible** and **not significant** under the EIA Regulations.

The inclusion of the second breeding season of ornithology data results in no difference to the predicted significance of effects in terms of collision risk for great skua, as reported in the submitted EIA Report.

Red-throated diver: update to Paragraphs 8.8.85 to 8.8.91 of EIA Report Chapter 8:

The diver flightlines during the breeding season all followed a north-east to south-west axis over the site therefore CRM for this species used the linear rather than random model (see Appendix 8.2), and provided an output of 0.05 collisions per annum, equating to 1.24 collisions over a notional 25 year operation period of the Proposed Development (one collision every 20.2 years).

Of the 16 red-throated diver flights recorded, all were recorded with a south-west to north-east axis which would indicate the birds were not in fact from the Orkney Mainland Moors SPA population. Red-throated divers generally fly directly from breeding locations to foraging locations during the breeding season and this would suggest the birds would fly into the viewsheds from the SPA to the south. It seems likely that a proportion or all of the red-throated diver flights consist of records of immature and non-breeding birds or of birds that are breeding outside the SPA, although to prove the birds are not of SPA provenance is extremely difficult.

A conservative, precautionary view can be taken, based on the assumption that all observed flights are in fact SPA birds (considered very unlikely for the reasons noted above). The red-throated diver breeding population for the Orkney Mainland Moors SPA population is estimated to be 18 pairs and the Orkney population is estimated at 97 pairs (Wilson *et al*., 2015) meaning the annual collision risk value of 0.047 collisions, and presuming all the birds involved are from the SPA, represents 0.13 % and 0.02 % of the SPA and ONC populations respectively. When this figure is considered over a 25 year period the total collision rate represents 3.26 % of the SPA population and 0.61 % of the Orkney population. These figures only include the breeding population (i.e. pairs) and, as noted above, are likely to be precautionary.

There are reasons to believe the resultant figure for collision risk for red-throated diver is precautionary and the avoidance rate as used in the assessment is too low. A review of red-throated diver avoidance rates was commissioned by SNH (Furness, 2015) and included studies by Upton (2012a; 2014a, 2014b) from Burgar Hill which lies 2.7 km east of the site, as well other wind farm sites across Scotland and Europe as a whole. The study concluded that as no carcasses have been recovered in the UK which related to collision with turbines and with only one from Germany across Europe, the avoidance rate for red-throated diver is almost certainly greater than 99 % and probably greater than 99.5 %, as during the survey if a 99.5 % avoidance rate was correct the searches would of expected to recover between 1.5 and 3 carcasses at Burgar Hill during the search time period when in fact none were recovered.

Given this evidence from Orkney, it is considered likely that an avoidance rate of 99.5 % is precautionary for red-throated diver. An avoidance rate of 99.8 % is currently used for geese and given their similar size and flight characteristics, being large and long-necked species which are slow to manoeuvre and with the evidence provided by the Upton studies, it seems that 99.8 % would be a more realistic avoidance rate for red-throated diver and even then it would still be a precautionary figure.

However, even using the precautionary collision risk value based on 99.5 % avoidance rate as set out above, the small increase in baseline mortality is predicted to result in an impact that is considered to be long-term and of negligible magnitude on a high sensitivity receptor, resulting in an effect that is considered to be **low** and therefore **not significant** under the EIA Regulations.

The inclusion of the second breeding season of ornithology data results in no difference to the predicted significance of effects in terms of collision risk for red-throated diver, as reported in the submitted EIA Report.

Peregrine: addition to Section 8.8 of EIA Report Chapter 8:

The CRM calculations result in an estimate of 0.009 collisions potentially occurring per annum, equating to 0.233 collisions over the notional 25 years of operation of the Proposed Development. The peregrine breeding population on Orkney is estimated at 22 breeding pairs (Wilson et al., 2015). Peregrine occasionally breed at the age of one year but the majority breed at two years or older (Hardey et al., 2013) meaning the figure of 22 pairs will not represent all the birds present in Orkney (i.e. excluding immature birds still to reach breeding age). The surveys identified four flights, two in the non-breeding season and two in the edge of the breeding season, only one bird was confirmed to be an adult. The modelled collision rate over the notional 25 years represents 0.53 % of the Orkney breeding population but as mentioned above will likely be a lower proportion of the full population and this also does not consider the likely recruitment of new individuals into the local population. This very small increase in baseline mortality is therefore predicted to result in an impact that is considered to be long-term and of negligible magnitude, resulting in an effect that is **not significant** under the EIA Regulations.

Short-eared owl: addition to Section 8.8 of EIA Report Chapter 8:

The short-eared owl breeding population for the Orkney Mainland Moors SPA population is estimated to be 19 pairs and the Orkney population is estimated at 283 pairs (Wilson et al., 2015). The modelled annual collision risk value for short-eared owl is 0.019 collisions per annum. Presuming all birds recorded within the site are from the SPA, this represents 0.05 % and 0.004 % of the SPA and ONC populations, respectively. When this figure is considered over a 25 year period the total collision rate represents 1.25 % of the SPA population and 0.09 % of the Orkney population. These figures only include the breeding population (i.e. pairs) and are likely to be precautionary. This very small increase in baseline mortality is therefore predicted

to result in an impact that is considered to be long-term and of negligible magnitude, resulting in an effect that is **not significant** under the EIA Regulations.

5.2.3 Breeding walkover surveys

There was no update to the breeding bird walkover surveys which included April and May visits, but Appendix 8.1 does include the updated breeding raptor survey results. The results were similar for hen harrier with two recorded territories although the results for short-eared owl saw a drop from three predicted territories to one. The resultant drop in short-eared owl territories does not impact on the impact assessment as reported in the submitted EIA Report, as the assessment is based on the presumption of the most successful year.

5.3 Additional Mitigation

There is no additional mitigation proposed as a result of the additional information.

5.4 Updated Residual Effects

The residual effects remain unchanged, all are effects are predicted to remain negligible or low and not significant under the EIA Regulations.

5.5 Updated Cumulative Effects

The additional survey data does not have any impact on the assessment of cumulative disturbance/ displacement impact on curlew and lapwing, which remains negligible and not significant.

With respect to cumulative collision risk for red-throated diver, the inclusion of the full second year of survey data results in a reduced collision risk estimate. The updated cumulative collision risk is therefore also slightly reduced, and the significance of cumulative effect remains negligible and not significant.

Further discussion on potential cumulative impacts on SPA species, in response to NatureScot's specific comment, is given in Section 5.7.3 below.

5.6 Updated Habitat Regulations Appraisal

A Habitat Regulations Appraisal (HRA) was completed and included as Appendix 8.3 of the submitted EIA Report, providing information to assist the competent authority in their consideration of whether the proposed works will have likely significant effects on European sites, and in ascertaining any adverse effects on their integrity, as required under Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

The HRA has been updated to take account of additional survey data from the 2022 breeding season and associated analyses, including updated collision risk modelling. The updated HRA is included as Appendix 8.3 to this SEI report. The conclusion remains unchanged, namely that subject to implementation of mitigation measures (pre-commencement update breeding bird survey, otter-specific protection plan, toolbox talks and ECoW), it is anticipated that the Appropriate Assessment will conclude the proposed works will have no likely adverse effect on the integrity of any European sites, alone or in combination with other plans or projects.

5.7 NatureScot Consultation Response – Specific Points

Key comments raised in NatureScot's consultation response are summarised in Section 5.1 above. For ease of reference, Applicant responses to these key comments are noted below.

5.7.1 Second Year of Breeding Season Survey Work

The full two years of survey data was completed and submitted in August 2022 and included all the breeding records, full details of flightlines and updated collision risk values for the qualifying species of the Orkney Mainland Moors SPA. The results are summarised in Section 5.22 of this document and the updated results shown in Appendix 8.1 and Appendix 8.2.

5.7.2 Flight Activity To/From the Orkney Mainland Moors SPA

The viewshed from VP1 at 20 m above ground level covers approximately 3 ha of the Orkney Mainland Moors SPA (within the 2 km viewshed arc) and VP2 covers approximately 50 ha, meaning any flights of target species coming to and from the SPA would be recorded as such. The flight figures show all the data as collected by the surveyor, no additional surveys were commissioned in order specifically cover movements of species outwith the two viewsheds as shown in Appendix 8.1: Figure 1.

The flight figures for the three SPA qualifying species as shown in Appendix 8.1: Figures 3 to 5 and cover all the flight activity data recorded for qualifying species. The assessment uses a precautionary worst-case scenario in that all birds recorded are assumed to form part of the SPA population.

5.7.3 Cumulative impacts on SPA species

Cumulative impacts were calculated for red-throated diver which have been updated to include the full two years of survey results. We have also added for completeness the cumulative impacts for short-eared owl which are presented below although as no collision risk was predicted for hen harrier therefore no cumulative impacts are predicted.

An annual collision risk of 0.047 and a total figure of 1.34 over a 25 year period was predicted for red-throated diver at the site. Other sites which performed collision risk for red-throated diver include Hammars Hill (estimated as 0.06 per annum), Evie (0.053 per annum), Faray (0.03 per annum) and Hoy (0.265 per annum) although it is considered unlikely that birds recorded at Hoy and Faray sites were part of the Orkney Mainland Moors SPA population.

While low numbers of red-throated divers were recorded at other wind farm sites there were not sufficient data to undertake CRM. The combined estimated annual collision risk for all Orkney wind farms is therefore 0.458, but this figure is 0.163 when considering only those potentially part of the SPA population (itself a precautionary assumption given the distance of those developments from the SPA), with a cumulative total of 4 birds over a period of 25 years. The population of Orkney Mainland Moors SPA population is estimated to be 18 pairs. The annual collision risk modelled represents 0.44 % of the SPA population respectively. When this figure is considered over a 25-year period the total collision rate would represent 11.1% of the SPA population. These figures only include the breeding population (i.e. pairs) and, as noted above, are likely to be precautionary for the various reasons outlined in this report, and in terms of the 25-year figure does not allow for natural movement of birds to and from the local area over the 25-year period.

The predicted annual collision risk for short-eared owl was 0.019 which over a 25-year period is 0.475. No collision risk value was predicted for short-eared owl for relevant cumulative developments, with the exception of Burgar Hill where it was calculated as 0.017 although calculated using a 95% avoidance rate. Using up to date guidance (98% avoidance) this would reduce to a figure of 0.007 making a cumulative value of 0.026.

The population of Orkney Mainland Moors SPA population of short-eared owl is estimated to be 18 pairs. The annual collision risk modelled represents 0.07 % of the SPA population. When this figure is considered over a 25-year period the total collision rate represents 1.81 % of the SPA population. These figures only include the breeding population (i.e. pairs) and, as noted above, are likely to be precautionary.

5.7.4 North Orkney SPA – Red Throated Diver

The North Orkney SPA lies over 4 km east of the Proposed Development site at its closest point and while within the connectivity distance for breeding red-throated diver (generally considered to less than 8km, SNH (2018)) it is considered unlikely the registrations of red-throated diver recorded during the breeding season were from the North Orkney SPA. As described in the SPA citation for North Orkney SPA "*red-throated diver feed almost exclusively at sea close to their freshwater breeding sites in the moorlands of Rousay and Orkney Mainland*" (NatureScot, 2022). Gilbert et al. (2013) also states that "*in coastal areas the bulk of feeding is carried out at sea*" indicating that in Orkney red-throated divers will generally leave their breeding lochans to feed on the nearest available area of open sea to feed.

The majority of the flight registrations show birds landing on or leaving one of Loch of Swannay and Loch of Hundland to the east and west of the site respectively, which are freshwater lochans and not coastal areas that are usually frequented by red-throated diver for foraging. If we are to presume the diver registrations were from the North Orkney Mainland SPA population then for birds to use either Loch of Swannay or Loch of Hundland they would have to cross the Orkney Mainland Moors SPA, flying a minimum of 4km to get to these locations, which are not considered suitable foraging habitats.

To suggest that breeding birds from lochans on Rousay or Orkney Mainland as detailed in the SPA citation would instead fly several kilometres overland to a freshwater lochan rather than the short distance to the open sea is considered unlikely and therefore we consider that the observed red-throated divers at the site are much more likely to either belong to the Orkney Mainland Moors SPA population or to be part of the non-SPA or non-breeding populations.

None of the other species that are mentioned as part of the Orkney Mainland Moors SPA citation (non-breeding Great northern diver, Slavonian grebe and velvet scoter) were recorded during the two years of survey and are almost exclusively found on the open sea during winter months meaning any impacts on these species considered highly unlikely. We therefore consider the decision to scope out Orkney Mainland Moors SPA was correct.

The assessment (as a worst-case scenario) considered all the red-throated diver flights to belong to the Orkney Mainland Moors SPA population and even in this worst case scenario the impacts on the SPA population are predicted to be negligible or low and not significant. As discussed in Section 5.2 the red-throated diver breeding population for the Orkney Mainland Moors SPA population is estimated to be 18 pairs, however the North Orkney Mainland SPA population is 47 pairs, therefore using a worst-case scenario where all the birds present are from the North Orkney Mainland SPA population, the calculated annual collision risk would represent just 0.05 % of North Orkney Mainland SPA population and would be not significant.

5.8 RSPB Consultation Response – Specific Points

Key comments raised in RSPB's consultation response are summarised in Section 5.1 above. For ease of reference, Applicant responses to these key comments are noted below.

5.8.1 Second Year of Breeding Season Survey Work

The full two years of survey data was completed and submitted in August 2022 and included all the breeding records, full details of flightlines and updated collision risk values for the qualifying species of the Orkney Mainland Moors SPA. The results are summarised in Section 5.22 of this document and the updated results shown in Appendix 8.1 and Appendix 8.2.

5.8.2 Avoidance Rates used in Collision Risk Modelling

The updated section which includes the results of two full years of VP surveys and in relation to collision risk is outlined above in Section 5.2. The current guidance from NatureScot outlines the 99.5% figure for red-throated diver (SNH, 2018) and Section 5.2 does mention the 99.8% rate for red-throated diver, which is now included as a discussion point, with all the figures for the 99.8% collision risk value removed. The original assessment and the results above used the results of the currently accepted figure of 99.5% for red-throated diver and this remains the same.

RSPB's point that a 99.5% avoidance rate should not be applied to great skua rather than 98% we believe is incorrect as the current guidance from NatureScot outlines the 99.5% figure for this species (SNH, 2018).

5.8.3 Range of Species Included in Collision Risk Modelling

Of the six species noted by RSPB for which collision risk modelling was not undertaken, two, namely merlin and white-fronted goose, were not recorded at-risk during baseline surveys. For whooper swan, with only a single flight recorded 'at-risk' across two years and a 99.8 % avoidance rate, Arctic skua with 185 seconds 'at-risk' across two breeding seasons and a 99.5% avoidance rate, and hen harrier with 38 seconds 'at-risk' across two full years, it was considered that collision risk modelling would produce figures that would be so low they would be insignificant even to include in cumulative assessment (less than 0.01 collisions per annum).

Collision risk modelling has now been undertaken for peregrine and short-eared owl and the results are presented in Section 5.2 above with full details in Appendix 8.2.

5.9 Summary

The additional information supplied in Appendix 8.1 and Appendix 8.2, and summarised above, confirms the findings in terms of ornithology at the site as discussed in Chapter 8 of the submitted EIA Report. The additional information completes a full second year of surveys at the site which is in line with the relevant NatureScot guidance and consolidates the finding as shown in the EIA Report. The results of the additional surveys display a drop in flight activity for key species, most notably red-throated diver, and suggest that the figures used in the assessment reported in the submitted EIA Report were in fact precautionary, and had a second breeding season of data been available at the time of the submission the predicted collision risk for both great skua and red-throated diver would have been lower.

The additional information does not alter the predicted significance of the effects on any of the scoped-in features within the ornithology assessment.

6. Socio-Economics

OIC has requested that a clearly differentiated future baseline is provided for Chapter 14 of the EIA Report (Economics and Tourism).

The baseline assessment as reported in Chapter 14 of the submitted EIA Report included a review of projected future population trends for the study area. These highlighted that the working age population is projected to decline and so that there is a need for employment opportunities such as those associated with the Proposed Development, to make it less likely that these projections will be realised. If the project were not to proceed, these employment opportunities would not be available and so the projections for decline in working age population would be more likely to be realised.

7. Cumulative Assessment – West of Orkney Offshore Wind Farm

A cumulative landscape and visual assessment including the West of Orkney Wind Farm is not required in respect of the Proposed Development, for the following reasons.

The proposed West of Orkney Wind Farm is located more than 50km from the Proposed Development. This substantial separation distance reduces the potential for cumulative effects because where intervisibility occurs one or both of the proposed wind farms would appear as distant features and would occupy only a small proportion of the wider landscape and seascape context. Landscape and visual receptors with potential to be affected would occur on the West Mainland of Orkney. The Landscape and Visual Impact Assessment (LVIA) for the Proposed Development (Chapter 6 of the submitted EIA Report) found that the potential for

solus landscape and visual effects would be contained within a 7km radius of the Proposed Development, albeit that not all receptors in this radius would be significantly affected. The Proposed Development comprises a small number (four) turbines and while the LVIA found that significant effects would arise, that these would be contained within a localised area with effects beyond this rapidly dissipating as this compact wind farm would be seen to occupy only a small proportion of a much wider landscape and seascape.

In considering the potential cumulative influence of the West of Orkney Wind Farm on West Mainland, the 'defence' of the coastal hill along the west coast of the West Mainland of Orkney means that visibility would be concentrated along the coastal edge but likely to be screened from much of the land to the east of the coastal hills. While there is some visibility of the Proposed Development on this coastal edge, it is patchy and the main association of receptors in this area is with the Atlantic Ocean to the west and not the interior of the West Mainland of Orkney to the east. With the West of Orkney Wind Farm located at a minimum distance of more than 50km, its additional influence on the cumulative context would be very limited and significant cumulative effects would not arise, and it is for this reason that a detailed cumulative assessment of the effects of the West of Orkney Wind Farm is not required.

8. St Magnus Way

OIC has noted that, "*Appropriate reference should be made to the St Magnus pilgrimage route*".

Chapter 14 of the submitted EIA Report (Socio-economics, Tourism and Recreation) refers to the St Magnus Way at Paragraph 14.6.57, noting:

"*St Magnus Way is a long-distance trail through Mainland Orkney, which follows the path taken by the saint, beginning at the Broch of Gurness, following the coast to Birsay then passing through Twatt, Dounby, FInstown and Orphir, before finishing at Kirkwall. The trail is 93 km in length and, at its closest point, passes approximately 2 km from the Proposed Development*."

An assessment of potential effects on visitors to/ users of the St Magnus Way is given within the 'Recreational Trails' section of the assessment of tourism and recreation effects, at Paragraph 14.9.84:

"*… The trail features coastal, forest and hill landscapes and in general motivations for using the trail along its 58 mile length are unlikely to be affected. For a small stretch near the Proposed Development, it is possible that the Proposed Development may affect motivations (low magnitude). Therefore, the effect of the Proposed Development on tourism has been assessed as negligible*."

9. Conclusions

Following submission of Planning Application ref. 22/320/TPPMAJ for the Proposed Development, and receipt of consultation responses from OIC and a range of other statutory and non-statutory consultees, this SEI Report provides additional environmental information to respond to and address the queries and comments raised by OIC and consultees.

No changes are proposed to the design or layout of the Proposed Development, however an increased micrositing allowance of 100 m is sought for T4 and associated infrastructure.

The additional information provided in this SEI Report includes:

- Further, detailed assessment of potential effects on groundwater dependent terrestrial ecosystems (GWDTE);
- Confirmation that micrositing T4 and associated infrastructure approximately 80 to 100 m north is considered feasible, and that this would allow the M27 community in this area to be avoided;
- Clarification and additional information on proposed surface water drainage and measures to control groundwater migration;

- Clarification and reiteration of information provided in the submitted EIA Report on local storage of peat, flood risk, and sustainable drainage;
- Clarification and justification of the scope and methodology undertaken for assessment of cultural heritage effects, including determination of appropriate study area and agreement of the study area during the scoping stage;
- Clarification of the assessment of impacts on the integrity of the settings of Scheduled Monuments, taking account of the recently adopted National Planning Framework 4;
- Additional photomontages to support the assessment of effects on the Stones of Stenness and Maeshowe (monuments within the Heart of Neolithic Orkney World Heritage Site);
- Information on a Community Engagement Programme proposed by the Applicant to increase public awareness of the Scheduled Monuments within and near the Proposed Development site boundary;
- Confirmation that a commercial arrangement between the applicant and the operator of the existing small turbine within the Proposed Development site boundary is currently ongoing and as such no wind shadow assessment is considered to be necessary, with the operator of the existing turbine expected to formally remove their objection once this agreement has been reached;
- Details of additional ornithology survey work undertaken during the 2022 breeding season, which had not been available at the time of writing the submitted EIA Report, including updated assessment of effects on relevant ornithological receptors and clarification of potential effects on the Orkney Mainland Moors Special Protection Area (SPA) and North Orkney SPA;
- Clarification of the future baseline in respect of socio-economics;
- Clarification and further justification for not including the West of Orkney Offshore Wind Farm in the cumulative assessment;
- Reiteration of information provided in the submitted EIA Report relating to the St Magnus Way.

The additional information provided, including additional analyses of potential environmental effects where relevant, confirms **no change to the assessed significance of environmental effects** as presented in the submitted EIA Report. A summary of residual effects was provided in Chapter 17 of the submitted EIA Report and this is unchanged.

Although no changes have been identified to the assessed significance of effects, additional mitigation measures have been set out in this SEI Report, comprising:

- further precautionary mitigation measures to minimise potential for adverse effects on groundwater in a discrete area of potential GWDTE in the north-west of the site;
- increasing the micrositing allowance for T4 and associated infrastructure to 100 m to allow the M27 community in this area to be avoided; and
- a proposed Community Engagement Programme to increase public awareness of the Scheduled Monuments within and near the Proposed Development site boundary.

All other mitigation measures and environmental commitments remain as previously presented, as summarised in Chapter 16 of the submitted EIA Report.

10. References

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