ScottishPower Renewables UK Limited

Land Adjacent to Whitelee Windfarm – Solar PV, Green Hydrogen Production and Battery Storage Facilities

Environmental Impact Assessment Report – Further Environmental Information

Wood Group UK Limited – May 2022

Report for

Planning and Economic Development
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1	Working Draft	11.02.2022
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3	Final Draft	11.05.2022

Executive summary

This report has been produced for the purpose of providing Further Environmental Information (FEI). This FEI Report is provided as *supplementary information* under the definitions of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 and is also known as *additional information* under the definitions of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, which also includes for additional voluntary information. The FEI Report is used to provide further environmental information to supplement the existing EIA Report, requested primarily by the local planning authority (East Ayrshire Council – "EAC") but also by the Scottish Environment Protection Agency (SEPA).

The extent of the reporting within this document is divided into core environmental and planning elements. The topics which are reported on within this document are as follows:

- GHG Emissions (Carbon).
- Geology, Hydrology and Hydrogeology.
- Noise Modelling.
- Major Accidents and Hazards.

In addition to the FEI information requested above, the following additional information has also been requested by EAC:

- Traffic and Transport (clarification of inconsistencies of information provided within the EIA Report).

The Project comprises two interconnected development proposals. The first of these is a solar photovoltaic (PV) farm and a Battery Energy Storage System (BESS) with an associated high-voltage (HV) cable, haul/link road and associated access(es) and infrastructure which has been submitted under Section 36 of the Electricity Act 1989 (the Electricity Act) for determination by the Scottish Ministers (application reference 21/0001/S36). The second proposal is a green hydrogen production facility with associated accesses and laydown area submitted under Section 32 of the Town and Country Planning (Scotland) Act 1997, as amended (the Planning Act) for determination by EAC (application reference 21/0261/PP). The green hydrogen production facility connects to the proposed solar PV farm and links back, via the HV cables, to the existing Whitelee Extension windfarm substation. The proposed BESS facility also connects into the existing Whitelee Extension substation, via separate newly proposed, buried HV cables. Both applications have been the subject of Environmental Impact Assessment (EIA) which comprises a single assessment of all environmental impacts identified across both applications (i.e. the EIA Report).

A FEI Report is required when certain sections of an EIA need more clarification or where it is deemed that the EIA Report does not fully address a particular environmental issue. In this case, EAC has written to the Applicant (ScottishPower Renewables (UK) Limited/SPR) requesting FEI to enable an informed assessment / consideration of the application for Planning Permission for the green hydrogen production facility to take place. This includes the addition of matters relating to the production of a hazardous substance and related matters under the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 as well as the Electricity

Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations). EAC has written to confirm that it requires further information to address the matters set out and this can be taken as the written request for such under Regulation 26 of the EIA Regulations and Regulation 24 of the Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 (the Development Management Procedure Regulations). In addition to the requested information under the relevant legislative requirements above, EAC has also written to request additional information clarifying report transport figures provided within the Traffic and Transport assessment of the EIA Report.

It should be noted that once a FEI Report is submitted, this information forms part of the original EIA, and in this instance the submitted EIA Report covers the project in its entirety. Given this, this FEI Report should be treated as forming part of the original EIA and therefore a copy has also been submitted to the Energy Consents Unit (ECU) for its records and inclusion with the copy of the EIA Report submitted for the solar PV, BESS and HV cable elements of the Project.

Contents

1.

Non Technical Summary

1. Non-Technical Summary

1.1 Introduction

Wood Group UK Limited (Wood) has been instructed by ScottishPower Renewables (UK) Limited (SPR/the Applicant) to provide further information, as requested by East Ayrshire Council (EAC) and Scottish Ministers (Energy Consents Unit/ECU) to address the matters set out and this can be taken as the written request for such under the Environmental Impact Assessment (EIA) Regulations and the Development Management Procedure Regulations.

Project background

History of the Whitelee site

The relevant history of the Whitelee site is provided within Section 2.1 of the EIA Report (document reference: 43122-WOOD-ZZ-XX-RP-T-0001_S3_P01.1).

Site selection

A full detailed description of the site selection is provided within Section 2.2 of the EIA Report (document reference: 43122-WOOD-ZZ-XX-RP-T-0001_S3_P01.1).

Application history

For the Project SPR has submitted separate applications; one for consent under Section 36 of the Electricity Act and one for consent under Section 32 of the Planning Act. The application submitted under Section 32 of the Planning Act is for Full Planning Permission for the erection of a green hydrogen production facility with associated temporary laydown area and ancillary infrastructure including substation, various plant and perimeter security fencing. This planning application was submitted to EAC on the 8th April 2021, and it was validated on the 13th May 2021. The reference for the application is 21/0261/PP. The application submitted under S36 of the Electricity Act is for Section 36 consent for the construction and operation of solar PV, BESS and HV cabling with associated accesses and ancillary infrastructure. The S36 application was submitted to the ECU on the 13th May 2021 and was validated on the same date. The reference for the application is 21/0001/S36.

Project description

A full detailed Project description is provided within Section 3.2 of the EIA Report (document reference: 43122-WOOD-ZZ-XX-RP-T-0001_S3_P01.1).

By way of a brief summary, the Project as submitted to both EAC and the Energy Consents Unit (ECU) comprises the following:

- A solar PV farm consisting of c. 62,000 solar panels, each with a height of less than 3m at the frame's highest point, constructed as a series of arrays and connected via HV

and LV cabling. This proposal was submitted to the ECU under Section 36 of the Electricity Act.

- A BESS with an operating capacity of up to 50MW exported onto the grid, constructed as a portal frame building of approximate dimensions 70m x 62.5m x 6.8m (to apex). This proposal was submitted to the ECU under Section 36 of the Electricity Act.
- A new section of HV cable measuring approximately 4km which would run north/south between the substation contained within the green hydrogen production facility and an existing wind turbine located at the Rough Hill area of the Site, to the west of Craigendunton Reservoir (NS 51959 45164). This proposal was submitted to the ECU under Section 36 of the Electricity Act.
- A green hydrogen production facility, embedded within the solar PV layout and accessed via a c. 1.5 km haul/link road connecting directly to the B764/Moor Road via a new vehicular junction located at NS 49870 47450. The extent of the proposed green hydrogen production facility site measures 120m x 120m based on a site platform of 1.44 hectares. The green hydrogen production facility would have the capability of producing up to c. 480,000 litres of hydrogen per day, based on a 24 hour per day / 365 days per year operation. This proposal was submitted to EAC under Section 32 of the Planning Act.

1.2 Summary of Further Environmental Information provided

The following sub-sections provide a non-technical summary by topic of the FEI information contained within this Report.

EAC considers matters still require FEI to enable an informed assessment / consideration of the applications to take place. Below are the matters as raised by EAC within its email of 15th October 2021 (Appendix A):

- *"Whilst there are details about areas of habitat loss, I couldn't see details about anticipated volumes of peat loss to accommodate the respective developments, could you provide details on anticipated excavated peat volumes please – this relates to the requirement under Policy ENV 10 which requires (using the carbon calculator or other equivalent evidence) that the balance of advantage in terms of climate change rests with the proposed renewable energy development despite impacts on carbon rich soils. Whilst commentary has been provided on this it remains limited in terms of actual data on carbon emission volumes or carbon savings over the lifetime of the development to evidence the balance.*
- *Associated with the detailed PWS (private water supply) risk assessment and detailed mapping of PWS sources and pathways previously requested, I've not seen a figure showing the hydrological catchments throughout the area, this would be required to better understand and assess potential hydrological impacts and evidence comments made regarding hydrological catchments are accurate. It remains the case that mapping showing the hydrological catchments throughout this area is required, alongside mapping showing these catchments relative to the proposed infrastructure and PWS sources and their pathways to the receiving properties to fully understand the potential risks to PWS as a result of the proposed development. Mitigation measures you have*

raised recently (in your letter of 24 September) specific to PWS regarding PWS water quality monitoring and short- and long-term contingency measures have not been proposed within the EIA Report to date. Such information is relevant in terms of mitigation measures and should be included as part of the suite of FEI if this is now proposed.

- *There remains no details regarding operational noise levels generated by the proposed development (hydrogen production facility or battery storage facility) nor cumulative noise assessment of these proposed developments in combination, with commentary on any potential cumulative noise implications for existing operational wind turbines. It is not possible to determine at this stage the likelihood of compliance with any potential condition or what level would be appropriate without any idea as to the noise levels likely to be generated. Details of operational noise levels are required to make an informed assessment / consideration of the project.*
- *In terms of the fact the hydrogen production facility requires hazardous substances consent which through relevant regulations require details of the measures taken or proposed to be taken to limit the consequences of a major accident and details relevant to the risks and consequences of a major accident. Whilst hazardous substances consent is a separate matter, the fact that the hydrogen production facility will introduce a hazardous substance into the area and given the matters required to be assessed and detailed in such an application would also be applicable to the matters required to be assessed under the EIA Regulations, notably the risks of major accidents and disasters and population and human health, then these are relevant matters which should be assessed as part of the EIA Report for the project. As this hasn't been assessed as part of the EIA Report then it is failing to meet those requirements and would leave any decision taken by the Council or Scottish Ministers liable to challenge. "*

In its 1st December 2021 letter to the Energy Consents Unit (ECU) (Appendix B), the Scottish Environment Protection Agency (SEPA) submitted a holding objection to the Project because it considered that more information was required with respect to impact on Groundwater Dependent Terrestrial Ecosystems (GWDTEs) and PWS matters. It also wanted adoption of a number of specific planning conditions. Below are the key matters raised by SEPA (Appendix B):

- *"The solar PV farm and battery energy storage system and the hydrogen facility appears to be located on groundwater dependent terrestrial ecosystem (GWDTE)….We ask that the necessary mitigation measures are put in place to ensure that there is no negative impact on the GWDTE both during construction and permanently after the proposed development. In that regard, we would like to see this in a mitigation plan…."*
- *"It appears that….PWS P3 [Best Friends Cottage] (borehole) is within 250m from the link/haul road in its initial section at the junction with the B764. The distance between P03 and the link/haul road needs to be clarified and meet the requirements set out in LUPS-GU31 [SEPA* Land Use Planning System Guidance 31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems]. *Should this distance be less than 250m, information on the construction and construction methods of the link/haul road should be submitted."*

- *"We ask that a finalised Peat Management Plan is provided highlighting how peat on site with be avoided and consequential release of CO2 and outline the preventative/mitigation measures to avoid significant drying or oxidation of peat through, for example, the construction of access tracks, drainage channels, cable trenches, or the storage and re-use of excavated peat. This should be ensured by way of a planning condition."*
- *"There are a number of watercourses which cut across the solar PV farm and a standard buffer of 20m has been applied to these watercourses to mitigate against any potential impacts on water quality and groundwater dependent terrestrial ecosystems (GWDTEs). Also these watercourse crossings are to be designed to the [SEPA] standard….We ask that these are ensured by a planning condition."*

The following paragraphs provide a non-technical summary (NTS) of the topics contained later within this report, addressing the comments made by EAC and SEPA above:

GHG Emissions (Carbon) (refer to Section 2)

In relation to EAC's request for further information to assess fully the potential environmental effects of the proposed development, Section 2 of this report provides the following information such as it relates to carbon savings over the lifetime of the development:

- Anticipated net carbon emission impact of disturbed peat areas (estimated at 24,000 tCO2e).
- Net lifetime benefits of the proposed renewable energy development (estimated to be in the range of 350,000 – 460,000 tCO2e).

Geology, Hydrology and Hydrogeology (refer to Section 3)

In respect to PWSs, EAC has requested that a map be provided of the hydrological (surface water) catchments in the area, in order to provide more context for the PWS risk assessment and the wider EIA. The original EIA Figures 8.5 and 8.6 have been redrafted with this information and are incorporated within the FEI as Figures 1 and 2 respectively (Appendix C). EAC wanted to know if there was any potential hydrological impacts and evidence. The FEI has met this concern by identifying that the only potential interaction of the PWS groundwater catchments with the proposed infrastructure is that between the Best Friends Cottage PWS and the haul road approach to, and junction with, the B764 carriageway. It is also recognised that Drumtee PWS is located close to Drumtee Burn whose surface water catchment extends across part of the Southern Section of the Site, including the battery storage cabling. However, a considerable amount of mitigation is identified in the EIA Report, and the Applicant has indicated that the EAC's PWS concerns can be addressed by a suspensive planning condition and is willing to offer an extra level of assurance by way of a further review of the PWS risk assessment and production of a method statement.

SEPA notes that the EIA Report Figure 8.6 did not provide a SEPA 250m buffer for the Best Friends Cottage PWS. It also identified that this PWS is within 250m from the link/haul road in its initial section at the junction with the B764, in which case it requested more information regarding the PWS and the nature of the haul road and junction construction. The FEI notes that the accidental omission of the buffer has been addressed by the new Figure 2. The presence of the Kingswell Burn immediately to the east of the PWS, the planned shallow (< 1m) depth of the haul road and

B764 junction excavations and the implementation of the various mitigation measures mentioned in the EIA Report ensures that the level of effect of the Proposed Development on this PWS is negligible adverse and not significant.

SEPA also notes that the solar PV farm and green hydrogen production facility as well as the BESS are located, at least in part, within GWDTEs and their 250m buffers, and asks that *"the necessary mitigation measures are put in place to ensure that there is no negative impact on the GWDTE both during construction and permanently after the proposal developed"*. The FEI notes that the Geology, Hydrology and Hydrogeology chapter of the EIA Report concludes that *"Overall, wider-scale groundwater supply to the habitats identified is likely to be limited, with the majority of the supply coming instead from surface or very near-surface infiltration and surface runoff"*. An extensive range of mitigation measures to protect GWDTEs in the area is also provided in both that chapter and the Ecology and Ornithology chapter. Furthermore, a formal statement of mitigation intent accompanied by mapping "*which includes for example floating roads demonstrating how GWDTE have been avoided or protected"* is not currently in place but would form part of the conditioned Construction Environment Management Plan (CEMP).

SEPA requests that a PMP is provided by way of a planning condition. In response, the FEI confirms that a PMP would form part of the conditioned CEMP.

It has also been identified by SEPA is that there are a number of watercourses which cut across the solar PV farm and that a number of mitigation measures are proposed to protect water quality and GWDTEs. The FEI confirms that SEPAs understanding of the required watercourse crossings is correct, and that the design would be ensured by planning condition.

Noise Modelling (refer to Section 4)

EAC raised an issue regarding operational noise levels generated by the proposed development. The FEI addresses the councils concern as Tables 4.3 to 4.7 provide the results for the noise modelling receptors. The results indicate that at a sound power level of 120 dB(A) a significant adverse impact would occur at all of the receptors. When the sound power level is 115 dB(A), significant adverse impact occurs at all but two receptors. Adverse impact is still observed at Moor when the modelled noise source has a sound power level of 110 dB(A). To ensure no exceedance whatsoever, including a maximum tonal penalty, then a sound power limit of 100 dB(A) would be appropriate. At this sound power level, there is no excess during the night. At 105 dB(A), there is no daytime excess, and daytime operations would be acceptable and can be adequately controlled via the implementation of a planning condition for operational noise levels within these limits.

Major Accidents and Hazards (refer to Section 5)

The final matter raised by EAC regards the risks of major accidents and disasters and population and human health. Table 5.1 of the FEI includes an assessment of the potential Major Accidents and Disasters which are relevant to the Proposed Development, with a description of the embedded measures and regulatory controls which ensure that there would be no significant effects (risk) affecting either the Proposed Development or the surrounding (human and non-human) environment. Of the potential Major Accident and Disasters which were identified in the table, none pose a significant effect to safety.

Traffic and Transport (refer to Section 6)

Traffic Generation

Wood's traffic and transport consultants have reviewed the text within the EIA chapter relating to traffic and transport and the detailed traffic and transport calculations and after review have concluded that the traffic generation impact assessment is accurate.

The error that has been identified in the EIA Report is purely grammatical. The mistake can be found in Paragraph 9.9.42 which mistakenly states that *"a peak of 128 two-way HGV movements per day (64 HGV deliveries per day)"*. This would be incorrect doubling so for consistency Paragraphs 9.9.41 to 9.9.43 have been redrafted and are included within the FEI.

The redrafting of paragraphs 9.9.41 to 9.943 addresses the issues raised by EAC and does not result in any additional assessments of Table 9.10 and Sections 9.10 and 9.11 being required. The text in Paragraphs 9.11.7 and 9.11.8 has been noted to be accurate.

Access to BESS

Clarification on permanent access to the BESS has been provided. In the EIA Traffic and Transport Chapter, access to the various elements of the site is addressed first in Section 9, Paragraphs 9.2.1 to 9.2.5 (Site Access) and Paragraph 9.2.10 (Haul/Link Road). This section discusses the need for a new site access road which was set out in Figure 9.2. Paragraph 9.2.10 states the internal access road would be 1.5km long and 7m wide.

What was not clear in the initial chapter drafting was how access to the BESS would be achieved. Paragraph 9.9.35 refers to the removal of the stone roads at the end of construction. To clarify, it is these stone roads that would link the BESS and the Solar/Hydrogen site. It is expected that this route would allow access permanently in the operational phase and the BESS would have a direct access route to the local highways. The proposed new access is set out in Paragraphs 9.2.1 to 9.2.5.

Peat Landslide Hazard Risk Assessment (refer to Appendix D)

The Applicant has engaged Arcus to undertake a revised Peat Landslide Hazard Risk Assessment (PLHRA). This PLHRA is included as an appendix to this FEI report (Appendix D).

1.3 Assessment Team

The following suitably qualified personnel have provided inputs to relevant sections of this Report. Details of their title and qualifications are listed below.

- Chris Pepper BA (Hons) mRTPI – Principal Consultant (Planning and EIA), 16 years' experience – all Sections.
- Scott Quinn MA (Hons) – Assistant Consultant (Planning and EIA), 1 years' experience – Section 1.
- Dr Gareth Oakley BSc (Hons) MSc PhD, 16 years' experience – Section 2.
- Dr Shaun Salmon BSc, MSc, PhD, MCIWEM, C.WEM and FGS – Technical Director (Hydrology, Geology and Hydrogeology), 37 years' experience – Section 3.

- Alistair Miller BSc Hons, MSc, MCIEEM – Associate Director (Ecology and Ornithology), 17 years' experience – Section 3.
- Eric Donnelly BEng (Hons) MIOA – Associate Director (Noise and Vibration), 24 years' experience – Section 4.
- Suzanne Knights CChem, MRSC, BSc – Technical Director (Safety and Risk), 28 years' experience – Section 5.
- Jack Davy CChem CEnv MRSC – Principal Consultant (Safety and Risk), 8 years' experience – Section 5.
- Huge Siddle BSc MSc AMEI– Principal Consultant (Safety and Risk), 9 years' experience – Section 5.
- Glyn Price BA (Hons) – Associate Director (Traffic and Transport), 17 years' experience – Section 6.

2.

FEI Reporting

2. GHG Emissions (Carbon) Overview

2.1 Introduction

This section provides a summary of the projected net GHG (carbon) benefits of the Project. It is based on the initial system design parameters set out in the relevant associated planning and section 36 documentation.

2.2 Scope of reporting

This analysis incorporates an assessment of the net impact associated with Project. This includes initial assessment of the direct impact on peatland as a consequence of the proposed energy infrastructure. It also accounts for the benefits of the energy outputs from the Proposed Development in terms of avoided GHG emissions associated with the use of power and hydrogen.

Key aspects of the proposals include the following:

- Solar PV array (indicative capacity of up to 40 MW exported onto the grid).
- Green Hydrogen production facility (indicative capacity of up to 10 tonnes Hydrogen per day).
- Battery energy storage facility (indicative capacity of up to 50 MW exported onto grid, with up to 100 MWhrs capacity).

2.3 Impact assessment summary

The significant impacts and benefits of the proposed system are summarised in Table 2.1 Net carbon (GHG) overview.

Details of the habitat loss calculations associated with the Solar PV development are provided separately[1]. This also includes details of the land area to be remediated within the Whitelee Habitat Management Area (HMA) as part of the preparatory works.

The impacts of the solar PV construction programme have been estimated using relevant details within the Carbon Calculator Tool[2].

For simplicity the electrical output from the Solar PV array is assumed to displace existing generation that would be drawn from the national electricity grid. The carbon benefit of this output is therefore calculated using the latest carbon grid intensity factor published by BEIS[3].

It is assumed that if power produced from the Solar PV development is used to feed the electrolyser, the produced "green hydrogen" would then be used for displacement of fossil fuels used for the transport industry, which is currently considerably more CO_2 intensive than the power

[1] Volume 3E Habitat Loss Calculations
[2] https://informatics.sepa.org.uk/CarbonCalculator/index.jsp (Accessed January 2022)
[3] https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2021 (Accessed January 2022)

sector. This takes into account process conversion efficiencies and therefore the approach taken in this assessment is considered the most conservative approach.

For the purpose of analysis, the operating lifetime of the Project (including the green hydrogen production facility) has been taken as 25 years, however as consent is being sought in perpetuity it is considered that any operational lifespan beyond this period would serve to increase the net carbon benefit of the scheme.

Table 2.1 Net carbon (GHG) overview

Description	GHG Lifetime Impact (tCO_{2e})	GHG Benefit (tCO_{2e}) Per Year	Lifetime GHG Benefit (tCO_{2e})
Impact of peat bog degradation during Solar PV construction	27,125		-27,125
Impact of habitat restoration management work within Habitat Management Area (HMA)		3,100	3,100
Avoided emissions from annual generation from Solar PV array		6,455	129,000

Note: Figures rounded

3. Geology, Hydrology and Hydrogeology

3.1 Introduction

Responses have been received from a number of consultees with respect to Chapter 8: Geology, hydrology and hydrogeology of the March 2021 EIA Report. They relate to PWSs, namely from EAC and the SEPA, and GWDTEs, peat and watercourse crossings from SEPA. Addressing these issues forms the basis of this part of the FEI response.

3.2 Private water supplies

EAC has requested that a map be provided of the hydrological (surface water) catchments in the area, in order to provide more context for the PWS risk assessment and the wider EIA. The original EIA Figures 8.5 and 8.6 have been redrafted with this information and are incorporated within this FIA (Figures 1 and 2 respectively, Appendix A). They indicate that the majority of the solar PV farm and green hydrogen production facility would be located within the Drumtee surface water catchment, with the exception of the westernmost section of the solar PV farm and the haul road, which both extend across into the northern Kingswell Burn catchment.

Figure 2 indicates that two of the three assessed PWSs, namely P01 (Drumtee spring) and P05 (Cauldstanes borehole), are also within the Drumtee catchment, with the other, namely P03 (Best Friends Cottage borehole), sat in the Kingswell Burn catchment. The SEPA LUPS-GU31 250 m buffers associated with these PWSs sit within the same catchments, except for that related to P05, which also extends north into the Kingswell Burn catchment.

If the 250m buffers are taken as an indication of the PWS groundwater catchments, then all the PWSs have catchments that extend partly onto (P01, marginally, and P03) or exist fully within (P05) the Site. However, the only potential interaction of the PWS catchments with the proposed infrastructure is that between P03 and the haul road approach to and junction with the B764 carriageway. It is also recognised that PO1 is located close to Drumtee Burn whose surface water catchment extends across part of the Southern Section of the Site, including the BESS cabling.

A considerable amount of mitigation is identified in the EIA Report with respect to the PWSs. For example, EIA Report Paragraph 8.12.18 states:

"Mitigation that would serve to help protect these sources includes restricting the Proposed Development in their vicinity by way of the 100 m/250m [SEPA] *groundwater buffer zones, and adherence to the CEMP, BS6031: 2009 Code of Practice for Earth Works, WAT-SG-29 on Temporary Construction Methods and any dewatering CAR* [Controlled Activities Regulations] *registration or licence requirements (Section 8.10). The absence of any proposed works within or near the abstractions, the presence of the low permeability of the local aquifer, and the anticipated effectiveness of the embedded environmental measures combine to limit the magnitude of change at these abstractions."*

Notwithstanding the conclusion (EIA Report Paragraph 18.12.19) that *"the level of effect of the Project (in this instance just the Proposed Development (S36)) on the* [PWS] *abstractions is*

negligible…adverse and not significant (Table 8.15)", in its letter to EAC of 24th September 2021 the Applicant agreed that the EAC's PWS concerns can be addressed by a suspensive planning condition related to a further review of the PWS risk assessment and production of a method statement. This was identified to comprise the following three elements:

"1. PWS Characterisation and Risk Assessment

To assist with the risk assessment process, a site survey will be undertaken to help characterise the P01, P03 and P05 PWS. The site survey visit(s) would seek to identify, map and photograph supply source locations, PWS protective measures, key components and the presence and location of any known pathways from the development infrastructure to the receptor catchment. The site survey information would be supported by any information provided by EAC and the Owners/Occupiers where made available. (It should be noted that some PWS users may not know or may be unwilling to provide information about PWS and the characterisation and risk assessment will be based on information made available and established at the time).

The proposed Risk Assessment would use the Source-Pathway-Receptor concept as the underlying model to further assess and refine the risk posed by the development activities. In addition to the type and nature of the PWS, the risk assessment would consider the volume/quantity of water used (or dwelling population equivalent), supply catchment and location of PWS receptor relative to development infrastructure, presence and location of known or likely hydrological and hydrogeological pathways, the type of superficial and underlying geology and the indicative hydrological interception potential of the development infrastructure in the PWS catchments.

A definitive supply source/catchment for a PWS may be difficult to ascertain with certainty; where the supply source/catchment is not known, this will be specified and an informed opinion provided.

The EIA Report describes the mitigation measures proposed to protect PWS and the EHO [Environmental Health Officer] *Response acknowledges that extensive mitigation is proposed to prevent contamination of the PWS. Notwithstanding the mitigation proposed in the EIA Report, if the PWS Risk Assessment recommends additional precautionary measures, these will be incorporated into the CEMP.*

2. PWS Water Quality Monitoring Plan

As part of the Method Statement, a PWS Water Quality Monitoring Plan will be developed and will include details regarding:

a. Monitoring locations (both untreated and treated where practical and applicable);

b. Monitoring duration and frequency (with a minimum commitment to include monthly extractive samples collected 6 months prior to construction, during construction, and 12 months post construction);

c. Monitoring analytical suite, including both chemical and biological parameters (with a minimum commitment to include traditional PWS monitoring parameters such as total coliforms, E.coli, colour, turbidity, pH, conductivity, aluminium, iron, manganese and lead) and also taking into consideration parameters associated with construction activities such as TPH [Total Petroleum Hydrocarbons] *and indicator parameters that may be associated with the operation of the site.*

Samples would be collected by an independent and competent body in accordance with drinking water and PWS sampling guidance. Samples would be analysed by a UKAS [United Kingdom

Accreditation Service] *accredited laboratory. It should be noted that PWS owners/occupiers may prevent or restrict access for PWS sampling purposes.*

3. PWS Contingency Plan

As part of the Method Statement, a PWS Contingency Plan will be developed that will consider both short term and long-term supply arrangements. Short term contingency arrangements during the construction phase are likely to involve the provision of bottled and potable water supplied via bowser to ensure PWS users have immediate access to water supplies should a disruption or deterioration in the PWS be associated with the development activities." For clarity, *"short term"* here is taken here to mean *"during construction"* whilst *"long term"* is taken here to mean *"the first twelve months of operation"*.

In its letter the Applicant also confirmed that *"no local water abstraction will be used to supply water for the process water to the hydrogen production facility"*. For clarity, *"local"* is taken here to mean those surface water catchments identified in Figure 2.

With respect to PWSs, SEPA notes that the original EIA Report Figure 8.6 did not provide a SEPA 250m buffer for P03. It also identified "*that this PWS P3 (borehole) is within 250m from the link/haul road in its initial section at the junction with the B764. The distance between P03 and the link/haul road needs to be clarified and meet the guidelines set out in LUPS-GU31. Should this distance be less than 250m, information on the construction and construction methods of the link/haul road should be submitted (e.g., excavation depth etc) for review. This should also include information on the P03 borehole including depth, groundwater level, condition of headworks and abstraction regime. Further risk assessment may be required following the review of this additional information. Alternatively, the course of the link road could be altered to be located beyond a 250m radius of P03"*.

The absence of the P03 SEPA buffer on the original Figure 8.6 was an oversight and is addressed in the new version of that figure introduced earlier (Figure 2). It can be confirmed that the minimum distance between the P03 source (not user's property) and the haul road is approximately 210m i.e. the haul road junction is within the SEPA buffer. However, mitigating any effects are the presence of the Kingswell Burn immediately to the east of the PWS, the planned shallow (< 1m) depth of the haul road and B764 junction excavations and the implementation of the various mitigation measures mentioned in the EIA Report. These considerations ensure that the level of effect of the Proposed Development on this PWS is negligible adverse and not significant. The Applicant is also offering an extra level of assurance by way of a further review of the PWS risk assessment and production of a method statement.

3.3 Groundwater dependent terrestrial ecosystems

SEPA notes that the solar PV farm and green hydrogen production facility as well as the BESS are located, at least in part, within GWDTEs and their 250m buffers, and this is acknowledged in the EIA Report (Paragraph 8.10.9). SEPA asks that *"the necessary mitigation measures are put in place to ensure that there is no negative impact on the GWDTE both during construction and permanently after the proposal developed. In that regard, we* [SEPA] *would like to see this in a mitigation plan which includes for example floating roads demonstrating how GWDTE have been avoided or protected"*.

The Geology, Hydrology and Hydrogeology chapter of the EIA Report which SEPA references when making its comments describes the hydrological baseline condition of the GWDTEs and the effects of the Proposed Development on this baseline. It first observes that there are no obvious topographic gradients that would generate a significant groundwater hydraulic gradient to provide groundwater support to many of these habitats and concludes (Paragraph 8.6.58) that *"Overall, wider-scale groundwater supply to the habitats identified is likely to be limited, with the majority of the supply coming instead from surface or very near-surface infiltration and surface runoff"*.

The Chapter then goes on to identify an extensive range of mitigation measures to protect GWDTEs in the area that should be of interest to SEPA, including the following:

- avoidance of deep (>3m thick) peat (paragraph 8.10.5);
- avoidance of 50m and 20m watercourse buffer zones (paragraph 8.10.7);
- minimising incursions of SEPA buffer areas (paragraph 8.10.8);
- micro-siting of infrastructure (paragraphs 8.10.10 and 8.13.2);
- adherence to Construction Site Licence (CSL) requirements including a Pollution Prevention Plan (PPP) (paragraph 8.10.11);
- use of 'floating roads' on peat > 1m thick (paragraphs 8.10.12 and 8.10.13);
- appropriate drainage design (paragraphs 8.10.14 – 8.10.21);
- adoption of cable-laying protocols (paragraphs 8.10.22 and 8.10.23);
- minimising the number of watercourse crossings, and adopt good practice design when their use is unavoidable (paragraphs 8.10.24 – 8.10.27);
- appropriate foundation and peat excavation and drainage design (paragraphs 8.10.28 – 8.10.39);
- appropriate site working practices (paragraphs 8.10.40 – 8.10.47); and
- adherence to a CEMP (paragraphs 8.10.48 and 8.10.49).

Such measures are also summarised for GWDTEs (together with other receptors) in the EIA Report Table 8.12 and later in the assessment Paragraph 8.12.22.

On the basis of this mitigation, it is concluded in the Geology, Hydrology and Hydrogeology Chapter (Paragraph 8.12.25) that even after allowing for some uncertainty around the hydrological dependency of the GWDTEs and the overlap of the buffer areas with some infrastructure the level of (hydrological) effect on the GWDTEs would be minor adverse and not significant.

However, it is important to recognise that Geology, Hydrology and Hydrogeology Chapter only concerns itself with hydrological effects on the GWDTEs, and that overall (but including hydrological) effects are examined in Chapter 6: Ecology and Ornithology. This distinction is highlighted in the Geology, Hydrology and Hydrogeology Chapter Paragraph 8.8.6. SEPAs response makes no mention of the additional extensive mitigation outlined in Chapter 6, of which some addresses non-hydrological potential effects on the GWDTEs, such as direct loss of habitats due to the placement of infrastructure such as tracks and PV panels.

The ecology-driven mitigation (EIA Report Paragraph 6.9.1) includes the following additional measures that would be of interest to SEPA:

- avoidance of areas of peat >1m thick wherever possible;
- avoidance of localised areas of bog pools and areas with high-water table with presence of broad-branched Sphagnum species;
- areas of lower value grassland habitats on shallow peat and more heavily modified or degraded bog are considered more preferential for siting infrastructure than areas of better condition (but still modified) blanket mire; and
- habitats (both wet modified bog and marshy grassland within the Habitat Management Area (HMA) on shallow peat) are considered more preferential than modified bog on deeper peat outside the HMA.
- The EIA Report Table 6.9 includes the identification of how these embedded measures influence the ecological assessment of the construction effects on blanket bog communities.

Design measures for minimising effects to sensitive habitats are relevant to the issue raised by SEPA and include the following:

- the layout of the solar array ensures that good condition blanket bog and mire communities on deeper peat >1m are avoided as much as possible, with preference for development on lower sensitivity habitat including more degraded modified bog and areas of shallower peat;
- access track and cable route layout has been designed as far as reasonably practicable to use the minimum land take, and cabling infrastructure would be installed where possible alongside existing forestry track thus limiting temporary disturbance of habitat;
- the green hydrogen production facility, BESS Compound, and temporary storage/laydown areas have been sited to avoid sensitive vegetation communities where possible, utilising areas such as existing disturbed ground, grassland or clear-felled areas; and
- tight construction footprints would be adhered to in order to minimise damage to sensitive habitats. All access tracks on peat depths exceeding 1m would be of floating design, to minimise effects on peat.

Table 6.9 also identifies that the following measures would be incorporated to minimise construction effects to sensitive blanket bog habitats:

- full details of proposed construction measures would be provided within the CEMP, including a PMP, which would be submitted pursuant to a condition of the deemed planning permission in consultation with EAC, NatureScot and SEPA, in advance of construction works commencing;
- site supervision would be provided by a suitably experienced Environmental Clerk of Works (ECoW), who would be responsible for ensuring the successful implementation of embedded measures; and

- a Habitat Management Plan (HMP) would also be implemented with the aim of ensuring successful restoration and reinstatement of affected blanket bog within the Site. The HMP would be submitted pursuant to a condition of the deemed planning permission to be agreed with EAC.

On this basis the Ecology and Ornithology Chapter concludes that whilst indirect disturbance and changes to composition of plant communities resulting from hydrological change during both construction and operation would be not significant (Paragraphs 6.11.21 and 6.11.26), direct (permanent) loss due to land take (prior to any habitat reinstatement or restoration) and temporary disturbance of wet modified bog communities during construction would be significant (Paragraph 6.11.16). However, the following mitigation and compensation measures are proposed within the EIA Report to ensure these effects are not significant. These are confirmed as follows:

- habitat re-instatement would take place alongside the hydrogen storage compound, BESS substation, temporary lay down areas and cable route (Paragraph 6.17.2); and
- compensatory habitat restoration would take place, within an area coincident with the HMA and involving the blocking of historical drainage channels (using 'wave dams'), some exclusion of grazing and removal of self-seeded conifer regeneration, and monitoring (Paragraphs 6.17.3 – 6.17.12).

The two EIA Chapters together are therefore considered to already have identified the *"necessary mitigation measures"* needed *"to ensure that there is no significant negative impact on the GWDTE both during construction and permanently after the proposal developed"*, as subsequently requested by SEPA.

SEPAs second request in relation to GWDTEs relates to the production of a mitigation plan. The main elements of such a plan are discussed above. A formal statement of mitigation intent accompanied by mapping "*which includes for example floating roads demonstrating how GWDTE have been avoided or protected"* is not currently in place but would form part of the conditioned CEMP.

3.4 Peat

SEPA requests that a PMP is provided by way of a planning condition. As mentioned earlier with respect to SEPAs GWDTE comments, a PMP would form part of the CEMP, which would be submitted pursuant to a condition of the deemed planning permission in consultation with EAC, NatureScot and SEPA, in advance of construction works commencing.

3.5 Watercourse Crossings

SEPA notes that *"there are a number of watercourses which cut across the solar PV farm and a standard buffer of 20m has been applied to these watercourses to mitigate against any potential impacts on water quality and….GWDTEs. Also these watercourse crossings are to be designed to the standard as in our [SEPAs] Construction of River Crossings Good Practice Guide. We* [SEPA] *ask that these are ensured by a planning condition"*.

SEPAs understanding of the required watercourse crossings is correct, and the design would be ensured by planning condition.

4. Noise Modelling

4.1 Introduction

Five simulations were carried out in SoundPLAN with the green hydrogen production facility noise source input at different sound power levels. The result was a modelled specific noise level at various receptors in the vicinity of the green hydrogen production facility site area. The noise levels that were modelled were then compared with background noise limits to find the maximum sound power that the equipment should be to minimise impact on receptors.

4.2 Noise limits

Each noise sensitive receptor has its noise assessed relative to background noise, obtained from the August 2012 Environmental Statement (ES) for Whitelee Wind Farm extension Phase 3. Four of the receptors use the background noise level from Shieldhill, and two use background noise levels from Lochgoin. Using the noise limit curves from Figures 2 and 4 of the ES, the limits were found for Lochgoin and Shieldhill respectively at wind speeds of 3 m/s. These limits are shown in Table 4.1 below, rounded to the nearest dB in accordance with BS 4142.

Table 4.1 Background noise levels and limits

Location for Background Noise	Night-time Background Noise Level (dB(A))	Daytime Background Noise Level (dB(A))
Lochgoin Farm	22	28
Shieldhill	28	32

4.3 Modelling

The hydrogen production facility was modelled as a point source with a specified sound power level, L_W. Currently, data on the noise levels of the equipment are not available, therefore the plant is modelled as a point source to give an even acoustic spreading.

The aim of the modelling exercise was to find what the maximum sound power level of the plant could be before causing an impact on any receptors, whilst avoiding risk of any contribution from the existing windfarm (by selecting wind speeds below wind turbine cut-in wind speed).

The initial sound power level that was modelled was 120 dB(A). From there, sound power levels of 115 dB(A), 110 dB(A), 105 dB(A), and 100 dB(A) were also modelled.

The receptors, their coordinates and distance from the noise source are shown in **Table 4.2.**

Table 4.2 Receptors and their distances from the noise source

Location for Background Noise	Distance from noise source (m)	Coordinates	Background location used
Moor	957	250871, 648037	Shieldhill
Cauldstanes	1356	249995, 646831	Shieldhill
Kingswell	1380	250052, 647762	Shieldhill
Drumtee	1581	249959, 646354	Shieldhill
Lochgoin Farm	1673	252965, 646907	Lochgoin Farm
Craigendunton	2075	251242, 645109	Lochgoin Farm

4.4 Results

The following tables show the results of the modelling. Results of each of the five modelling scenarios are shown including the specific noise modelled at each receptor. A tonal penalty is added to the modelled specific noise, resulting in an overall rating level. A maximum tonal penalty of 6 dB is applied to the noise level at each receptor to ensure a conservative and worst-case scenario assessment. This rating is compared to the daytime and night-time background noise levels from Table 4.1. If the rating at a receptor is in excess at a receptor, there is likely to be an impact. BS 4142: 2014 states that the greater the excess at receptors, the greater the impact of the specific sound. The classifications of impact are as follows:

- An excess of around 10 dB is classed as a significant adverse impact.
- An excess of around 5 dB over background is classed as an adverse impact.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source would have an adverse impact or significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

Tables 4.3 to 4.7 show the results of the modelling and the excesses in the daytime and at night.

Table 4.3 L_W = 120 dB(A) - modelled levels and excessed during day and night

Receptor	Level (dB(A))	Rating	Excess at Night	Excess in Day
Moor	40	46	18	14
Cauldstanes	35	41	13	9
Kingswell	31	37	9	5
Drumtee	33	39	11	7
Lochgoin farm	34	40	18	12
Craigendunton	29	35	13	7

Table 4.4 L_W = 115 dB(A) - modelled levels and excessed during day and night

Receptor	Level (dB(A))	Rating	Excess at Night	Excess in Day
Moor	35	41	13	9
Cauldstanes	30	36	8	4
Kingswell	26	32	4	0
Drumtee	28	34	6	2
Lochgoin farm	29	35	13	7
Craigendunton	24	30	8	2

Table 4.5 L_W = 110 dB(A) - modelled levels and excessed during day and night

Receptor	Level (dB(A))	Rating	Excess at Night	Excess in Day
Moor	30	36	8	4
Cauldstanes	25	31	3	-1
Kingswell	21	27	-1	-5
Drumtee	23	29	1	-3
Lochgoin farm	24	30	8	2
Craigendunton	19	25	3	-3

Table 4.6 L_W = 105 dB(A) - modelled levels and excessed during day and night

Receptor	Level (dB(A))	Rating	Excess at Night	Excess in Day
Moor	25	31	3	-1
Cauldstanes	20	26	-2	-6
Kingswell	16	22	-6	-10
Drumtee	18	24	-4	-8
Lochgoin farm	19	25	3	-3
Craigendunton	14	20	-2	-8

Table 4.7 L_W = 100 dB(A) - modelled levels and excessed during day and night

Receptor	Level (dB(A))	Rating	Excess at Night	Excess in Day
Moor	20	26	-2	-6
Cauldstanes	15	21	-7	-11
Kingswell	11	17	-11	-15
Drumtee	13	19	-9	-13
Lochgoin farm	14	20	-2	-8
Craigendunton	9	15	-7	-13

4.5 Conclusions

A sound power level of 120 dB(A) shows that significant adverse impact would occur at all of the receptors. When sound power level is 115 dB(A), significant adverse impact occurs at all but two receptors. Adverse impact is still observed at Moor when the modelled noise source has a sound power level of 110 dB(A). To ensure no exceedance whatsoever, including a maximum tonal penalty, then a sound power limit of 100 dB(A) would be appropriate. At this sound power level, there is no excess during the night. At 105 dB(A), there is no daytime excess, and daytime operations would be acceptable and can be adequately controlled via the implementation of a planning condition for operational noise levels within these limits.

5. Major Accidents and Disasters

5.1 Introduction

Both Regulation 4 and Schedule 4 of the EIA Regulations require *"a description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned"*.

Whilst a formal Scoping Opinion was not sought, the submission summarised the rationale for scoped in topics and this was based on the limited sensitivities (largely directed to the impact of solar on peat), as well as the Screening Opinion from the ECU which indicated they believed *"the design of the development is such that it would result in very limited or negligible pollution and has low risks of major accidents*". On this basis, i.e. there were no significant adverse effects to describe, no further information was included within the EIA Report. It is noted that the European Commission guidance on the incorporation of Major Accidents in EIA states that a risk-based approach should be used when considering these unlikely events (European Commission, 2017).

EAC has requested FEI to demonstrate that the risks of Major Accidents and Disasters affecting Population and Human Health had been duly considered before being excluded from the EIA Report. This section of the FEI seeks to address that request.

The FEI focuses on the green hydrogen production facility which would have an installed rated energy consumption of c. 20MW, and which would be split across multiple Polymer Electrolyte Membrane (PEM) Electrolysers. These units would consume water and generate hydrogen and oxygen gases at the different electrodes. These gases would then be purified and then compressed to be stored in the eight pressurised storage vessels. These storage vessels would be used to fill road tankers in one of the four loading bays.

The hydrogen in the process would be generated at a rate of up to 10,000 kg per day at a pressure of ~30 bar. This hydrogen would be compressed to be held in high pressure storage tanks, which combined would hold approximately one day's production capacity. Typically twenty HGVs with dedicated hydrogen tube trailers would export compressed hydrogen from the site by road.

It is intended that the facility would operate as a lower tier establishment subject to the COMAH Regulations. Inventories of Dangerous Substances would subject to a Hazardous Substances Consent Application to be submitted to the relevant consenting authority.

5.2 Embedded measures

The purpose of assessing Major Accidents and Disasters is to ensure that resilience has been built into the design and layout of the Project. This section provides a summary of SPRs proposed approach to comply with the regulatory requirements in Section 5.3.

Health and Safety has been a key consideration in the design of the hydrogen facility to date, and the approach has incorporated good practice principles such as inherently safer design and the hierarchy of controls. While it is obviously not possible to eliminate or substitute hydrogen for an

alternate fuel, several measures have been incorporated to reduce the intrinsic hazard of the facility.

Primarily, the site location selected is a significant distance from most receptors. The green hydrogen production facility is surrounded by the wider Whitelee development which is owned and operated by SPR. The public would have no access to the hydrogen facility, the solar PV farm and BESS. There are established internal access tracks between the existing wind turbines and the closest of these is located approximately 220m from the hydrogen facility. The nearest public road is the B764 over a kilometre to the west, and the nearest buildings which are not associated with the facility are also over a kilometre to the west.

SPR's planned approach is to apply best practice risk assessment and management techniques to assess and manage hydrogen safety. After conducting an initial legislative and industry standards review, the assessment would consider development of a design safety case alongside an Operational Safety Case, where:

- Design safety case focusses on demonstrating that risks are reduced to As Low As Reasonably Practicable (ALARP) by design; and
- Operations Safety Case focusses on demonstrating that risk would be managed to ALARP throughout the operational lifecycle.

The process would be initiated by undertaking hazard identification workshops, which would be conducted collaboratively with design engineers, to develop a comprehensive hazard register based on designer and manufacturer design risk assessments (DRA). This structured process and subsequent Bowtie analysis (a graphical risk analysis technique) of the safety critical elements (physical controls) identifying the associated hazards threats and consequences would enable identification and review of the associated controls against industry good practice standards. The objective is to ensure systematic management of the risks associated with the hydrogen hazards to ALARP during design and throughout the assets operational life, with the inclusion of a Major Accident Prevention Policy (MAPP). This approach would consider the safety critical activities associated with the operation of the hydrogen plant from a procedural perspective to provide development of a robust safety management system. This would enable the safe progression of the hydrogen plant from construction through to operation. It is important to note that integration hazards associated with the supporting infrastructure, solar generation and grid connection works would also be considered and controlled. Initial high-level Hazards that would be included in the analysis but not restricted to these include:

- Loss of Containment of Hydrogen from electrolyser;
- Loss of Containment of Hydrogen in storage; and
- Loss of Containment of Hydrogen during refuelling.

These have been considered in the assessment in Section 5.4.

5.3 Existing regulatory environment

Generally, the planning process in Scotland and the UK focuses on whether proposed developments represent an acceptable use of land and should not seek to duplicate other control regimes which have established regulatory processes such as COMAH or Environmental Permitting.

Instead, the guiding assumption is that these regulations are fit for purpose and are enforced by their statutory regulators. Further information on the regulatory regimes which apply to the Project is given below in this section.

The UK has a robust regulatory regime covering Occupational Health and Safety. Most of the UK safety regulations are made under the Health and Safety at Work etc. Act 1974 (HSWA), and these make specific provisions and requirements relating to industries and activities.

HSWA combined with the Management of Health and Safety at Work Regulations 1999 (MHSWR) enshrine various principles as fundamental components of UK law. These include the requirement to undertake a written risk assessment of any activities and to ensure that the residual risk arising from those activities is reduced to ALARP, which is known as the ALARP principle. Finally, they codify the 'hierarchy of controls' which prioritises the avoidance of risk and combatting the risk at source in preference to individual protection measures such as Personal Protective Equipment (PPE).

The Control of Major Accident Hazard Regulations 2015 (COMAH) place duties upon site operators which store or use dangerous substances. The COMAH regulations apply at two tiered levels, based upon the inventories of Dangerous Substances, and the green hydrogen production facility would be in the Lower Tier of the regulations, which has fewer specific duties as Lower Tier sites are anticipated to be lower risk. These duties include the requirement to undertake a risk assessment of all potential Major Accident Hazards, and then demonstrate to the satisfaction of the COMAH Competent Authority (CA) that the risk of major accidents has been reduced to ALARP. Lower Tier Establishments must also provide the CA with a documented Major Accident Prevention Policy (MAPP), which describes how they manage the risk of Major Accidents.

The Town and Country Planning (Hazardous Substances) (Scotland) Regulations 2015 form the planning regime counterpart to the COMAH regulations, where all COMAH establishments require a consent for their Hazardous Substances. The regulations require that all sites holding a qualifying amount of dangerous substances apply for consent to the local Hazardous Substances Authority (HSA). The HSA must then consult the HSE and consider whether it would be appropriate to grant consent. The HSA (on the advice of HSE) may require specific conditions to be imposed on the operation of the site, if required to ensure public safety.

All workplaces are subject to the Control of Substances Hazardous to Health (COSHH) Regulations 2002, which lays out the duties of an employer to protect workers from hazardous substances. While the COSHH regulations are scoped to include long term cumulative effects of exposure to chemicals, they also communicate the same hierarchy of controls enforced in the HSWA and set out a need for risk assessments and appropriate training for workers.

Construction activities are subject to the Construction (Design and Management) Regulations 2015 (CDM). CDM requires that all structures must be designed so that they can be built and maintained safely, and the designer must also 'design out' hazards where possible by applying the hierarchy of controls and produce a designers' risk assessment to inform the construction contractors of any residual risks. The construction process must then be managed to take account of the risks to people affected by the work, including the public. This ensures that the risk of such effects occurring is extremely low and would be reduced to ALARP.

Pressurised equipment including gas storage are subject to the Pressure Systems Safety Regulations 2000 (PSSR), which cover the safe design and use of pressure systems. The aim of

PSSR is to prevent serious injury from the hazard of stored energy (pressure) as a result of the failure of a pressure system or one of its component parts. Users of pressure systems are required to demonstrate that they know the safe operating limits (principally pressure and temperature) of their systems, and that they are safe under those conditions. They need to ensure that a suitable written scheme of examination is in place before the system is operated and that the system is examined in accordance with the written scheme of examination. The Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) are concerned with preventing or limiting the harmful effects of fires, explosions and similar events. DSEAR sets requirements relating to the assessment and management of risk from flammable substances and ensures that work equipment is suitable for the location where it is used and sets standards for ignition control.

The Fire Safety (Scotland) Regulations 2006 require that employers undertake a suitable fire risk assessment and eliminate (or where elimination is not possible), reduce the risk from fire to ALARP. They also require that suitable provision is made for firefighting.

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG) implement the European agreement widely known as ADR. The CDG regulations are a highly prescriptive set of requirements and regulations which regulate the transport of dangerous goods by road. The regulations require the classification, risk assessment and appropriate packaging of dangerous goods which are to be transported. They set requirements for the vehicle, personnel and method of transport which are intended to minimise the risk associated with road transport.

5.4 Assessment of potential effects

Introduction

Potential combinations of source and receptors were examined to identify potential major accidents or disasters. Where these were considered, if the magnitude of damage did not meet the threshold for major accident or disaster, when assessed without taking into account mitigation, then they were not considered to be potential Major Accidents or Disasters.

For the purpose of EIA, Wood defines the following key terms, drawing from regulatory guidance used in hazardous industries:

- Major Accident – an occurrence resulting from an uncontrolled event caused by a man-made activity or asset leading to serious harm to receptors.
- Disaster – a natural occurrence leading to serious harm to receptors.
- Serious harm to the environment – loss or significant detriment to populations of species or organisms, valued sites (including designated sites), valued cultural heritage sites, contamination of drinking water supplies, ground or groundwater, or harm to environmental receptors in line with other UK Major Accident regulations.
- Serious harm to human populations – harm considered substantial i.e., death(s), multiple serious injuries or a substantial number requiring medical attention.

The effects of both Major Accidents and Disasters can be either immediate or delayed.

The EIA Regulations recognise that developments would affect different environmental elements to differing degrees, and that not all of these are of sufficient concern to warrant detailed investigation or assessment through the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are *"likely to be significantly affected by the development"*. Guidance provided by the EC (European Commission, 2017) highlights that the context for inclusion of major accidents and disasters in EIA is to ensure that adequate focus is given to the provisions for events leading to significant risk with an objective of building resilience into a development against such effects.

Risk in this assessment was defined as a combination of magnitude of change and likelihood. The assessment applied professional judgement to evaluate the likelihood of each potential Major Accident and Disaster occurring, once the mitigation was considered.

Where there were potential Major Accidents or Disasters identified, they were considered in conjunction with the mitigation and design processes which are already or would be in place to manage the risk of Major Accidents and Disasters. An estimate of the reasonable worst case potential consequences was based upon professional judgement by process safety specialists with experience on similar projects.

Professional judgment was then applied to determine whether the risk was adequately controlled to prevent an increase in risk to an intolerable ('significant') level. Table 5.1 includes an initial assessment of the potential Major Accidents and Disasters which are relevant to the Project, with a description of the embedded measures and regulatory controls which ensure that there would be no significant effects (risk) affecting either the Project or the surrounding (human and non-human) environment.

Hydrogen fires

As with most combustion fuel sources, hydrogen is flammable, so any storage or handling of it has the potential to lead to a fire. Hydrogen fires have properties which are different to other types of fire which are more common such as building (house) fires or those associated comparable natural gas infrastructure. A de scription of the nature of hydrogen fire is included below.

Hydrogen fires are different in nature than natural gas fires in several areas, firstly, in that their radiant heat of hydrogen fires is lower and, secondly, because hydrogen is buoyant (lighter than air). Both of these factors tend to lead to a smaller area at risk than for a comparable natural gas fire. However, hydrogen burns with a pale blue flame, which is very difficult for the human eye to see in daylight, so may be harder to detect visually. Hydrogen may also be stored at higher pressures, and has a wider flammable range than natural gas which may increase the area at risk. Hydrogen is also easier to ignite and requires a higher design standard for ignition protection.

Typical hydrocarbon fires can be very dirty and produce noxious or toxic combustion products, this does not typically occur with hydrogen fires. One of the virtues of green hydrogen is that is does not produce exhaust fumes, with the only combustion products limited to water. Hydrogen fires are therefore not considered to have the potential to affect watercourses, the ground or groundwater.

Table 5.1 Initial assessment of major accident and disaster effects

Potential Major Accident or Disaster	Potential Receptors	Description of risk	Embedded Mitigation and Regulatory Measures	Significance
Loss of containment of hydrogen from production process	Onsite workforce (typically 1-4 personnel) Adjacent woodland and moorland habitat	A release of hydrogen from the process at 30 barg could result in a significant size fire or explosion. Coarse consequence modelling indicates that a significant hydrogen explosion, could affect up to approximately 300m from the facility with the potential to injure or kill any workers in this area. A significant fire from the process would likely affect a much smaller area. An accident of this type may also lead to escalation and cause an accident at the storage or tube trailers. Adjacent woodland and other habitats could be damaged in a fire, but these are not designated and it is not considered likely that a significant area would be destroyed. Under the CDOIF guidance endorsed by HSE & SEPA (CDOIF, 2016), the threshold for a Major Accident would have to destroy >10 ha of 'Widespread Habitat'.	The location of the hydrogen facility has been specifically selected to minimise the potential to affect any receptors. The limited inventory of hydrogen means that any accidents would not be able to affect offsite receptors. The site would be regulated under the COMAH regulations which would require the operator (SPR) to demonstrate to the COMAH Competent Authority (HSE & SEPA acting jointly) that it has taken 'all necessary measures' to reduce the risk to ALARP. The HSWA and subordinate regulations would require the risk assessment of all work activities including hydrogen production. Strict ignition controls would be in place in line with the DSEAR Regulations, and separation distances required by industry good practice codes and standard would be incorporated into the design.	Not Significant
Loss of containment of hydrogen from storage or during tube trailer loading	Onsite workforce (typically 1-4 personnel)	A release of hydrogen from the high-pressure storage vessels could result in a large fire or explosion. Coarse consequence modelling indicates large hydrogen explosion from the storage is likely to be limited to within 1 km from the facility, with the potential to injure or kill any workers in this area likely to be restricted to closer to the facility. A large hydrogen fire is	The location of the hydrogen facility has been specifically selected to minimise the potential to affect any receptors. The limited inventory of hydrogen means that any accidents would not be able to affect offsite receptors. The site would be regulated under the COMAH regulations which would require the operator (SPR) to demonstrate	Not Significant

Potential Major Accident or Disaster	Potential Receptors	Description of risk	Embedded Mitigation and Regulatory Measures	Significance
		likely to affect a smaller area than an explosion. An accident of this type may also lead to escalation and cause an accident at the process or tube trailers. Adjacent woodland and other habitats could be damaged in a fire, but these are not designated and it is not considered likely that a significant area would be destroyed. Under the CDOIF guidance endorsed by HSE & SEPA, the threshold for a Major Accident would have to destroy >10 ha of 'Widespread Habitat'.	to the COMAH Competent Authority (HSE & SEPA acting jointly) that the operator has taken 'all necessary measures' to reduce the risk to ALARP. The HSWA and subordinate regulations would require the risk assessment of all work activities including hydrogen production. Strict ignition controls would be in place in line with the DSEAR Regulations, and separation distances required by industry good practice codes and standards would be incorporated into the design. The facility would operate in line with industry good practice guidance such as the British Compressed Gases Associated Code of Practice 33 (BCGA CP33).	
Loss of containment of hydrogen from road vehicles (tube trailers)	Onsite workforce (typically 1-4 personnel)	Hydrogen would be moved offsite by road in specially designed tube trailers. These tube trailers would be pulled by a HGV tractor and manoeuvred into one of the four filling bays. The tube trailers would then be filled progressively from the high-pressure storage tanks until the tube trailer reaches the desired pressure. The tube trailer technology is currently developing, as new materials are being developed to allow larger inventories of hydrogen to be safely carried. The current average tube trailer is anticipated to carry approximately 500kg of gaseous hydrogen.	The HSWA and subordinate regulations would require the risk assessment of all work activities including hydrogen production. DSEAR would require appropriate equipment is installed to minimise the risk of ignition. The CDG regulations would ensure that any tube trailer is designed to a suitable standard with a trained and competent driver. The facility would operate in line with industry good practice guidance such as the British Compressed Gases Associated Code of Practice 41 (BCGA CP41).	Not Significant
Loss of containment of oxygen from process or storage vessels.	Onsite workforce (typically 1-4 personnel)	Oxygen is an oxidising gas, which promotes combustion (although oxygen itself cannot burn). This increases the risk of	Strict ignition controls would be in place in line with the DSEAR Regulations, and separation distances required by industry good practice	Not Significant

Potential Major Accident or Disaster	Potential Receptors	Description of risk	Embedded Mitigation and Regulatory Measures	Significance
		a fire, although it does not directly cause one to occur. A significant release of oxygen could lead to an increased risk of fires involving combustible materials that would not usually burn.	codes and standard would be incorporated into the design. The oxygen systems would be physically separated from the hydrogen systems and stores of any combustible materials in line with good practice design standards.	
Loss of containment of other dangerous substances	Onsite workforce (typically 1-4 personnel) Adjacent woodland and moorland habitat	There may be small inventories of other dangerous substances such as fuel for vehicles, lubricating oils, cleaning products or water treatment chemicals.	Any inventories of substances would be extremely small and unlikely to lead to a Major Accident if spilled. The site would be regulated under the COMAH regulations which would require the operator (SPR) to demonstrate to the COMAH Competent Authority (HSE & SEPA acting jointly) that the operator has taken 'all necessary measures' to reduce the risk to ALARP. The HSWA and subordinate regulations would require the risk assessment of all work activities including hydrogen production.	Not significant
Accident during construction	Construction workforce	Construction of any development carries inherent risks such as the potential to strike operators with plant and machinery, or the requirement for excavation and temporary structures. These risks are present in any significant construction project and are well understood and can be mitigated through employing good industry practices.	The construction activities would be managed in line with the Construction (Design and Management) Regulations 2015 (CDM), which requires appointment of a Principal Designer and Principal Contractor. Those organisations are required to maintain a designers risk register and to ensure that the design of any facility can be constructed, operated and maintained safely.	Not Significant
External Major Accident affecting the Project	Onsite workforce (typically 1-4 personnel)	The surrounding area at least a kilometre in every direction is owned and operated by SPR as either windfarm, solar farm or unused rural countryside with some areas of woodland. Beyond a kilometre, there are occasional houses and	The selected facility location is located away from external sources of hazard such that there are no external industrial sources of hazard which can affect the Project.	No credible external major accident scenarios

Potential Major Accident or Disaster	Potential Receptors	Description of risk	Embedded Mitigation and Regulatory Measures	Significance
		farmland with the M77 motorway lying approximately 2km to the west. The nearest village is over 5 km away. There are no other Major Accident Hazard sites which have been identified in the vicinity of the hydrogen facility. No land use planning consultation distances have been identified on the HSE Planning Advice WebApp (HSE, n.d.) within either the Hydrogen or PV facilities. The HSE COMAH Public Information Portal (HSE, n.d.) states there are no COMAH sites within 3 miles (~5 km) of the hydrogen facility. The nearest Licensed Nuclear Site is over 30 km away at Hunterston B on the Firth of Clyde (ONR, 2021). No sources of a Major Accident which can affect the Project have been identified from external sources.		
Major Accident from Whitelee facility affecting the Project	Onsite workforce	A fire at the BESS cannot credibly lead to a Major Accident at the hydrogen facility due to the distance involved (~7 km). A fire at the solar farm cannot credibly cause to a major accident at the hydrogen facility. The most likely location for a fire is at the substation, which is located in the vicinity of the BESS (~7km away). A fire at the PV panels is extremely unlikely and likely to be short lived due to the lack of available fuel, the hydrogen facility has adequate separation to prevent any escalation.	The design of the site by SPR has considered the potential accident scenarios at each element of the wider renewable energy campus (wind, battery and solar) and the proposed layout ensures that an accident in one location cannot escalate to the hydrogen facility. The solar farm is separated from the hydrogen facility by hard standing (access road). The BESS and solar PV transformer is located several kilometres from the hydrogen facility. The windfarm operator has confirmed that hydrogen facility is well outside the area	Not significant

Potential Major Accident or Disaster	Potential Receptors	Description of risk	Embedded Mitigation and Regulatory Measures	Significance
		Wind turbines potentially collapse, drop blades or throw ice, and whilst rare, these events are known to happen. The nearest wind turbine is located approximately 200m to the east.	which could be affected by blade throw or ice throw.	
Disasters affecting the Project	Onsite workforce	The design of the Project has accounted for all foreseeable environmental conditions, with due allowances for climate change. This includes factors such as wind loa dings, extreme temperatures, ground movement (seismic) and periods of drought. A fire in the adjacent woodland is considered unlikely as forest fires are not common in Scottish woodland. While small wildfires do occur in Scotland, there is not considered to be a risk of a fire in the surrounding environment which would be capable of initiating a Major Accident at the hydrogen facility due to physical separation and fire protection systems. A standalone Flood Risk Assessment (FRA) has been undertaken and is documented in Chapter 8 of the EIA Report. The findings are not duplicated here.	The design of the Project has and would account for all foreseeable environmental conditions to ensure that adverse weather or other environmental factors cannot cause a major accident at the Project or cause direct harm to the Project workforce. The design of the Project allows sufficient separation between any sources of fire and the Project such that any fire in the vicinity would not escalate and cause a Major Accident at the Project. Flood Risk is considered elsewhere and not duplicated here.	Not significant

6. Traffic and Transport

6.1 Introduction

This section of the FEI has been prepared to address comments made by EAC on 15th October 2021 in response to the Traffic and Transport assessment contained within the submitted EIA Report of March 2021.

6.2 EAC comments

The comments received on traffic and transport from EAC's transport officers were focused on the detailed traffic calculations presented in the Traffic and Transport EIA Chapter. The EAC response is detailed below:

"The EIA Report notes that the table in Appendix 6B provides the total traffic generated per day, noting a peak in week 10. In the table, week 10 indicates a total of 64 HGVs and 57 LGVs (and 121 total vehicles) per day. Peak LGVs are set out in weeks 11 – 20 as 67.

In paragraph 9.9.42 of the EIA Report, this advises there will be 128 two-way HGV movements (64 HGVs to the site and 64 leaving the site) – so the figure in the table represents total HGVs (64) but this requires to be doubled to account for their movements to and from the site. This paragraph then goes on to advise in respect of LGVs that there would be 66 (rounded down from table for weeks 11-20) two-way movements relating to 33 arrivals and 33 departures, so halving the figure shown in the table.

So there is inconsistency in what is being shown in the table and how this is being interpreted in the EIA Report:- for HGVs the figure is being doubled to get the total HGV movements whilst the LGV figure is being halved, suggesting the figure in the table represents total LGV movements (accounting for arrivals and departures). This is then carried forward into the assessment of impacts on the road network in coming to a figure of vehicle movements during peak hours in paragraphs 9.11.7 – 9.11.8. These paragraphs consider week 10 as having 58 two-way movements (29 arrivals and 29 departures). But if the figure in the table for HGVs in week 10 (64) is a single movement and requires to be doubled, then surely the LGVs shown in the table (57 or 58 if rounded) would also be based on a single movement and would require to be double to account for arrivals and departures, rather than halved? And the subsequent assessment of impacts on the road network based on 58 LGVs travelling to the site and 58 LGVs leaving the site, rather than 29?

So clarity on what the figures in Appendix 6B represent and whether this has been consistently interpreted and applied throughout the assessment undertaken in Chapter 9 of the EIA Report, and any corrections if necessary, should be detailed."

6.3 FEI response

Traffic generation

To provide a response to the EAC comments, Wood's traffic and transport specialists reviewed the text within the Traffic and Transport EIA Chapter and the detailed traffic and transport calculations that informed Appendix 6B and the assessment contained within Table 9.10.

On review of the assessment, the traffic generation impact assessment provided within Table 9.10 has been found to be accurate. This indicates a total traffic generation for HGVs in Week 10 of 64 Two Way HGVs and 57 two-way LVs which is consistent with the figures that are set out as Two-Way traffic flows per day in Appendix 6B.

The error identified within Paragraph 9.9.42 the EIA report is purely grammatical. This paragraph mistakenly states "*a peak of 128 two-way HGV movements per day (64 HGV deliveries per day)*". This would be an incorrect doubling and the figures in Appendix 6B indicate 64 two-way HGV movements, or 32 arrivals and 32 departures in week 10. For consistency Paragraphs 9.9.41 to 9.9.43 have been redrafted below:

"9.9.41 – Appendix 6B of Volume 6 sets out the total two way traffic generation per day across the programme for HGVs, LVs and total vehicles based on a five day working week for a robust assessment for the solar PV farm, Hydrogen Facility, BESS, Grid Connection and site mobilisation and reinstatement.

9.9.42 – This indicates a peak of HGV traffic in months 9 and 10 of 64 two-way HGV movements per day (32 arrivals and 32 departures) Appendix 6B also indicates a peak of LV traffic of 67 two-way LV movements per day (33 arrivals and 33 departures (rounded)) in weeks 11 to 20 (not including week 16).

9.9.43 – To inform a worst-case assessment however, Appendix 6B sets out that the overall peak week for total traffic generation occurs in week 10 when there are 64 two way HGV movements and 57 two way LV movements which results in a total of 121 two-way movements per day for all traffic."

It is considered that the redrafting of paragraphs 9.9.41 to 9.943 addresses the issues raised by EAC and this does not result in the need to present and additional assessments to those presented in Table 9.10 and the corresponding in Sections 9.10 and 9.11 of the Traffic and Transport EIA Chapter. The text in Paragraphs 9.11.7 and 9.11.8 is also noted to be accurate.

Access to BESS

In addition to the commentary above on traffic generation this section of the FEI provides some clarification on permanent access to the BESS and the existing substation (and associated infrastructure).

In the EIA Traffic and Transport Chapter access to the various elements of the site is addressed first in Section 9, Paragraphs 9.2.1 to 9.2.5 (Site Access) and Paragraph 9.2.10 (Haul/Link Road).

The text in these sections discussed the need for a new site access in the form of a priority junction which would be constructed off the B764 as set out in Figure 9.2. Paragraph 9.2.10 the sets out that the internal access road would be approximately 1.5km long and 7m wide to allow for this to

access the construction of the Solar Farm and a permanent access for the conveyance of the hydrogen movements.

What was not clear in the initial chapter drafting was how access to the BESS would be achieved.

Paragraph 9.9.35 sets out that *"It should be noted that this calculation includes for the removal of the stone roads at the end of the construction of the new cable. This has been assumed as a worst case as it is likely this road will remain in situ and form part of the network of access tracks in the area for forestry works"*.

To clarify, it is this stone access road that would link the BESS and the existing substation, and the Solar PV and green hydrogen production facility sites, and it is anticipated this route would be permanently available in the operational phase for access and that the BESS would have a direct access route to the local highways network via the proposed new access set out in Paragraphs 9.2.1 to 9.2.5.

Appendix A
Copy of EAC Correspondence

Mealing, Adam

From: GILLILAND, JAMIE <jgilliland@scottishpower.com>
Sent: 03 May 2022 17:08
To: Pepper, Chris
Subject: FW: Whitelee Solar/Hydrogen/BESS project (21/0261/PP) (21/0001/S36) [OFFICIAL]

fyi

Internal Use

From: Mitchell, Graham <Graham.Mitchell@east-ayrshire.gov.uk>
Sent: 15 October 2021 15:34
To: GILLILAND, JAMIE <jgilliland@scottishpower.com>
Cc: James.McKenzie@gov.scot
Subject: EXTERNAL:RE: Whitelee Solar/Hydrogen/BESS project (21/0261/PP) (21/0001/S36) [OFFICIAL]

CLASSIFICATION: **OFFICIAL**

Afternoon Jamie,

Thank you for your correspondence of 24 September. Whilst I note the contents the letter provided does not fully address the key information requested on 10 August and further clarified on 26 August. I've set out below the matters which still require FEI to enable an informed assessment / consideration of the applications to take place. This includes the addition of matters relating to the production of a hazardous substance and related matters under the EIA Regulations.

- Whilst there are details about areas of habitat loss, I couldn't see details about anticipated volumes of peat loss to accommodate the respective developments, could you provide details on anticipated excavated peat volumes please – this relates to the requirement under Policy ENV 10 which requires (using the carbon calculator *or other equivalent evidence*) that the balance of advantage in terms of climate change rests with the proposed renewable energy development despite impacts on carbon rich soils. Whilst commentary has been provided on this it remains limited in terms of actual data on carbon emission volumes or carbon savings over the lifetime of the development to evidence the balance.

- Associated with the detailed PWS risk assessment and detailed mapping of PWS sources and pathways previously requested, I've not seen a figure showing the hydrological catchments throughout the area, this would be required to better understand and assess potential hydrological impacts and evidence comments made regarding hydrological catchments are accurate. It remains the case that mapping showing the hydrological catchments throughout this area is required, alongside mapping showing these catchments relative to the proposed infrastructure and PWS sources and their pathways to the receiving properties to fully understand the potential risks to PWS as a result of the proposed development. Mitigation measures you have raised recently (in your letter of 24 September) specific to PWS regarding PWS water quality monitoring and short and long term contingency measures have not been proposed within the EIA Report to date. Such information is relevant in terms of mitigation measures and should be included as part of the suite of FEI if this is now proposed.

- There remains no details regarding operational noise levels generated by the proposed development (hydrogen production facility or battery storage facility) nor cumulative noise assessment of these proposed developments in combination, with commentary on any potential cumulative noise implications for existing operational wind turbines. It is not possible to determine at this stage the likelihood of compliance with any potential condition or what level would be appropriate without any idea as to the noise levels likely to be

generated. Details of operational noise levels are required to make an informed assessment / consideration of the project.

- In terms of the fact the hydrogen production facility requires hazardous substances consent which through relevant regulations require details of the measures taken or proposed to be taken to limit the consequences of a major accident and details relevant to the risks and consequences of a major accident. Whilst hazardous substances consent is a separate matter, the fact that the hydrogen production facility will introduce a hazardous substance into the area and given the matters required to be assessed and detailed in such an application would also be applicable to the matters required to be assessed under the EIA Regulations, notably the risks of major accidents and disasters and population and human health, then these are relevant matters which should be assessed as part of the EIA Report for the project. As this hasn't been assessed as part of the EIA Report then it is failing to meet those requirements and would leave any decision taken by the Council or Scottish Ministers liable to challenge.

The Council would confirm that it requires further information to address the matters set out and this can be taken as the written request for such under regulation 26 of the Town and Country Planning (Environmental impact Assessment) (Scotland) Regulations 2017 and regulation 24 of The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 (as reflected in the original written request of 10 August and amended in light of information received to date).

I have discussed these matters with James McKenzie at the ECU (copied in) as these will have a bearing on the Section 36 application too as the additional information relates to the EIA Report. I am aware that there is currently additional information in relation to peat which is yet to be advertised and consulted on by the ECU which the Council will require a copy of (if this information includes more than the Figure 5 from the Peat Slide Risk Assessment, which the Council has been provided with). The Council will also require to publish this information and will wait to synchronise with the ECU to try and ensure any publication of the peat information is done around the same time to avoid further delays. It would be sensible to await the full suite of FEI to publish everything (the matters above and the additional peat information) at once rather than having two rounds of publishing/advertising/consulting on two separate sounds of FEI.

I'm also not aware of receiving a response to the matter raised in my email of 26 August with respect to the traffic volumes. For ease I have copied that below:-

I've also noticed something in the traffic and transport assessment which I'm wondering if you could clarify please:-

The EIA Report notes that the table in Appendix 6B provides the total traffic generated per day, noting a peak in week 10. In the table, week 10 indicates a total of 64 HGVs and 57 LGVs (and 121 total vehicles) per day. Peak LGVs are set out in weeks 11 – 20 as 67.

In paragraph 9.9.42 of the EIA Report, this advises there will be 128 two-way HGV movements (64 HGVs to the site and 64 leaving the site) – so the figure in the table represents total HGVs (64) but this requires to be doubled to account for their movements to and from the site. This paragraph then goes on to advise in respect of LGVs that there would be 66 (rounded down from table for weeks 11-20) two-way movements relating to 33 arrivals and 33 departures, so halving the figure shown in the table.

So there is inconsistency in what is being shown in the table and how this is being interpreted in the EIA Report:- for HGVs the figure is being doubled to get the total HGV movements whilst the LGV figure is being halved, suggesting the figure in the table represents total LGV movements (accounting for arrivals and departures). This is then carried forward into the assessment of impacts on the road network in coming to a figure of vehicle movements during peak hours in paragraphs 9.11.7 – 9.11.8. These paragraphs consider week 10 as having 58 two-way movements (29 arrivals and 29 departures). But if the figure in the table for HGVs in week 10 (64) is a single movement and requires to be doubled, then surely the LGVs shown in the table (57 or 58 if rounded) would also be based on a single movement and would require to be double to account for arrivals and departures, rather than halved? And the subsequent assessment of impacts on the road network based on 58 LGVs travelling to the site and 58 LGVs leaving the site, rather than 29?

So clarity on what the figures in Appendix 6B represent and whether this has been consistently interpreted and applied throughout the assessment undertaken in Chapter 9 of the EIA Report, and any corrections if necessary, should be detailed.

If you can pull the requested information together and upload it through the online portal to each application case file (unless solely specific to one case) I can discuss further with the ECU to try and ensure the relevant publication/advertising/consultation is carried out approximately in parallel to reduce delays.

Regards
Graham

From: GILLILAND, JAMIE <jgilliland@scottishpower.com>
Sent: 24 September 2021 16:34
To: Mitchell, Graham <Graham.Mitchell@east-ayrshire.gov.uk>
Cc: Ferrier, Daniel <daniel.ferrier@scottishpower.com>; Caskie, Coni <ccaskie@scottishpower.com>; Wilson, David <David.Wilson@east-ayrshire.gov.uk>
Subject: Whitelee Solar/Hydrogen/BESS project (21/0261/PP) (21/0001/S36)

Dear Graham

Please find attached a letter and appendices responding to the key issues relating to the Whitelee Solar/Hydrogen/BESS project (21/0261/PP) (21/0001/S36) and providing our views on the processing of the applications.

As mentioned in the letter, we are very keen to progress with the project, therefore your consideration of the points would be greatly appreciated.

If there are any issues that need clarification, or if there is anything else you would like to discuss, please contact me as soon as possible.

Kind regards

Jamie

Jamie Gilliland
Project Manager

ScottishPower Renewables
9th Floor, Scottish Power House, 320 St. Vincent Street, Glasgow, G2 5AD
E: jgilliland@ScottishPower.com
M: +44 (0) 7598 607065

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COVID-19: For all the latest information and details of support available across East Ayrshire, please visit www.east-ayrshire.gov.uk/coronavirus

Appendix B
Copy of SEPA Correspondence

Mealing, Adam

From: GILLILAND, JAMIE <jgilliland@scottishpower.com>
Sent: 03 May 2022 17:08
To: Pepper, Chris
Subject: FW: Whitelee Solar/Hydrogen/BESS project ECU00002198
Attachments: Whitelee response- 4108.pdf

fyi

Internal Use

From: James.McKenzie@gov.scot <James.McKenzie@gov.scot>
Sent: 09 February 2022 10:12
To: GILLILAND, JAMIE <jgilliland@scottishpower.com>
Cc: Ferrier, Daniel <daniel.ferrier@scottishpower.com>; Caskie, Coni <ccaskie@scottishpower.com>; David.Wilson@east-ayrshire.gov.uk; Graham.Mitchell@east-ayrshire.gov.uk
Subject: EXTERNAL:RE: Whitelee Solar/Hydrogen/BESS project ECU00002198

Dear Jamie

Further to my email of 7 December 2021 (below) and in addition to the information requested on that date, **Scottish Ministers request supplementary information consisting of the information referred to by SEPA in the letter dated 8 February 2022 (attached) as being sent to SEPA by Wood Plc.** Noting that the information appears to be a matter on which the removal of an objection from SEPA hinges on, Scottish Ministers consider this information is likely to be will be substantive information about a matter to be included in the EIA report in accordance with regulation 5(2) of the Electricity Works EIA regulations. Scottish Ministers consider this information will be of interest to members of the public, some of whom have similar grounds for objection as SEPA.

I request that Scottish Ministers always be copied in to any exchanges of new information from the applicant with consultees so that they can make it available for the planning authority, consultees and members of the public to consider. It is important that there is open access to information which informs the views of consultees and in turn the determination of the application.

The application will not be processed further until all the supplementary information referred to in this email and that dated 7 December 2021 has been received, or you confirm you do not intend to provide it.

Regards

James

From: McKenzie JR (James)
Sent: 07 December 2021 11:20
To: 'jgilliland@scottishpower.com' <jgilliland@scottishpower.com>
Cc: 'daniel.ferrier@scottishpower.com' <daniel.ferrier@scottishpower.com>; 'ccaskie@scottishpower.com' <ccaskie@scottishpower.com>; 'David.Wilson@east-ayrshire.gov.uk' <David.Wilson@east-ayrshire.gov.uk>;

'Mitchell, Graham' <Graham.Mitchell@east-ayrshire.gov.uk>
Subject: RE: Whitelee Solar/Hydrogen/BESS project ECU00002198

Dear Jamie

ELECTRICITY ACT 1989
THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017
APPLICATION FOR THE PROPOSED SOLAR PV FARM AND BATTERY ENERGY STORAGE SYSTEM ELECTRICITY GENERATING STATION ON LAND ADJACENT TO WHITELEE WIND FARM, NEAR EAGLESHAM MOOR IN THE PLANNING AUTHORITY AREA OF EAST AYRSHIRE COUNCIL

Please see the attached email containing a response to the consultation on the Application for the proposed solar PV farm and battery energy storage system electricity generating station on land adjacent to Whitelee wind farm, near Eaglesham Moor in the planning authority area of East Ayrshire Council (application reference ECU00002198).

The Electricity Works regulations require that Scottish Ministers seek from the developer supplementary information about any matter mentioned in schedule 4 which in the opinion of the Scottish Ministers is directly relevant to reaching a reasoned conclusion on the significant effects of the development on the environment. Scottish Minsters have considered SEPA's response and conclude the information which SEPA has requested from you would appear to relate to the EIA development as a whole, and it is likely that the information you send will be substantive information about a matter to be included in the EIA report in accordance with regulation 5(2) of the Electricity Works regulations.

Further to my email of 28 October **Scottish Ministers request supplementary information which includes information addressing impact on wetlands and private water supplies as highlighted in section 1 and 2 of SEPA's letter.** This must contain a mitigation plan which includes for example floating roads demonstrating how GWDTE have been avoided or protected. This must also contain details of the actual source of private water supply abstractions and this should also include points of use located beyond the radius if the abstraction source lies within the zone referred to be SEPA. It is essential that any environmental information you send to a consultee such as SEPA is also sent to Scottish Ministers and placed in the public domain.

Scottish Ministers also consider that an extension needs to be given to the planning authority until at least 28 February 2022, to allow for preparation of the additional information by SPR, consultation, and representations from members of the public following the public notices which are likely to be required. The extension to the planning authority can be reviewed in due course**. I require confirmation that SPR agrees to, or objects to, the extension which Scottish Ministers will give East Ayrshire Council until 28 February 2022.**

The application will not be processed further until the supplementary information has been received, or you confirm you do not intend to provide it.

Regards

James

From: McKenzie JR (James)
Sent: 28 October 2021 18:19
To: 'jgilliland@scottishpower.com' <jgilliland@scottishpower.com>

Cc: 'daniel.ferrier@scottishpower.com' <daniel.ferrier@scottishpower.com>; 'ccaskie@scottishpower.com' <ccaskie@scottishpower.com>; 'David.Wilson@east-ayrshire.gov.uk' <David.Wilson@east-ayrshire.gov.uk>; 'Graham.Mitchell@east-ayrshire.gov.uk' <Graham.Mitchell@east-ayrshire.gov.uk>
Subject: RE: Whitelee Solar/Hydrogen/BESS project (21/0261/PP) (21/0001/S36) [OFFICIAL]

Dear Jamie

ELECTRICITY ACT 1989
THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017
APPLICATION FOR THE PROPOSED SOLAR PV FARM AND BATTERY ENERGY STORAGE SYSTEM ELECTRICITY GENERATING STATION ON LAND ADJACENT TO WHITELEE WIND FARM, NEAR EAGLESHAM MOOR IN THE PLANNING AUTHORITY AREA OF EAST AYRSHIRE COUNCIL

As you know, the Whitelee EIA Report is common to both the application made to the planning authority under the Town and Country Planning (Environmental impact Assessment) (Scotland) Regulations 2017 and the above application made to Scottish Ministers under the Electricity Act 1989 to which the Electricity Works (Environmental impact Assessment) (Scotland) Regulations 2017 ("the Electricity Works regulations") apply.

The information which the planning authority has requested from you would appear to be equally relevant to the application to Scottish Ministers, and relate to the EIA development as a whole. It would appear likely that the information you send will be substantive information about a matter to be included in the EIA report in accordance with regulation 5(2) of the Electricity Works regulations.

The Electricity Works regulations require that Scottish Ministers seek from the developer supplementary information about any matter mentioned in schedule 4 which in the opinion of the Scottish Ministers is directly relevant to reaching a reasoned conclusion on the significant effects of the development on the environment. Scottish Ministers request that you provide them the same information requested by the planning authority (on peat excavation, private water supplies, noise, the risks of major accidents and disasters and population and human health), I refer you to the email from Graham Mitchell below.

Furthermore, Scottish Ministers request supplementary information regarding the Peat Landslide Hazard Risk Assessment as follows:

- Please provide details on the outputs/ results of the factor based likelihood assessment and how this compares to the slope stability results. This is to reinforce the evaluation and to check that there are no medium/high risk areas (in terms of peat slide likelihood) that require further consideration.
- Please provide details on water table depth inputs adopted for the slope stability analysis.
- Please provide the resolution of the digital terrain model used and any associated limitations if applicable.
- Please provide the resolution of the digital terrain model used and any associated limitation if applicable.
- Please confirm the interpolation method used, along with any limitations if applicable.

Scottish Ministers recommend that additional data sets should be considered for the desk study such as soil mapping and historical plan review. Scottish Ministers have adopted the attached report from consultants Ironside Farrar as their position on the Company's PLHRA.

Scottish Ministers consider the information requested is directly relevant to reaching a reasoned conclusion on the significant effects of the development on the environment. Scottish Ministers also invite the Company to consider the attached consultation responses from SNH and RSPB Scotland and respond to the recommendation to increase the proposed area of peatland restoration as both SNH and RSPB Scotland suggest would be more appropriate.

This email should be considered as a request for supplementary information under regulation 19(2) of the Electricity Works regulations. The Electricity Works regulations also contain provision (at regulation 20) for public notification, service of copies and consultation regarding supplementary information.

When you are ready to submit the information, we can discuss how it should be placed on the ECU portal, sent to consultees etc. and the public notices. Scottish Ministers will also discuss a further extension for the planning authority to respond to the consultation on the application, in light of the anticipated supplementary information.

Regards

James

James McKenzie | Energy Consents Case Manager | Onshore Electricity Policy, Strategic Co-ordination & Consents Division
Scottish Government | 0131 244 1081 | 07870 90 50 90 | James.McKenzie@gov.scot
To view our current casework please visit https://www.energyconsents.scot
To read the Energy Consents Unit's privacy notice on how personal information is used, please visit
https://www.energyconsents.scot/Documentation.aspx

From: Mitchell, Graham <Graham.Mitchell@east-ayrshire.gov.uk>
Sent: 15 October 2021 15:34
To: 'GILLILAND, JAMIE' <jgilliland@scottishpower.com>
Cc: McKenzie JR (James) <James.McKenzie@gov.scot>
Subject: RE: Whitelee Solar/Hydrogen/BESS project (21/0261/PP) (21/0001/S36) [OFFICIAL]

CLASSIFICATION: **OFFICIAL**

Afternoon Jamie,

Thank you for your correspondence of 24 September. Whilst I note the contents the letter provided does not fully address the key information requested on 10 August and further clarified on 26 August. I've set out below the matters which still require FEI to enable an informed assessment / consideration of the applications to take place. This includes the addition of matters relating to the production of a hazardous substance and related matters under the EIA Regulations.

- Whilst there are details about areas of habitat loss, I couldn't see details about anticipated volumes of peat loss to accommodate the respective developments, could you provide details on anticipated excavated peat volumes please – this relates to the requirement under Policy ENV 10 which requires (using the carbon calculator *or other equivalent evidence*) that the balance of advantage in terms of climate change rests with the proposed renewable energy development despite impacts on carbon rich soils. Whilst commentary has been provided on this it remains limited in terms of actual data on carbon emission volumes or carbon savings over the lifetime of the development to evidence the balance.

- Associated with the detailed PWS risk assessment and detailed mapping of PWS sources and pathways previously requested, I've not seen a figure showing the hydrological catchments throughout the area, this would be required to better understand and assess potential hydrological impacts and evidence comments made regarding hydrological catchments are accurate. It remains the case that mapping showing the hydrological catchments throughout this area is required, alongside mapping showing these catchments relative to the proposed infrastructure and PWS sources and their pathways to the receiving properties to fully understand the potential risks to PWS as a result of the proposed development. Mitigation measures you have raised recently (in your letter of 24 September) specific to PWS regarding PWS water quality monitoring and short and long term contingency measures have not been proposed within the EIA Report to date. Such information is relevant in terms of mitigation measures and should be included as part of the suite of FEI if this is now proposed.

- There remains no details regarding operational noise levels generated by the proposed development (hydrogen production facility or battery storage facility) nor cumulative noise assessment of these proposed developments in combination, with commentary on any potential cumulative noise implications for existing operational wind turbines. It is not possible to determine at this stage the likelihood of compliance with any potential condition or what level would be appropriate without any idea as to the noise levels likely to be generated. Details of operational noise levels are required to make an informed assessment / consideration of the project.

- In terms of the fact the hydrogen production facility requires hazardous substances consent which through relevant regulations require details of the measures taken or proposed to be taken to limit the consequences of a major accident and details relevant to the risks and consequences of a major accident. Whilst hazardous substances consent is a separate matter, the fact that the hydrogen production facility will introduce a hazardous substance into the area and given the matters required to be assessed and detailed in such an application would also be applicable to the matters required to be assessed under the EIA Regulations, notably the risks of major accidents and disasters and population and human health, then these are relevant matters which should be assessed as part of the EIA Report for the project. As this hasn't been assessed as part of the EIA Report then it is failing to meet those requirements and would leave any decision taken by the Council or Scottish Ministers liable to challenge.

The Council would confirm that it requires further information to address the matters set out and this can be taken as the written request for such under regulation 26 of the Town and Country Planning (Environmental impact Assessment) (Scotland) Regulations 2017 and regulation 24 of The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 (as reflected in the original written request of 10 August and amended in light of information received to date).

I have discussed these matters with James McKenzie at the ECU (copied in) as these will have a bearing on the Section 36 application too as the additional information relates to the EIA Report. I am aware that there is currently additional information in relation to peat which is yet to be advertised and consulted on by the ECU which the Council will require a copy of (if this information includes more than the Figure 5 from the Peat Slide Risk Assessment, which the Council has been provided with). The Council will also require to publish this information and will wait to synchronise with the ECU to try and ensure any publication of the peat information is done around the same time to avoid further delays. It would be sensible to await the full suite of FEI to publish everything (the matters above and the additional peat information) at once rather than having two rounds of publishing/advertising/consulting on two separate sounds of FEI.

I'm also not aware of receiving a response to the matter raised in my email of 26 August with respect to the traffic volumes. For ease I have copied that below:-

I've also noticed something in the traffic and transport assessment which I'm wondering if you could clarify please:-

The EIA Report notes that the table in Appendix 6B provides the total traffic generated per day, noting a peak in week 10. In the table, week 10 indicates a total of 64 HGVs and 57 LGVs (and 121 total vehicles) per day. Peak LGVs are set out in weeks 11 – 20 as 67.

In paragraph 9.9.42 of the EIA Report, this advises there will be 128 two-way HGV movements (64 HGVs to the site and 64 leaving the site) – so the figure in the table represents total HGVs (64) but this requires to be doubled to account for their movements to and from the site. This paragraph then goes on to advise in respect of LGVs that there would be 66 (rounded down from table for weeks 11-20) two-way movements relating to 33 arrivals and 33 departures, so halving the figure shown in the table.

So there is inconsistency in what is being shown in the table and how this is being interpreted in the EIA Report:- for HGVs the figure is being doubled to get the total HGV movements whilst the LGV figure is being halved, suggesting the figure in the table represents total LGV movements (accounting for arrivals and departures). This is then carried forward into the assessment of impacts on the road network in coming to a figure of vehicle movements during peak hours in paragraphs 9.11.7 – 9.11.8. These paragraphs consider week 10 as having 58 two-way movements (29 arrivals and 29 departures). But if the figure in the table for HGVs in week 10 (64) is a single movement and requires to be doubled, then surely the LGVs shown in the table (57 or 58 if rounded) would also be based on a single movement and would require to be double to account for arrivals and departures, rather than halved? And the subsequent assessment of impacts on the road network based on 58 LGVs travelling to the site and 58 LGVs leaving the site, rather than 29?

So clarity on what the figures in Appendix 6B represent and whether this has been consistently interpreted and applied throughout the assessment undertaken in Chapter 9 of the EIA Report, and any corrections if necessary, should be detailed.

If you can pull the requested information together and upload it through the online portal to each application case file (unless solely specific to one case) I can discuss further with the ECU to try and ensure the relevant publication/advertising/consultation is carried out approximately in parallel to reduce delays.

Regards
Graham

From: GILLILAND, JAMIE <jgilliland@scottishpower.com>
Sent: 24 September 2021 16:34
To: Mitchell, Graham <Graham.Mitchell@east-ayrshire.gov.uk>
Cc: Ferrier, Daniel <daniel.ferrier@scottishpower.com>; Caskie, Coni <ccaskie@scottishpower.com>; Wilson, David <David.Wilson@east-ayrshire.gov.uk>
Subject: Whitelee Solar/Hydrogen/BESS project (21/0261/PP) (21/0001/S36)

Dear Graham

Please find attached a letter and appendices responding to the key issues relating to the Whitelee Solar/Hydrogen/BESS project (21/0261/PP) (21/0001/S36) and providing our views on the processing of the applications.

As mentioned in the letter, we are very keen to progress with the project, therefore your consideration of the points would be greatly appreciated.

If there are any issues that need clarification, or if there is anything else you would like to discuss, please contact me as soon as possible.

Kind regards

Jamie

Jamie Gilliland
Project Manager

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SEPA
Scottish Environment Protection Agency
Buidheann Dion Àrainneachd na h-Alba

Our Ref: PERMS 4108
Your Ref: ECU00002198
21/0261/PP

SEPA Email Contact:
Planning.sw@sepa.org.uk

FAO James Mckenzie,Energy Consents Unit,
(James.mckenzie@gov.scot, econsents@admin.gov.scot)
David Wilson, East Ayrshire Council (David.wilson@east-ayrshire.gov.uk, consultation@east-ayrshire.gov.uk)

8 February 2022

Dear Sir

Land Adjacent to Whitelee Windfarm - Solar PV Farm and Battery Energy Storage System, HV cabling and associated access(es), link road and ancillary infrastructure
ECU reference - ECU00002198 SEPA reference - 4108

Erection of green hydrogen production facility with associated temporary laydown area and ancillary infrastructure including substation, various plant and perimeter security fencing at Land Adjacent to Whitelee Windfarm
East Ayrshire Council Planning reference - 21/0261/PP SEPA reference - 4108

Following our consultation response to the above proposal dated 1st December 2021 we've received clarification from Wood Plc on the points raised and are now able to remove our holding objection.

1. Wetlands

1.1 It was agreed that a mitigation plan to minimise impacts on GWDTEs would be included within a conditioned CEMP.

2. Private Water Supplies Section 2

2.1 It was confirmed that a 250 m buffer around Best Friends Cottage PWS would extend to the haul road and its junction with the B764. It was also confirmed that the depth of the haul road excavations would be less than 1m and would therefore comply with the guidelines set out in SEPA planning guidance LUPS-GU31 (Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems).

3. Peat and watercourse crossings

3.1 As per our response of 1 December 2021 the need for a Peat Management Plan and agreed watercourse crossings design should by ensured by way of planning conditions.

4. Regulatory advice

4.1 Details of regulatory requirements and good practice advice, for example in relation to private drainage, can be found on the regulations section of our website. If you are unable to find the advice you need for a specific regulatory matter, please contact a member of the local compliance

Angus Smith Building
6 Parklands Avenue, Eurocentral,
Holytown, North Lanarkshire ML1 4WQ
tel 01698 839000 fax 01698 738155
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team at: sws@sepa.org.uk.

If you have queries relating to this letter, please contact planning.sw@sepa.org.uk including our reference number in the email subject.

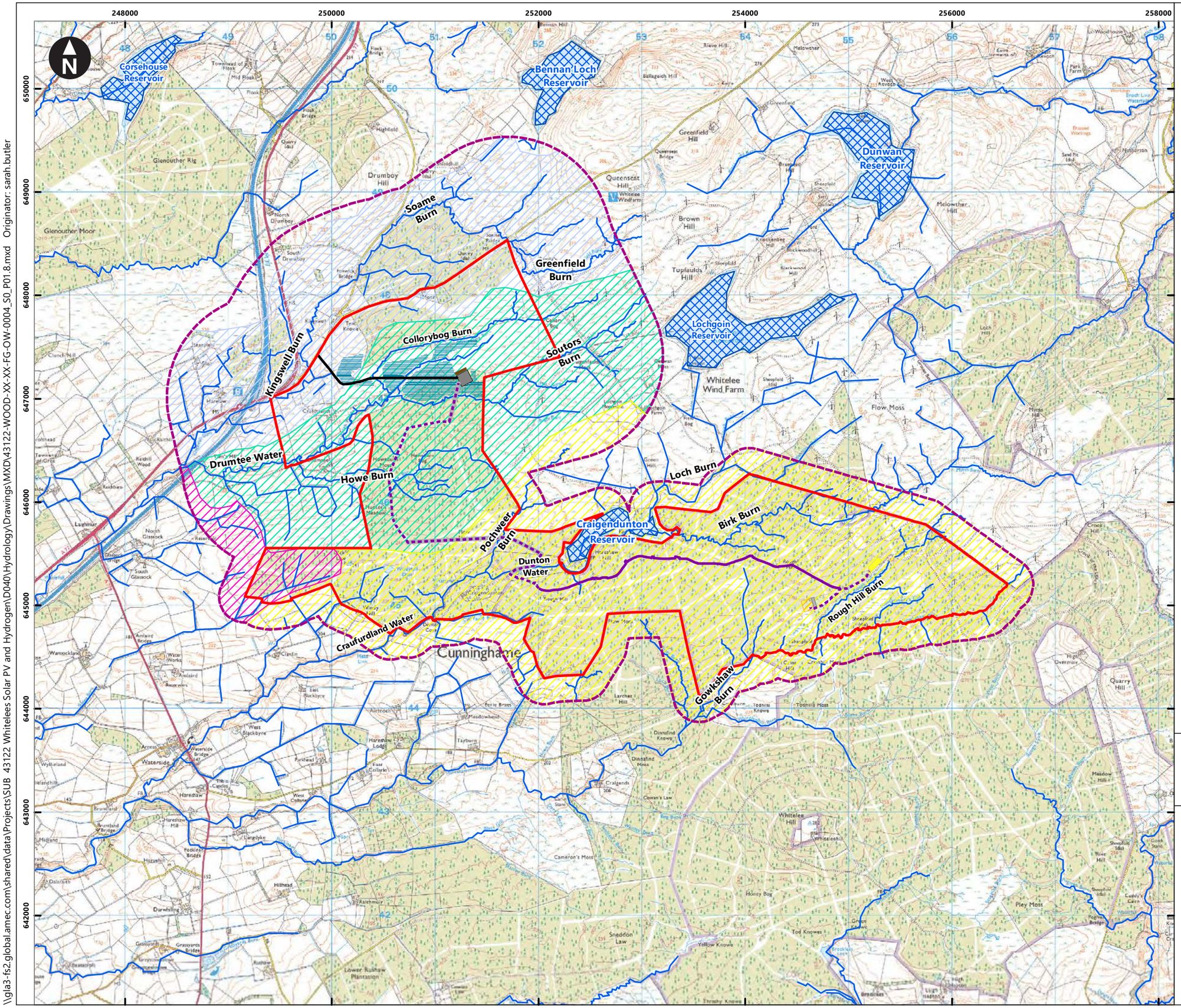
Yours sincerely

Lorna Maclean
Planning Unit Manager (SW)
Planning Service

Ecopy to: Dr Shaun Salmon, shaun.salmon@woodplc.com

Appendix C
Hydrology Figures

\\gla3-fs2.global.amec.com\shared\data\Projects\SUB 43122 Whitelees Solar PV and Hydrogen\D040\Hydrology\Drawings\MXD\43122-WOOD-XX-XX-FG-OW-0004_S0_P01.8.mxd Originator: sarah.butler



Key

- Extent of Project Landholding
- Study Area
- Existing cable
- New cable
- Link/haul road (S36)
- Proposed access track
- Green Hydrogen Production Facility (Full PP)
- Electrolyser Laydown Area (Full PP)
- PV Layout
- Whitelee Extension As Built Substation
- BESS Temp Compound
- Proposed BESS Compound
- Watercourse
- Loch
- Craufurdland Water Catchment
- Drumtee Water Catchment
- Kingswell Burn Catchment
- Fenwick Water Catchment

0 500 1,000 1,500 2,000 m

Scale at A3: 1:35,000

Client

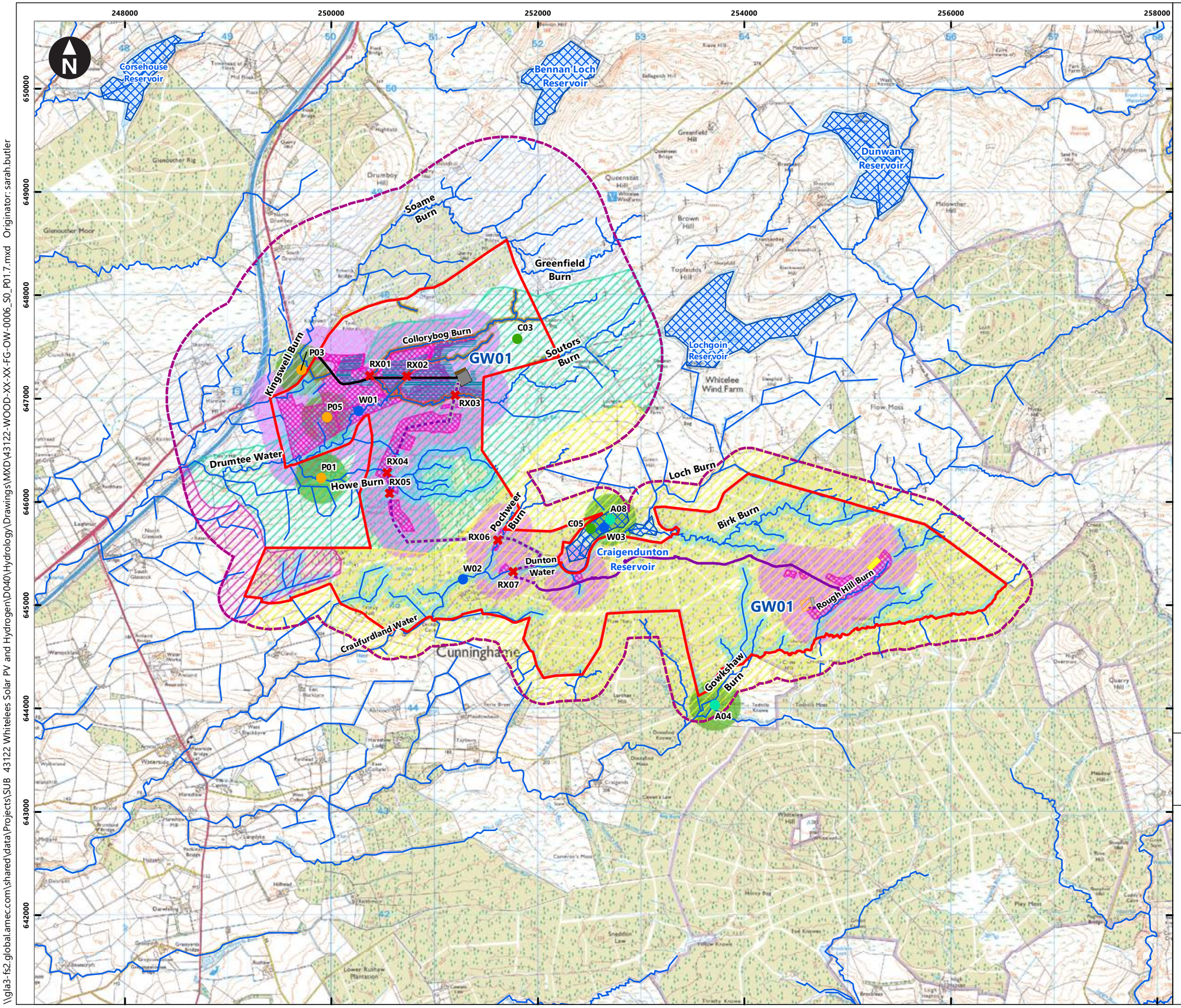
SCOTTISHPOWER RENEWABLES

Whitelee Windfarm Extension Solar PV, Green Hydrogen Production and Battery Storage Facilities

Figure 1 Proposed Development in Relation to Hydrological Catchments

February 2022

wood.



Client

SCOTTISHPOWER RENEWABLES

Whitelee Windfarm Extension Solar PV, Green Hydrogen Production and Battery Storage Facilities

Figure 2 Hydrological and Hydrogeological Receptors Requiring Assessment

January 2022

wood.

248000 250000 252000

649000 648000 647000 646000 645000

Extent of Project Landholding
Study Area
Existing cable
New cable
Link/haul road (S36)
Proposed access track
Electrolyser Laydown Area (Full PP)
Green Hydrogen Production Facility (Full PP)
PV Layout
Whitelee Extension As Built Substation
BESS Temp Compound
Proposed BESS Compound
Loch
Watercourse
Watercourse 20m buffer
Watercourse 50m buffer
Habitat Assessed as of High or Moderate Groundwater Dependency (C04)
PWS, abstraction and discharge 250m buffer
GWDTE 250m buffer
Craufurdland Water
Drumtee Water
Fenwick Water
Kingswell Burn
Abstraction/ discharge
PWS
Conservation site
Watercourse crossing
Surface water body

0 500 1,000 m
Scale at A3: 1:20,000

Client

SCOTTISHPOWER RENEWABLES

Whitelee Windfarm Extension Solar PV, Green Hydrogen Production and Battery Storage Facilities

Figure 3 Hydrological and Hydrogeological Receptors Requiring Assessment (Northern Section)

February 2022

wood.

Appendix D
Peat Landslide Hazard Risk Assessment

WHITELEE WINDFARM EXTENSION SOLAR PV, GREEN HYDROGEN PRODUCTION AND BATTERY STORAGE FACILITIES

SUPPLEMENTARY ENVIRONMENTAL INFORMATION (SEI)

PEAT SLIDE RISK ASSESSMENT (REVISED)

APRIL 2022

Prepared By:

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TABLE OF CONTENTS

1 INTRODUCTION

1.1 Background

Arcus Consultancy Services was commissioned by ScottishPower Renewables (UK) Limited (SPR) to carry out a Peat Slide Risk Assessment (PSRA) for the proposed Whitelee Solar, Battery and Hydrogen covering both the Section 36 application (Solar and Battery Energy Storage System (BESS) infrastructure) and the local application to East Ayrshire Council for the proposed Green Hydrogen Electrolyser Facility application sites (The Development). The Development will consist of the following key infrastructure:

- PV farm comprising approximately 62,000 solar panels;
- Green Hydrogen Electrolyser Facility;
- Battery Energy Storage System (BESS) infrastructure;
- Grid Connection; and
- Associated Access Tracks.

The proposed Site layout is shown on Figure 1 appended with this report in Appendix A.

This report responds to clarifications requested by the Scottish Government Energy Consents Unit, and will support a Further Environmental Information (FEI) package.

1.2 Scope and Purpose

This PSRA provides factual information on the peat survey results relating to the proposed development area. The desk-based information and Site surveys have been utilised to assess the potential risk of any peat landslide. The methodology adopted and details on the assessment are outlined in Sections 3, 4 and 5. The assessment has been undertaken in accordance with Scottish Government Guidance[1] in assessing the likelihood and consequence of such an event which is considered an appropriate guidance due to the project being an electricity generation scheme, the rural setting and the existing site conditions.

The references to EIAR chapters and associated documents relate to the Environmental Impact Assessment Report prepared by Wood Group UK Limited and submitted to the Scottish Government for ScottishPower Renewables in April 2021, associated with the Development 'Whitelee Windfarm Extension Solar PV, Green Hydrogen Production and Battery Storage Facilities'.

1.1 Project team

Team Member	Job Title	Qualifications	No. Years Experience
Brendan MacKinnon	Engineer	BSc (Hons), MSc	3 Years
David Ballentyne	Principal Engineer	BSc (Hons)	18 Years
Tomos Ap Tomos	Technical Director	BEng (Hons) MCIHT	25 Years

This assessment was undertaken by Brendan MacKinnon (BSc Hons, MSc), a Civil Engineer of 3 years, and was supported by David Ballentyne a Geo-Environmental Civil Engineer with

[1] The Scottish Government (2017) Peat Landslide Hazard and Risk Assessments - Best Practice Guide for Proposed Electricity Generation Developments Guidance [Online] Available at: http://www.gov.scot/Resource/0051/00517176.pdf (Accessed 04/04/2022)

over 18 years of experience in ground condition assessment. This Chapter has been technically reviewed by Tomos Ap Tomos, Technical Director of Engineering.

The site walkovers were undertaken May 2021 by experienced Engineers with over 10 years' experience of assessing and surveying peatland environments and renewables site assessment.

1.2 Scoped Out

The proposed BESS area is scoped out of this assessment due to its location within a former compound area comprising an existing engineered platform. Therefore, this area did not pose any peat slide risk.

2 SITE INFORMATION

2.1 Site Description and Topography

The Site is located approximately 6km south west of Eaglesham within an area of commercial forestry plantation and bogland, and adjacent to Whitelee Wind Farm. The ground elevations within the Southern Section range from approximately 220 metres Above Ordnance Datum (mAOD) at Howeburn Moss (National Grid Reference (NGR) NS 5055 4628) in the north eastern part, to 275mAOD on higher ground at Rough Hill (NS 5443 4539) within the southern part. In the Northern Section, elevations range from 200mAOD in the south western corner, near Drumtee (NS 4965 4639), to 265 mAOD at the high point in the north eastern corner (NS 5148 4807). Further information on Solid Geology is included in Chapter 8 of the EIAR, April 2021.

2.2 Published Geology

2.2.1 Superficial Soils

BGS maps indicate that the superficial deposits beneath the Site comprise predominantly peat deposits, which are present in the centre and the east of the site. Devensian diamicton till is shown to underlie the peat and is predominantly encountered at the surface in the western part of the Northern Section. Peat is also present at isolated locations to the east of the property known as 'Moor' (for example, at NS 5131 4793), and also along Collorybog Burn and Drumtee Water. Alluvium (silt, sand and gravel) occur along the main river valleys within the Study Area, although they are discontinuous in some places. Further information on Superficial Soils is included in Chapter 8 of the EIAR, April 2021.

Figure 2 illustrates the published Superficial Soils.

2.2.2 Solid Geology

The bedrock geology of the Site mainly comprises extrusive igneous rock of carboniferous age, which predominantly consists of microporphyritic basalt of the Clyde Plateau Volcanic (CPV) Formation. This is part of the Strathclyde Group and the rocks comprise lavas, tuffs and volcaniclastic sediments with a wide range of compositions. On BGS geological mapping the CPV Formation is recorded as being present at surface or at shallow depth at a number of locations, for example at NS 5076 4699.

The bedrock is truncated by two sets of faulting with a north east to south west trend and a north west to south east trend. This faulting occurs within the Study Area and also across the wider area, forming boundaries to other Carboniferous volcanic formations to the north and south, in turn forming a corridor of CPV Formation which runs from the north of the Site through to the Whitelee Forest in the south east of the site.

Figure 3 illustrates the published Solid Geology

2.2.3 Geomorphology

Geomorphological mapping can act as a primary instrument in highlighting geological risk factors when considering peat slides. The Scottish Government Guidance provides 5 basic features in which a geomorphological map should convey:

- The position of major slope breaks (e.g. convexities and concavities);
- The position and alignment of major natural drainage features (e.g. peat gullies and streams);
- The location and extent of erosion complexes (e.g. haggs and groughs, large areas of bare peat);
- Outlines of past peat landslides (including source areas and deposits), if visible; and

- The location, extent and orientation of cracks, fissures, ridges and other prefailure indicators.

Figure 4 'Geomorphological Map' has been prepared to inform a baseline information of the Site with consideration given to existing site conditions through site visit and aerial photography, slope angle and geomorphological data.

The reservoir 'Craigendunton Reservoir' is located just north of the site boundary where various burns issue. Several tributaries and run-off's are also located across the site including Collorybog Burn, Drumtree Water, Dunton Water, Howe Burn and Birk Burn.

Across the Site as a whole, there is little evidence of past peat failure and during the site walkover, there was no existing slippages with exception to some very localised river bank erosion. BGS mapping on landslides recorded none within the site or immediate vicinity.

The Site has varying slopes, although large expansions of the area were generally flat. Localised steeper slopes were present in the vicinity of the watercourses, and within the north of the site, the gradients sloped gently downward to the north-west. The majority of the developable Site area is between 0^{o} – 15^{o} slopes. Watercourses and notable slopes on the Site are presented in Figure 4 'Geomorphology Map' while more detailed slope data is presented in Figure 5 'Slope Gradient' in Appendix A of this PSRA.

2.3 Hydrology and Hydrogeology

An overview of the hydrology is provided below, however the detailed Hydrology and Hydrogeology assessment is included in Chapter 8 of the EIAR, April 2021.

2.3.1 Hydrology

Dunton Water issues from Craigendunton reservoir located in the northern site area and drains south west before merging with Calf Fauld Burn and flowing into Craufurland Water approximately 1.5 km south west of site.

In the south east of site Slough Burn drains south west before converging with Gawkshaw Burn and several other tributaries before flowing into Hareshawmuir Water. Collorybog Burn converges with Drumtee Water in the north of site before flowing south west. Howe Burn drains west, just south of Drumtee Water, before converging with Drumtee Water.

Birk burn in the north east of site drains west to Craigendunton reservoir. Dunton Water has a SEPA overall status of "Good".

2.3.2 Hydrogeology

BGS 1:50,000 digital mapping and the BGS GeoIndex shows the Carboniferous Strathclyde Group bedrock beneath the Site is a Class 2C low productivity aquifer in which highly indurated greywackes have limited groundwater in the near-surface weathered zone and secondary fractures. As a result, the bedrock can locally yield only small amounts of groundwater with short and localised flow paths in near-surface weathered zone and secondary fractures.

2.4 Sources of Information

The following sources of information were used as part of the desk study investigations:

- British Geological Survey - Online GeoIndex;
- Ordnance Survey (OS) topographical information;
- Aerial and Satellite photography via Ordnance Survey and Google Earth.
- Soil Survey of Scotland - 'MacAulay Institute for Soil Research' 1984;
- Soil Survey of Scotland - 'Scottish Peat Surveys' 1964;

- Scottish Government (SG) - 'Peat Landslide Hazard and Risk Assessments' December 2017;
- Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey, Guidance on Developments on Peatland;
- The Scottish Government - Scotland's Third National Planning Framework, 2014;
- The Scottish Government - Scottish Planning Policy, 2014;
- Assessments by other EIA specialists (specifically hydrology and ecology for data on sensitive receptors);
- Scotland's Environment Interactive Map

3 GUIDANCE AND METHODOLOGY

3.1 General Guidance on Peat Failure

The Scottish Government guidance utilised to guide the approach to the surveys and assessment (as outlined in Section 1.2) was developed to guide developers, consultants and contractors on the approach to survey and assessment for Electricity Generation projects.

The SG guidance divides peat instability into two categories[2], 'peat slides' and 'bog bursts'. The guidance states that peat slides have a greater risk of occurrence in areas where:

- Peat is encountered at or near to ground surface level;
- The thicknesses are recorded in the region of 2.0 m (above which, in general terms, peat instability would increase with peat thickness); and
- The slope gradients are steep (between 5° and 15°). The slope gradients are derived from Ordnance Survey (OS) Terrain 5 (Five Metre) with contour height data at 5 metre intervals.

Figure 5 illustrates the 'Slope Gradients' at the site.

Bog bursts are considered to have a greater risk of occurrence in areas where:

- Peat depth is greater than 1.5 m; and
- Slope gradients are shallow (between 2° and 10°).

It should be noted however that peat instability events, although uncommon, can occur out with these limits and reports of bog bursts are generally restricted to the Republic and Northern Ireland.

Preparatory factors which effect the stability of peat slopes in the short to medium-term include:

- Loss of surface vegetation (deforestation);
- Changes in sub-surface hydrology;
- Increase in the mass of peat through accumulation, increase in water content and growth of tree planting; or
- Reduction in shear strength of peat or substrate due to chemical or physical weathering, progressive creep and tension cracking.

Triggering factors which can have immediate effect on peat stability and act on susceptible slopes include:

- Intensive rainfall or snow melt causing pressures along existing or potential peat/substrate interfaces;
- Snow melt;
- Alterations to drainage patterns, both surface and sub-surface;
- Peat extraction at the toe of the slope reducing the support of the upslope material;
- Peat loading (commonly due to stockpiling) causing an increase in shear stress; and
- Earthquakes or rapid ground accelerations such as blasting or mechanical movement.

Consideration of peat stability should form an integral part of the design in development. While peat does not wholly provide a development constraint, areas of deep peat or peat deposits on steep slope should be either avoided through design and micro-siting or mitigation measures should be designed to avoid potential instability and movement.

[2] The Scottish Government (2017) Peat Landslide Hazard and Risk Assessments - Best Practice Guide for Proposed Electricity Generation Developments Guidance [Online] Available at: http://www.gov.scot/Resource/0051/00517176.pdf (Accessed 04/04/2022)

3.2 Assessment Approach

This PSRA has been carried out in accordance Scottish Government (SG) guidance of 2017 titled 'Peat Landslide Hazard and Risk Assessments - Best Practice Guide for Proposed Electricity Generation Developments', Scottish Government.

In June 2014, the new 'Scottish Planning Policy' (SPP)[3] and 'National Planning Framework (NPF3)[4] were published. In relation to peat and the assessment of effects on resource, NPF3 references Scottish Natural Heritage 'Scotland's National Peatland Plan'. These policy, framework and guidance documents are therefore also considered in this PSRA. The PSRA undertaken is based on;

- Desk based assessment;
- Site visits;
- Historic peat probing data;
- Further peat probing including infrastructure specific probing; and
- A hazard and risk ranking assessment.

The area of the Development subject to assessment was determined by the Proposed Site Layout as provided by the client and included in the EIAR report in April 2021, which considered initial findings from desk studies and anticipated peat deposits as well as other physical and environmental constraints.

3.3 Peat Probing Methodology

Peat probing was undertaken by Arcus to inform the Peat Slide Risk Assessment and to supplement existing peat information, and primarily to cover the areas of infrastructure which had no peat depth data. This included capturing the remainder of the solar array areas with no data on a 50m x 50m grid basis. In addition to this, detailed probing data was collected along the grid connection route, at 50m centres and then adjacent either side in accordance with SG guidance.

Peat Cores were also obtained from the area of the green hydrogen electrolyser facility.

3.3.1 Development of Hazard Rank

The early stages of the PSRA includes a desk study of existing data, mapping and site visit. Following identification of peat depths within the Site, the assessment was carried out to determine the potential effects on the peat resource from construction activities which would include:

- Construction of tracks;
- Foundation construction;
- Grid Route excavations
- Construction of hardstanding/laydown; and
- Temporary Storage of Peat

An assessment of the peat probing data and a review of any available Site information would be undertaken and a hazard rank calculated zonally across the Development reflecting risk of peat instability/constraint to construction.

Where practical, the Development layout would be designed to avoid areas of a risk score above 'low'. Where this has not been achieved, areas affected have been discussed in both the EIA as having a potentially significant effect (pre mitigation), with relative mitigation measures proposed to reduce this, and if required can be offered for the risk register which

[3] Scottish Government Scottish Planning Policy (2014): https://www.gov.scot/publications/scottish-planning-policy/ (Accessed 13/11/2019)

[4] Scottish Government National Planning Framework 3: https://www2.gov.scot/About/Performance/scotPerforms (Accessed 13/11/2019)

sets out specific mitigation measures which are considered necessary to reduce the risk of inducing instability.

4 SITE SURVEYS

4.1 Introduction

The existing peat depths across the Site have been determined through a phased survey approach. The survey was initiated to inform the EIAR to inform the design of the development. Further probing then took place post submission in response to request for PSRA and therefore gathering further data to inform the PSRA.

Initial peat depth surveys were undertaken by McArthur Green throughout 2020 comprising 50 m grid coverage across the northern part of the Development area, primarily the solar area. This methodology was applied to the remainder of the solar area in May 2021 by Arcus. This method was in accordance with Scottish Government guidance for investigating peat.

Peat depths were measured along the proposed grid connection at 50 m centres with offsets of 25 m on either side of the centre line.

4.2 Peat Depth

Throughout the peat surveys to date across the Development, a total of 516 probes were sunk. Over 21% of these recorded no peat or peat less than 0.5 m, while over 17% recorded peat between 0.5 m and 1.0 m. Thick peat (where the depth was greater than 1.0 m) was recorded at almost 62% of locations.

Peat depths ranged from 0 m to 5.3 m depth across the Site and the average peat depth was 1.70m. The deepest peat at the site was recorded in the central area where the grid connection passed through the Mosses and Bog and there were localised deep pockets recorded in the north-eastern area of the electrolyser and in the topographic flat/low lying areas in and around the proposed solar areas in the north western site area.

Figure 7 'Interpolated Peat Depths' (determined using the Inverse Distance Weighting (IDW) method of interpolation) included in Appendix A illustrates the peat depths across the site area. The distribution of peat deposits along the proposed tracks and infrastructure are shown on Figure 6 'Recorded Peat Depths' is included in Appendix A. The peat depth figures were based on the peat probe data available at the time of reporting.

Peat depths 1 are summarised in Table 1 while some key Site survey locations are illustrated in photographs 1 to 4. Additional photographs are included in Appendix C

Photograph 1 – Electrolyser Area Facing West

Photograph 2 – Southern Solar Area Facing West.

Photograph 3 – BESS Area Facing West

Photograph 4 – Grid Connection route Howeburn Moss Facing East

The peat slide risk assessment was undertaken on the Proposed Site layout as provided by the client and submitted as part of the EIAR in April 2021 and presented in Figure 1 'Site Layout Plan' in Appendix A. Table 1 summarises the peat depths recorded across the Site.

Table 1 – Peat Depth Summary

Peat Depth Range (m)	No of peat probes	Percentage of Total (%)
0.00 - 0.50	158	30.6
0.51 - 1.00	78	15.1
1.01 - 1.50	55	10.6
1.51 - 2.00	54	10.5
2.01 - 2.50	40	7.7
2.51 - 3.00	45	8.7
3.01 - 3.50	24	4.7
3.51 - 4.00	19	3.7
4.01 - 4.50	7	1.4
4.51 - 5.00	10	1.9
5.01 - 5.50	26	5.1

4.3 Substrate

To assist with the peat slide risk assessment, an estimation of the underlying substrate was obtained during the visit, comprising a resistance-based approach at base of probe.

- Gradual refusal – Clay;
- Crunching/Gritty – Weathered Rock/Gravel; or
- Abrupt Refusal/Hard – Rock

The substrate parameters are included in the Hazard and Exposure Assessment in Section 5 of this report.

4.4 Peat Cores

Two peat cores were obtained from the area of the proposed Hydrogen Electrolyser within the greatest depths during the peat probing assessment, in order to further characterise the peatland. The methodology in which the peat coring was undertaken was guided by the Peatland Survey (2017) *Guidance on Developments on Peatland*[5], commissioned by the Scottish Government, Scottish National Heritage and SEPA. An outline of the methodology along with photographs and characterisation of the peat cores are presented in the Peat Coring Records in Annex B.

The cores samples were obtained between 0.9m and 2.3m from the west and east respectively. Beyond these depths the cores were either restricted by the underlying substrate or the peat was unrecoverable due to the near structureless nature of the material

Humification of peat is determined using the Von Post scale which indicates the degree to which peat has undergone humification or, more correctly, a type of decomposition which includes breakdown under anaerobic conditions. The Von Post Scale (H) ranges from 1 to 10, the higher the number the higher the degree of humification.

Humification values from the cores varied between 3 (0-0.50m) and 9 (from 2.0-2.30m) within the core in the western area, whilst humification values for the core in the eastern area was 2 and 4 between 0 and 0.9m respectively.

[5] Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. *Guidance on Developments on Peatland*,

The definitions of the Von Post values are presented in the Peat Coring Records in Appendix D.

5 HAZARD AND EXPOSURE ASSESSMENT

5.1 Background

A 'Hazard Ranking' system has been applied across the Site based on the analysis of risk of peat landslide as outlined in the Scottish Government guidance. This is applied on the principle:

Hazard Ranking = Hazard x Exposure

Where 'Hazard' represents the likelihood of any peat slide event occurring and 'Exposure' being the impact or consequences that a peat slide may have on sensitive receptors that exist on and around the study area.

5.2 Methodology

The determination of Hazard and Exposure values is based on a number of variables which impact the likelihood of a peat slide (the Hazard), and the relative importance of these variables specific to the Site.

Similarly, the consequences or Exposure to receptors is dependent on variables including the particular scale of a peat slide, the distance it will travel and the sensitivity of the receptor.

In the absence of a predefined system, the approach to determining and categorising Hazard and Exposure is determined on a Site by Site basis. The particular system adopted for the Development PSRA assessment is outlined in the following sub sections.

5.3 Hazard Assessment

The potential for a peat slide to occur during the construction of a electricity generation project depends on several factors, the importance of which can vary from Site to Site. The principal factors considered in determining the hazard rank are:

- Peat depth;
- Slope gradient;
- Substrate material;

Further consideration is given to the conditions which surround each probe locations, therefore the assessment draws on the presence of the following to support the principal factors:

- Evidence of instability or potential instability (is there existing peat hags, cracks or other surface instabilities);
- Vegetation cover(is the vegetation intact or was there areas of bare peat); and
- Hydrology (the presence of surface watercourses/ditches etc).

Without a sufficient peat depth and a prevailing slope, peat slide hazard would be negligible for the Development, however the substrate material is also considered a relevant factor in relation to the mechanics of slide.

5.4 Hazard Rating

When several factors may impact on the Hazard potential, a relative ranking process is applied attributing different weighting to each factor as shown below.

Table 3: Coefficients for Slope Gradients

Slope Angle (degrees)	Slope Angle Coefficients
Slope < 2°	1
2° < Slope < 4°	2
4° < Slope < 8°	4
8° < Slope < 15°	6
Slope >15°	8

Table 4: Coefficients for Peat Thickness and Ground Conditions

Peat Thickness	Ground Conditions Coefficients
Peaty or organic soil (<0.5m)	1
Thin Peat (0.5 – 1.0m)	2
Deep Peat (>1.0m)	3*
Very Deep Peat (>3.0)	8

* - Note that thicker peat generally occurs in areas of shallow gradient and records indicate that thick peat does not generally occur on the steeper gradients.

Table 5: Coefficients for Substrate

Substrate Material	Substrate Coefficients
Gravel (G)	1
Rock (R)	1.5
Clay (C)	2
Not proven	2
Slip material (Existing materials)	5

The Hazard Rating Coefficient for a particular location is calculated using the following equation:

Hazard Rating Coefficient = Slope Gradient x Peat Thickness x Substrate

From the Hazard Rating Coefficient, the risk to stability can be ranked as set out in Table 6.

Table 6: Hazard Rating

Hazard Rating Co-efficient	Potential Stability Risk (Pre-Mitigation)
<5	Negligible
5 to 15	Low
16 to 30	Medium
31 to 50	High
> 50	Very High

Across the development area, using peat depths recorded in the 2021 work and the historical peat data made available to Arcus, the average peat depth was calculated to be just greater than 1.60m. The deepest peat was found in an expansive flat lying area of moss and bog in the central western area of the Site along the proposed underground cable connecting the proposed Hydrogen and Solar development to existing and proposed

infrastructure. Peat depths are presented in detail in Figure 6 'Recorded Peat Depths' and Figure 7 'Interpolated Peat Depths' in Appendix A.

The substrate evaluation gathered during the peat probing surveys primarily recorded a gravel or rock substrate beneath the peat. Locally, clay was recorded. The findings were consistent with the superficial soils mapping which illustrated that the site was predominantly peat with localised glacial till, as presented in Figure 2 'Superficial Soils' in Appendix A. Historical data was conservatively awarded a 'Not Proven' for analysis purposes as substrate data was not recorded during this initial phase of surveying.

Utilising the OS 5m DTM gradient with the peat thicknesses recorded and the substrate, estimation, the hazard rating calculations were derived and indicated relatively low risk ratings, with 441 of the 516 data points presented Low or Negligible stability risks (pre-mitigation), a further 62 rated as Medium risk, while 13 points had a High rating.

The 'High' rating probes were located sporadically across the wider study area, mostly out with the infrastructure footprint with exception of a single point beneath a proposed track, and three single locations across the length of the proposed cable route. While the risk rating coefficient was derived primarily from the peat depths, gradients and conservative estimation of substate, the stability analysis recorded these locations to be stable (greater than 1.0), although Factor of Safety values (FoS) varied between 1.6 and 5.4 for the high hazard rating locations. Peat Stability Assessment is explained in Section 5.5.

5.5 Peat Stability Assessment

The likelihood of a particular slope or hillside failing can be expressed as a Factor of Safety. For any potential failure surface, there is a balance between the weight of the potential landslide (driving force or shear force) and the inherent strength of the soil or rock within the hillside (shear resistance).

The stability of a slope can be assessed by calculating the factor of safety F, which is the ratio of the sum of resisting forces (shear strength) and the sum of the destabilising forces (shear stress):

$$F = \frac{c' + (\gamma - m\gamma_w) z \cos^2 \beta \tan \phi'}{\gamma z \sin \beta \cos \beta}$$

where c' is the effective cohesion, γ is the bulk unit weight of saturated peat, γ_w is the unit weight of water, m is the height of the water table as a fraction of the peat depth, z is the peat depth in the direction of normal stress, β is the angle of the slope to the horizontal and ϕ' is the effective angle of internal friction. Values of $F < 1$ indicate a slope would have undergone failure under the conditions modelled; values of $F > 1$ suggest conditions of stability.

In the absence of any historical hydrological monitoring, an assumption on groundwater levels has been adopted for the assessment, that 90% of the peat column at each probe location is below the water table, an overall conservative approach. While the assessment considers the recorded data at each of the peat probes to establish hazard ranking for the purposes of the peat stability analysis, groundwater depth is conservatively assumed to be within close proximity of the surface, based on the understanding of peat and its hydrological properties that it can consist of up to 90% water by volume (Hobbs, 1986,1987).

Assumed geotechnical parameters have been sought from various literature values and for the purposes of the assessment in this report have the following average values have been utilised in the formula to inform the stability assessment;

C′ – effective cohesion (kPa), typically ranging from 2.5 to 8.5 therefore **5.0** has been adopted for the purposes of the assessment.

ϕ – effective angle of friction (°), typically ranging from 21.6 to 43.5 therefore **29.6** has been adopted for the purposes of the assessment.

ϒ – unit weight (kN/m2), typically ranging from 9.61 to 10, therefore **10** has been adopted for the purposes of the assessment.

In accordance with the best practice method, F values of <1.0 indicate slopes that would experience failure under the modelled conditions and as such are considered areas of high risk. However, Boylan et al (2008) indicate that a relatively high value of F=1.4 should be used to identify slopes with the potential for instability. Adopting a similar and more onerous approach, high risk areas are indicated where F is <1.0, medium risk areas are indicated between 1.01 to 1.50, low risk between 1.51 and 2.00 and very low/negligible values > 2.0.

Using digital terrain modelling and GPS co-ordinates of each peat probe, a factor of Safety, F has been calculated for each probe location which has been created through ArcGIS Spatial Analyst tools. The 'Factor of Safety Plan' is shown on Figure 8.

The risk rating classification and 'Factor of Safety' have both confirmed that the potential peat stability risks are generally low and negligible, and where required mitigation implemented to reduce the risks of any peat slide in medium and high-risk areas. Mitigation is summarised in Table 13.

5.6 Exposure Assessment

The main Exposure receptors identified within the Site and surrounding area which could potentially be affected in the event of a peat slide were existing infrastructure, existing tracks, dwellings, watercourses and associated tributaries and sensitive habitats. The proposed infrastructure was also considered a receptor.

The impact of a peat slide on receptors can be assessed on a relative scale based on the potential for loss of habitat, a historical feature or disruption/danger to the public. To effectively assess the impact, the assessment of Exposure effect must also consider the distance between the hazard and the receptor, and the relative elevation between the two.

5.7 Exposure Rating

Similar to the Hazard Rating, the Exposure Ratings were determined using relative ranking process by attributing the different weighting systems to each factor as shown below:

Table 6: Coefficients for Receptor Type

Receptor	Receptor Coefficients
Electrolyser Laydown Area	2
PV Layout	3
Existing/Proposed Tracks/Temporary Compound	3
Minor watercourses and tributaries.	6
Electrolyser, New Cables/Grid Connection	6
Residential Properties/Community, Watercourses/Lochs, Blanket Bog	8

Table 7: Coefficients for Distance from Receptor

Distance from Receptor	Distance Coefficients
> 1 km	1
100 m to 1 km	2
10 m to 100 m	3
<10 m	4

Table 8: Coefficients for Receptor Elevation

Receptor Elevation	Elevation Coefficients
< 10 m	1
10 m to 50 m	2
50 m to 100 m	3
> 100 m	4

The Exposure Rating Coefficient for a particular location is calculated using the following equation:

Exposure Rating Coefficient = Receptor x Distance x Elevation

From the Hazard Rating Coefficient, the risk to stability can be ranked as set out in Table 9.

Table 9: Exposure Rating

Exposure Rating Co-efficient	Potential Stability Risk (Pre-Mitigation)
<6	Very Low
7 to12	Low
13 to 24	High
25 to 30	Very High
>30	Extremely High

5.8 Rating Normalisation

In order to achieve an overall Hazard Ranking in accordance with the Scottish Government Guidance, the Hazard and Exposure Rating Coefficient derived from the coefficient tables are normalised as shown in Table 10.

Table 10: Rating Normalisation

Hazard Rating		Exposure Rating	
Current Scale	**Normalised Scale**	**Current Scale**	**Normalised Scale**
< 6 Negligible	1	<5 Very Low	1
7 to 12 Low	2	5 to 15 Low	2
13 to 24 Medium	3	16 to 30 High	3
25 to 30 High	4	31 to 50 Very High	4
>30 Very high	5	>50 Extremely High	5

The record of the Hazard Rank Assessment is included in Appendix B of this report.

6 HAZARD RANKING

Having identified the rating coefficients as defined in Section 5 of this report, it is possible to categorise areas of the Site with a Hazard Ranking by multiplying the Hazard and Exposure Rating. Hazard Ranking and associated suggested actions matrix are shown in Tables 11 and 12 below:

Table 11 - Hazard Ranking and Suggested Actions

Hazard Ranking		**Action Suggested in the Scottish Executive Guidance**
17-25	High	Avoid project development at these locations.
11-16	Medium	Project should not proceed unless hazard can be avoided or mitigated at these locations, without significant environmental impact, in order to reduce hazard ranking to low or less
5-10	Low	Project may proceed pending further investigation to refine assessment. Mitigation of hazards maybe required through micro-siting or re-design at these locations.
1-4	Negligible	Project should proceed with monitoring and mitigation of peat landslide hazards at these locations as appropriate.

Table 12- Hazard Ranking Matrix

Hazard Rating	5	Low	Low	Medium	High	High
	4	Negligible	Low	Medium	Medium	High
	3	Negligible	Low	Low	Medium	Medium
	2	Negligible	Negligible	Low	Low	Low
	1	Negligible	Negligible	Negligible	Negligible	Low
		1	2	3	4	5
		Exposure Rating				

Receptor exposure was assessed for each of the twelve hazard zones using the approach in Section 5. A summary of the Hazard Ranking result for each identified area is summarised in Table 13 and is presented in Figure 9 'Hazard Ranking Zonation Plan'.

7 SLIDE RISK AND MITIGATION

7.1 General

This PSRA has shown the Site to be generally of negligible or low hazard ranking. There were isolated areas recorded as medium risk which were recorded in the solar area or along the grid connection. The location if these points lay within a generally wider zone dominated by low-risk points and presented as a low risk.

Where the hazard ranking has been lowered through mitigation measures, the original ranking will remain in the overall hazard zoning plan and it should be acknowledged that the hazard zonation plan is based on the pre-mitigation status

While the specific recommended mitigation in low ranked areas are proposed other mitigation is embedded in the design at EIA stage, it is also necessary for detailed design and construction of the Development infrastructure to be undertaken in a competent and controlled manner.

The embedded mitigation and good practice measures are set out in Section 7.2. It should be noted that the mitigation measures defined are not exclusive and other forms of mitigation may well be required and should be developed by designers and implemented during construction of the scheme.

Table 13 provides details of the hazard areas and outlines specific mitigation actions for each area, while Figure 9 'Hazard Rank Zonation Plan' presents the zonation of the Site in Appendix A.

Table 13 – Hazard Rank

Hazard Area and Infrastructure		**Unmitigated Hazard**		**Mitigated Hazard**	
Hazard Area	**Infrastructure Affected**	**Ranking**	**Key Aspects**	**Potential Mitigation**	**Ranking**
H1	Existing Track, Proposed Track, Construction Compound,	Negligible	Location and topography: North-west of the site, south of Kingswell. Generally flat with some gentle slopes. Peat Depth: (min) 0.0m - (max) 1.0m. Slope Gradient: 0° to 8° Exposure: Existing Track, Proposed Track, Construction Compound	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting out with areas of	Negligible

				deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the construction phase to undertake to provide monitoring and advice when required;	
H2	Proposed Tracks, Solar Panels	Low	Location and topography: North western site area, – Generally flat in the west with more gentle slopes and localised steep slopes to the east. Peat Depth: (min) 0.0m - (max) 3.500m. Slope Gradient: 0° to 15° Exposure: Proposed Tracks, Solar Panels, Minor Watercourse	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting out with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register	Low

				throughout the works; Presence of geotechnical specialist on-site during the construction phase to undertake to provide monitoring and advice when required;	
H3	Proposed Tracks, Solar Panels	Negligible	Location and topography: North-central solar site area, gently sloping in the north with steeper slopes in the southern zones. Peat Depth: (min) 0.1m - (max) 3.00m Slope Gradient: 0° to 15° Exposure: Proposed Tracks, Solar Panels, Minor Watercourse	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting out with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the construction phase to undertake to provide	Negligible

				monitoring and advice when required;	
H4	Solar Panels	Low	Location and topography: Gently sloping Peat Depth: (min) 0.1m (max) 1.0m. Slope Gradient: 2º to 15º Exposure: Solar Panels, Minor Watercourse	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting out with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the construction phase to undertake to provide monitoring and advice when required;	Low
H5	Solar Panels and grid connection	Negligible	Location and topography: most southerly areas of solar development, just north of the Bught Burn, sloping	Best practice measures in relation to drainage prior to and during construction will	Negligible

			south towards the burn. Peat Depth: (min) 0.0m - (max) 1.50m. Slope Gradient:2° to 15° Exposure: Solar Panels, Grid Connection, Minor Watercourse	be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting out with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the construction phase to undertake to provide monitoring and advice when required;	
H6	Solar Panels, Hydrogen Electrolyser and grid connection	Low	Location and topography: most south-easterly area of solar development, just north of the Bught Burn, sloping south towards the burn. Peat Depth: (min) 0.0m - (max) 4.0m. Slope Gradient:2° to 15°	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils	Low

			Exposure: Solar Panels, Grid Connection, Minor Watercourse	should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting out with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the construction phase to undertake to provide monitoring and advice when required;	
H7	Grid Connection	Negligible	Location and topography: South of Bught Burn, generally flatlying, blanket bog conditions. Peat Depth: (min) 0.0m - (max) 4.5m. Slope Gradient: 0° to 8° Exposure: Proposed Grid Connection, Minor Watercourses, Sensitive Habitats (Blanket Bog)	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan.	Negligible

				Micro-siting out with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the construction phase to undertake to provide monitoring and advice when required;	
H8	Grid Connection	Low	Location and topography: Howeburn Moss, Flow Moss, generally flatlying, blanket bog conditions located either side of Howe Burn. Peat Depth: (min) 0.0m - (max) 4.5m. Slope Gradient: 0° to 4° Exposure: Proposed Grid Connection, Minor Watercourses, Sensitive Habitats (Blanket Bog)	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting outw with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m.	Low

				Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the construction phase to undertake to provide monitoring and advice when required;	
H9	Grid Connection	Negligible	Location and Topography: West of Craigendunton Reservoir, generally flatlying area within the eastern side of Flow Moss, blanket bog conditions Peat Depth: (min) 0.0m - (max) 4.5m. Slope Gradient: 0° to 4° Exposure: Proposed Grid Connection, Minor Watercourses, Sensitive Habitats (Blanket Bog)	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting out with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the	Negligible

				construction phase to undertake to provide monitoring and advice when required;	
H10	Grid Connection	Low	Location and Topography: South of Craigendunton Reservoir and north of Rough Hill, generally flatlying area. Peat Depth: (min) 0.0m - (max) 4.5m. Slope Gradient: 2° to 8° Exposure: Proposed Grid Connection, Minor Watercourses, Sensitive Habitats (Blanket Bog)	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting out with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the	Low

				construction phase to undertake to provide monitoring and advice when required;	
H11	Grid Connection	Negligible	Location and topography: Situated adjacent to existing windfarm tracks, north of Rough Hill Burn, generally flatlying area. Peat Depth: (min) 0.0m - (max) 1.0m. Slope Gradient: 0° to 4° Exposure: Proposed Grid Connection, Minor Watercourses.	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting out with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the construction	Negligible

				phase to undertake to provide monitoring and advice when required;	
H12	Grid Connection	Low	Location and topography: Situated adjacent to existing windfarm tracks, north of Rough Hill Burn, generally flatlying area. Peat Depth: (min) 0.0m - (max) 2.5m. Slope Gradient: 0° to 8° Exposure: Proposed Grid Connection, Minor Watercourses.	Best practice measures in relation to drainage prior to and during construction will be implemented and should be detailed in a Construction Environmental Management Plan. Management of excavated peat and peaty soils should be undertaken with care and in line with bet practices, and in accordance with a site specific Peat Management Plan. Micro-siting out with areas of deep peat where possible. Adoption of floating tracks in areas of peat greater than 1.0m. Maintain a Geotechnical Risk Register throughout the works; Presence of geotechnical specialist on-site during the	Low

				construction phase to undertake to provide monitoring and advice when required;	

7.2 Embedded Mitigation

Embedded mitigation includes measures taken during design of the Development to reduce the potential for peat slide risk. In summary the principal measures that have been taken are:

- Locating infrastructure on shallower slopes, where possible; and
- Locating infrastructure on areas of shallow peat (or no peat) where possible.

7.3 Peat Slide Mitigation Recommendations

Mitigation measures are outlined in Table 13,outlining general best practice mitigation that should be adopted, however this is not extensive and at a post consent stage could be supplemented by:

- Ground investigations prior to detailed design;
- Identification of areas sensitive to changes in drainage regime prior to detailed design;
- Update the PSRA as necessary following detailed ground investigations;
- Development of a drainage strategy that will not create areas of concentrated flow and will not affect the current peatland hydrology;
- Design of a Development drainage system for tracks and hardstanding that will require minimal ongoing maintenance during the operation of the development;
- Inspection and maintenance of the drainage systems during construction and operation;
- Identification of suitable areas for stockpiling material during construction prior to commencement of works; and
- Consideration of specific construction methods appropriate for infrastructure in peat land (i.e. geogrids) as part of design Development.

8 PSRA CONCLUSIONS

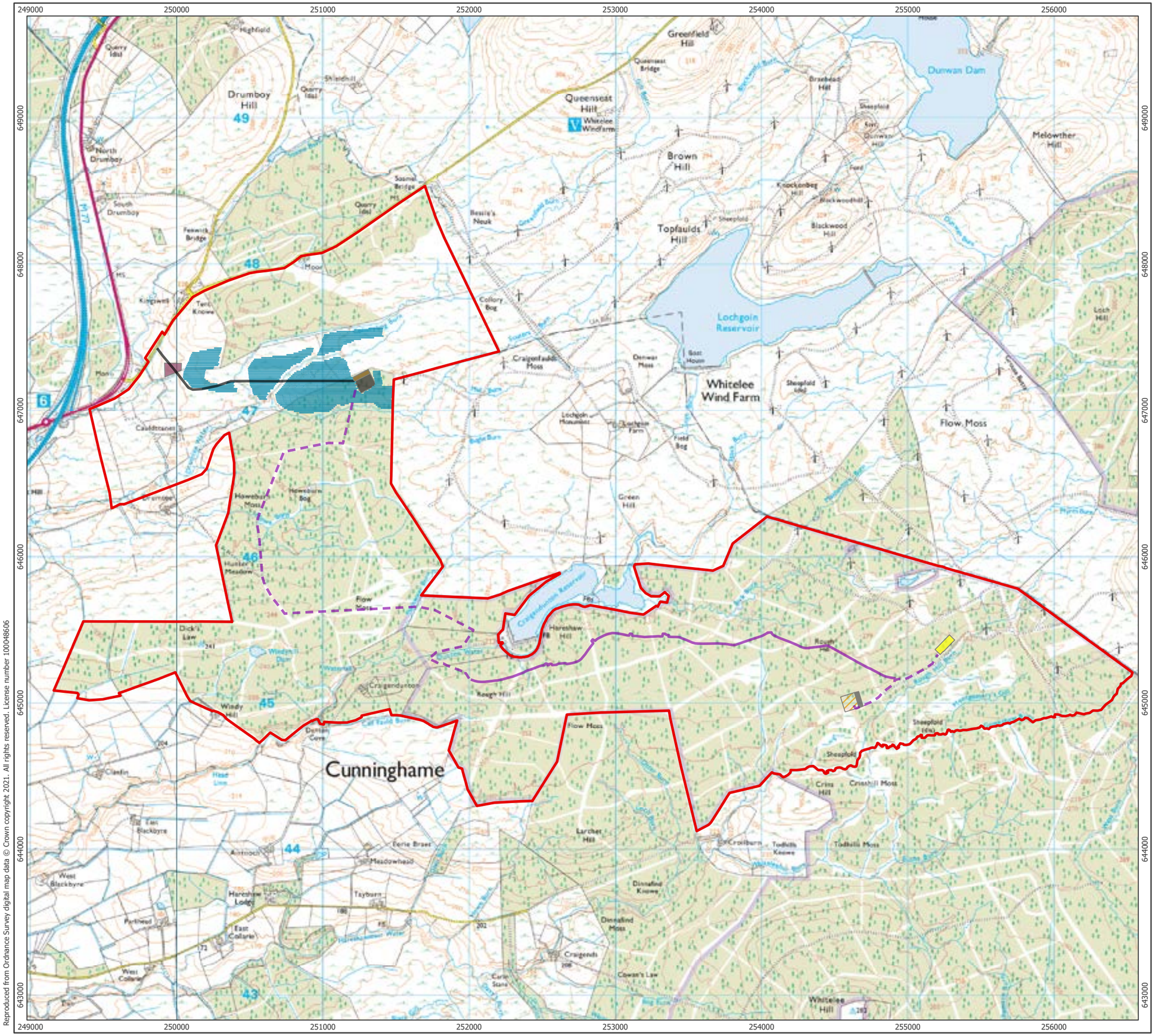
This PSRA has been undertaken for the proposed Whitelee Solar, Battery and Hydrogen in accordance with the SG guidance. The early stages of the assessment included a desk study and historic peat probing across the Site. This was followed by further intensive probing on the finalised Site layout design. The information gathered during this investigation was used to develop a Hazard Ranking across the Development Site.

The findings of the probing indicate varying depths of peat across the site, although generally shallower in northerly slopes where the solar panels are proposed, deepening locally with topography, particularly at the Hydrogen Electrolyser and thereafter relatively deep throughout the grid connection route.

Based on the peat depths recorded and resulting assessment and analysis, the PSRA has indicated that the majority of the Site is generally of 'Low' or 'Negligible' hazard rank mainly in areas where no infrastructure is proposed.

Notwithstanding this, infrastructure locations and existing site conditions should be checked on Site at the time of construction and micro-siting adopted if required in order to maintain the design objective of avoiding any potential peat slide risk.

APPENDIX A - FIGURES



P:\GIS\Engineering\Projects\4362 Whitelee Solar and Hydrogen\4362 Whitelee Solar and Hydrogen.aprx\4362-REP-001 Fig01 Site Layout Plan

SCOTTISHPOWER RENEWABLES

- Site Boundary

Cables and Roads

- Existing cable
- Proposed New Cable
- Link/Haul Road (S36)

Site Infrastructure

- Proposed BESS Temp Compound
- Proposed Electrolyser
- Proposed Electrolyser Laydown Area
- Proposed PV Layout
- Proposed BESS Compound
- Proposed Temporary Compound
- Whitelee Extension Substation

1:25,000 Scale @ A3

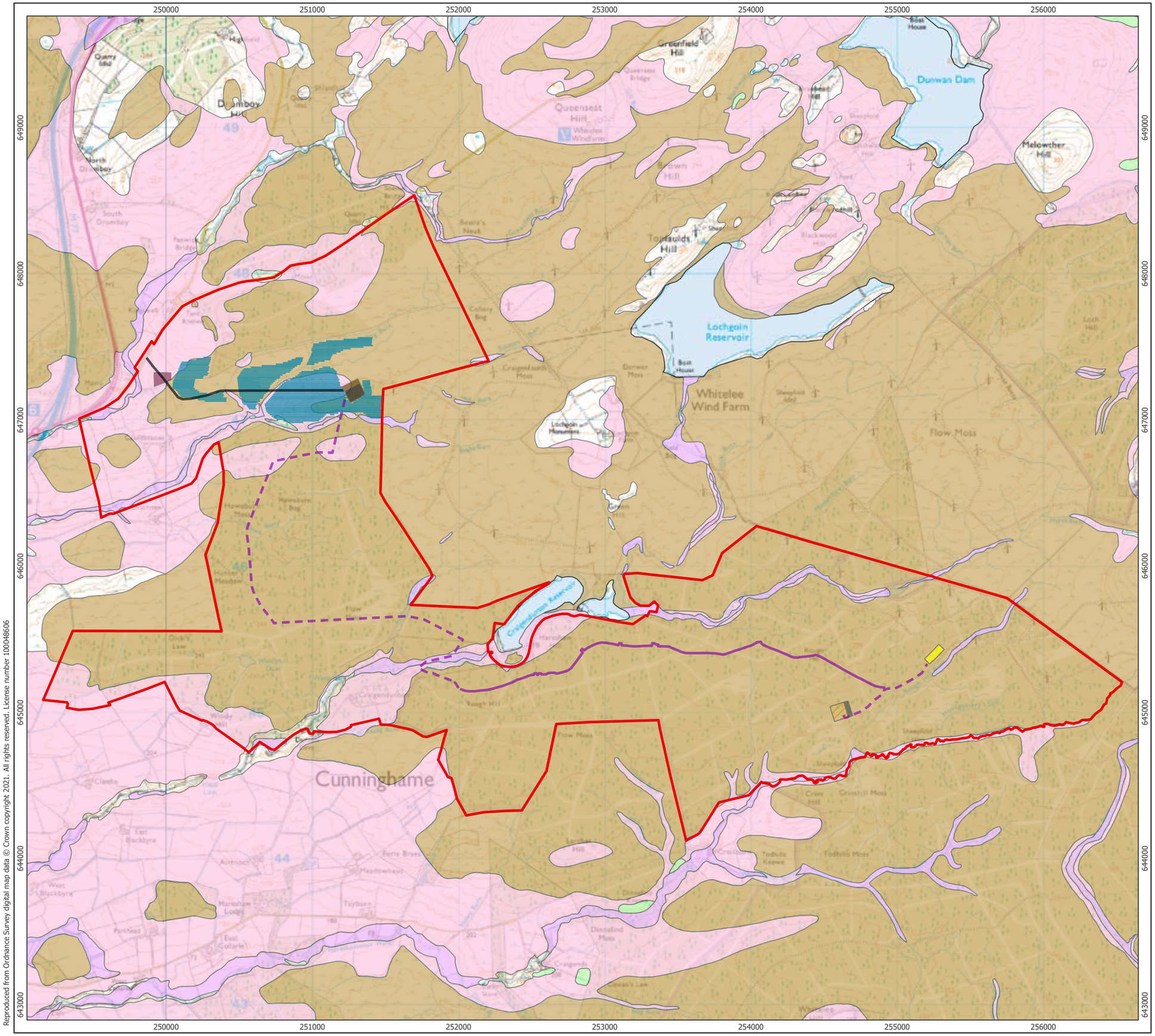
0 0.5 1 km

NORTH

Produced By: BM	Ref: 4362-REP-001
Checked By: SC	Date: 04/06/2021

Site Layout Plan
Figure 1

Whitelee Windfarm Extension Solar, PV, Green Hydrogen Production and Battery Storage Facilities Peat Slide Risk Assessment



SCOTTISHPOWER RENEWABLES

- Site Boundary

Cables and Roads

- Existing cable
- Proposed New Cable
- Link/Haul Road (S36)

Site Infrastructure

- Proposed BESS Temp Compound
- Proposed Electrolyser
- Proposed Electrolyser Laydown Area
- Proposed PV Layout
- Proposed BESS Compound
- Proposed Temporary Compound
- Whitelee Extension Substation

Superficial Soils

- Alluvium
- Glaciofluvial Deposits
- Glaciolacustrine Deposits
- Hummocky (Moundy) Glacial Deposits
- Peat
- River Terrace Deposits (Undifferentiated)
- Superficial Theme Not Mapped
- Till, Devensian

1:25,000 Scale @ A3

0 0.5 1 km

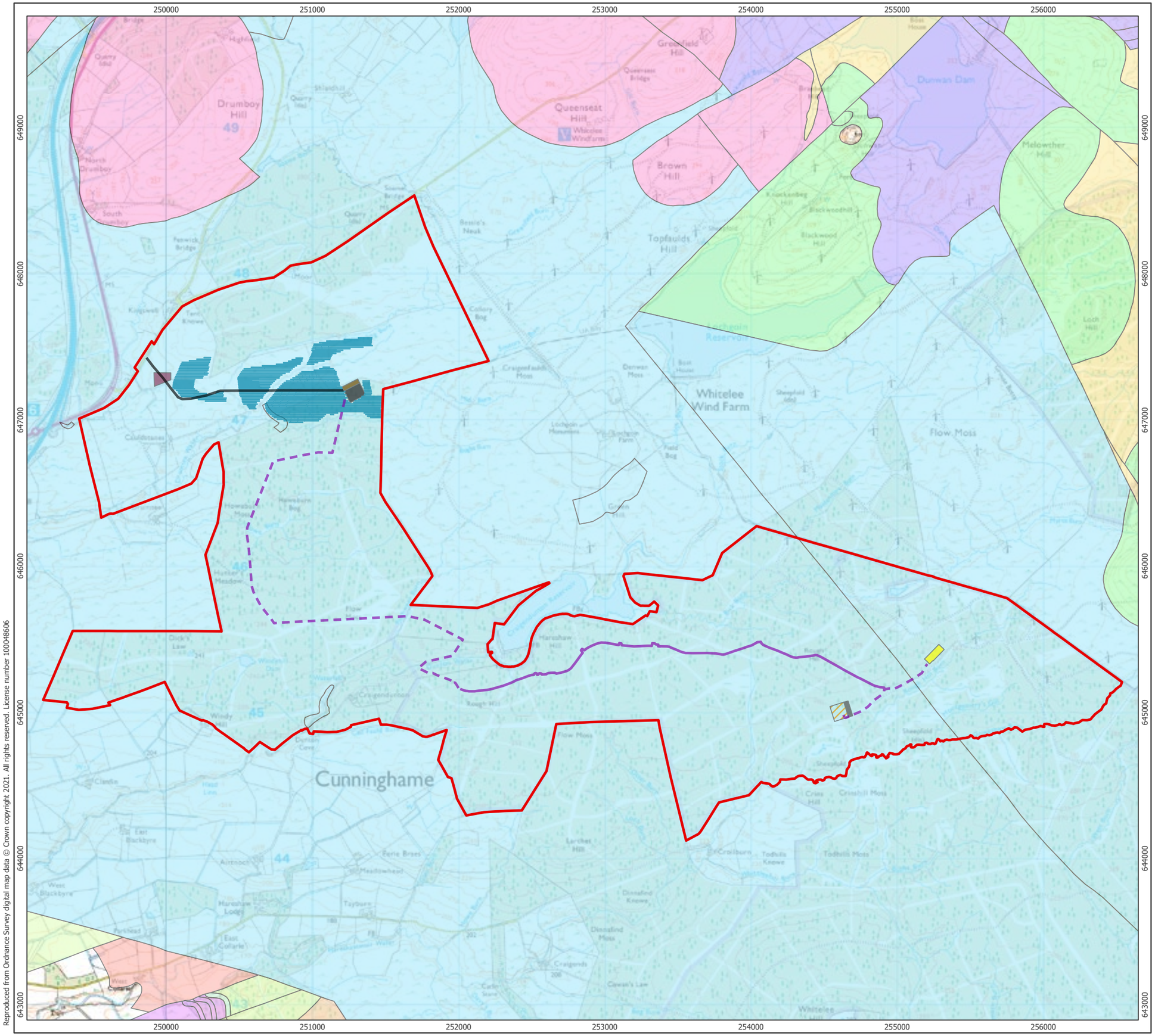
NORTH

Produced By: BM	Ref: 4362-REP-002
Checked By: SC	Date: 04/06/2021

Superficial Soils
Figure 2

Whitelee Windfarm Extension Solar, PV, Green Hydrogen Production and Battery Storage Facilities Peat Slide Risk Assessment

P:\GIS\Engineering\Projects\4362 Whitelee Solar and Hydrogen\4362 Whitelee Solar and Hydrogen.aprx\4362-REP-002 Fig02 Superficial Soils



SCOTTISHPOWER RENEWABLES

- Site Boundary

Cables and Roads

- Existing cable
- Proposed New Cable
- Link/Haul Road (S36)

Site Infrastructure

- Proposed BESS Temp Compound
- Proposed Electrolyser
- Proposed Electrolyser Laydown Area
- Proposed PV Layout
- Proposed BESS Compound
- Proposed Temporary Compound
- Whitelee Extension Substation

Solid Geology

- Ayrshire Bauxitic Clay Member
- Dumdruff Hill Lava Member
- Eaglesham Lava Member
- Flow Moss Lava Member
- Gowk Stane Volcanistic Member
- Harelaw Lava Member
- Hosie Limestones
- Index Limestone (Scotland)
- Kilbirnie Mudstone Member
- Limestone Coal Formation
- Lower Limestone Formation
- Upper Limestone Formation

1:25,000 Scale @ A3

0 0.5 1 km

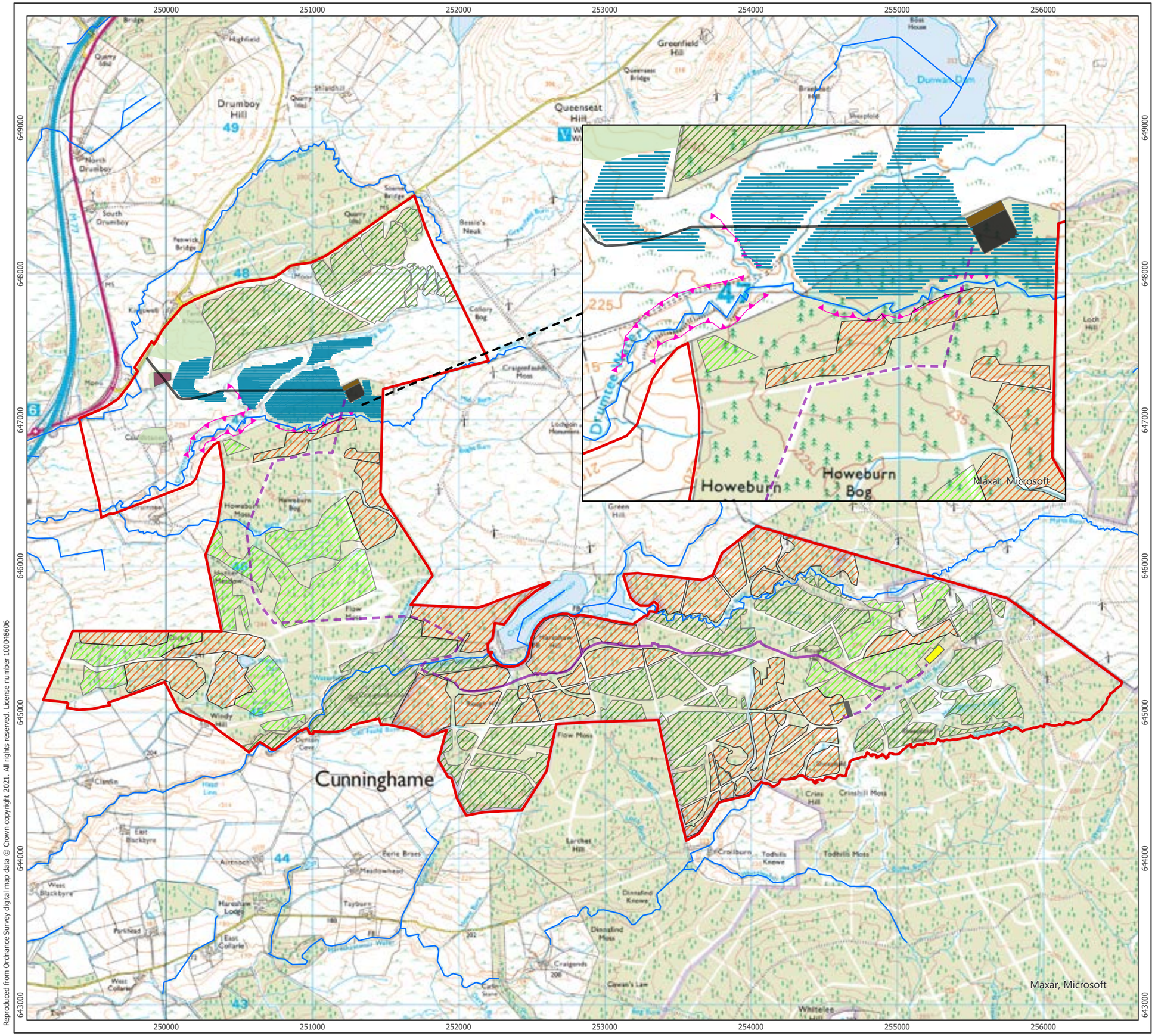
NORTH

Produced By: BM	Ref: 4362-REP-003
Checked By: SC	Date: 04/06/2021

Solid Geology
Figure 3

Whitelee Windfarm Extension Solar, PV, Green Hydrogen Production and Battery Storage Facilities Peat Slide Risk Assessment

P:\GIS\Engineering\Projects\4362 Whitelee Solar and Hydrogen\4362 Whitelee Solar and Hydrogen.aprx\4362-REP-003 Fig03 Solid Geology



SCOTTISHPOWER RENEWABLES

- Site Boundary
- Watercourses
- Pasture
- Felled Forestry
- Bottom of Slope
- Top of Slope
- Sporadic Young Forestry
- Forestry

Cables and Roads

- Existing cable
- Proposed New Cable
- Link/Haul Road (S36)

Site Infrastructure

- Proposed BESS Temp Compound
- Proposed Electrolyser
- Proposed Electrolyser Laydown Area
- Proposed PV Layout
- Proposed BESS Compound
- Proposed Temporary Compound
- Whitelee Extension Substation

1:25,000 Scale @ A3

0 0.5 1 km

NORTH

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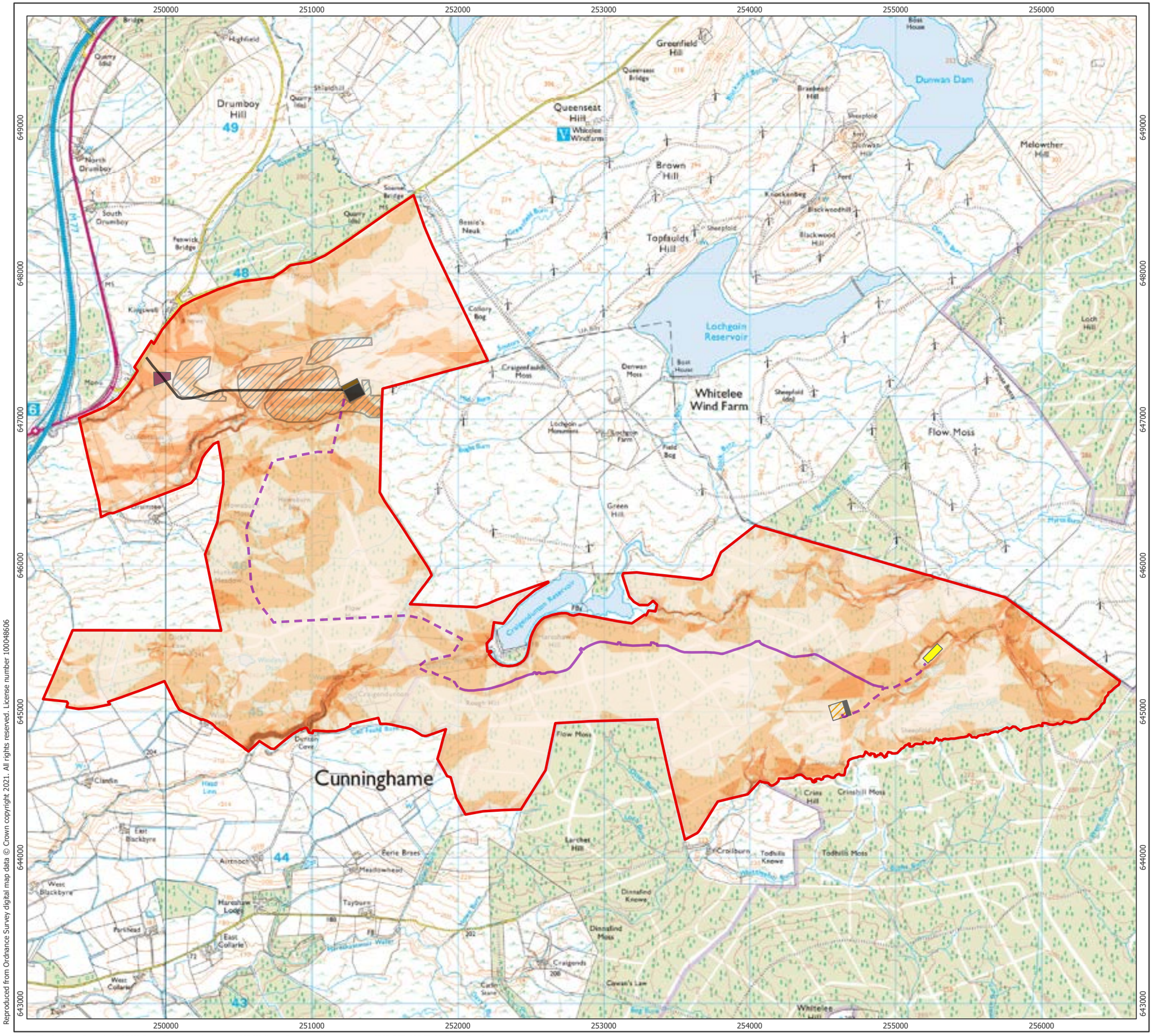
Checked By: SC	Date: 04/06/2021

Geomorphology Map
Figure 4

Whitelee Windfarm Extension Solar, PV, Green Hydrogen Production and Battery Storage Facilities Peat Slide Risk Assessment

P:\GIS\Engineering\Projects\4362 Whitelee Solar and Hydrogen\4362 Whitelee Solar and Hydrogen.aprx\4362-REP-004 Fig04 Geomorphology Map



SCOTTISHPOWER RENEWABLES

- Site Boundary

Site Infrastructure

- Proposed BESS Temp Compound
- Proposed Electrolyser
- Proposed Electrolyser Laydown Area
- Proposed BESS Compound
- Proposed Temporary Compound
- Whitelee Extension Substation
- Proposed PV Layout

Cables and Roads

- Existing cable
- Proposed New Cable
- Link/Haul Road (S36)

Slope Gradient (deg)

- 0 - 2
- 2 - 4
- 4 - 8
- 8 - 15
- > 15

1:25,000 Scale @ A3

0 0.5 1 km

NORTH

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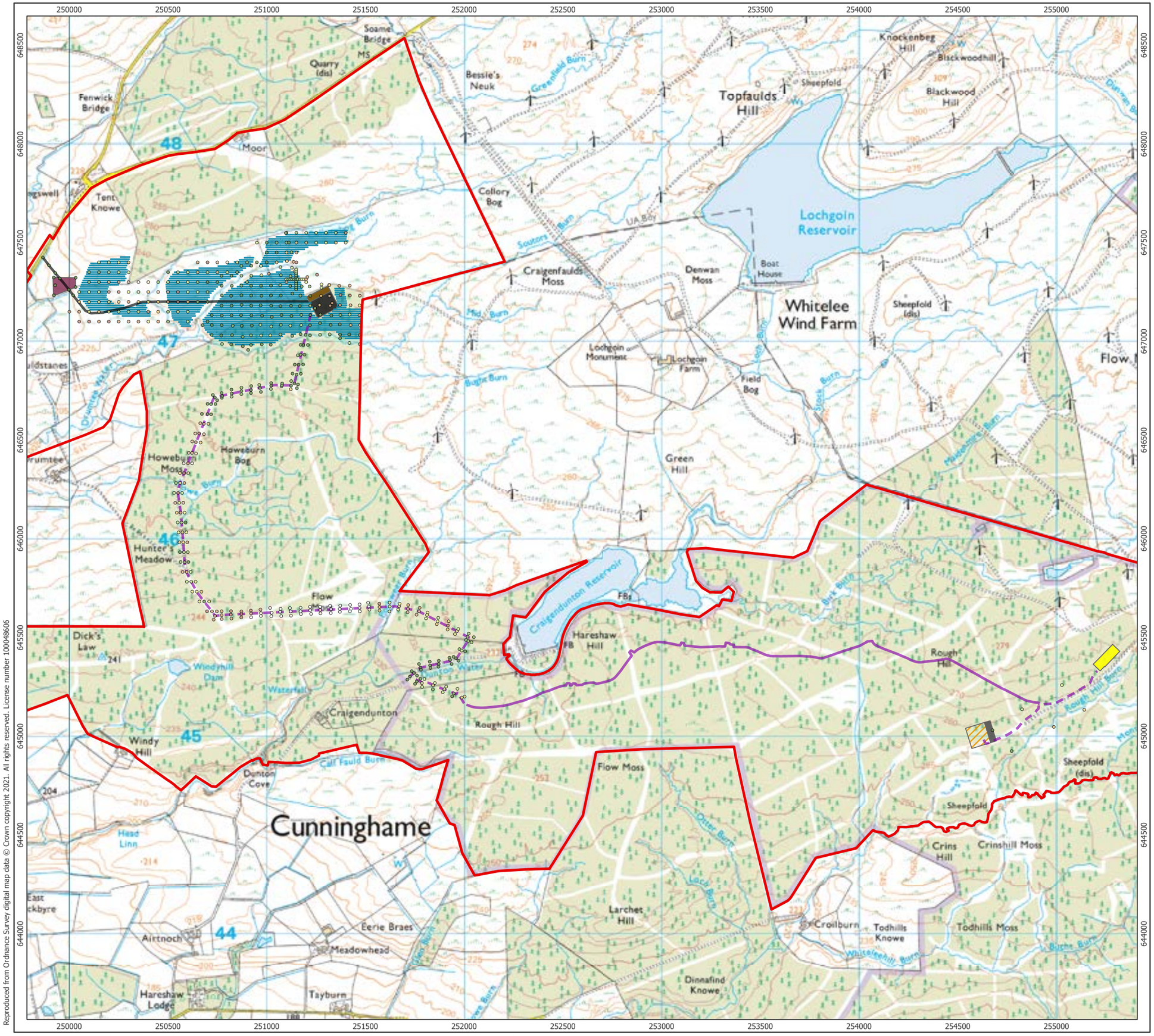
Checked By: SC	Date: 04/06/2021

Slope Gradient
Figure 5

Whitelee Windfarm Extension Solar, PV, Green Hydrogen Production and Battery Storage Facilities Peat Slide Risk Assessment

P:\GIS\Engineering\Projects\4362 Whitelee Solar and Hydrogen\4362 Whitelee Solar and Hydrogen.aprx\4362-REP-005 Fig05 Slope Gradient



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SCOTTISHPOWER RENEWABLES

Site Boundary

Cables and Roads

- Existing cable
- Proposed New Cable
- Link/Haul Road (S36)

Site Infrastructure

- Proposed BESS Temp Compound
- Proposed Electrolyser
- Proposed Electrolyser Laydown Area
- Proposed PV Layout
- Proposed BESS Compound
- Proposed Temporary Compound
- Whitelee Extension Substation

Recorded Peat Depths (m)

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.01 - 4.50
- 4.51 - 5.00
- 5.01 - 5.50

1:18,500 Scale @ A3

0 250 500 M

NORTH

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Checked By: SC	Date: 04/06/2021

Recorded Peat Depths
Figure 6

Whitelee Windfarm Extension Solar, PV, Green Hydrogen Production and Battery Storage Facilities Peat Slide Risk Assessment

P:\GIS\Engineering\Projects\4362 Whitelee Solar and Hydrogen\4362 Whitelee Solar and Hydrogen.aprx\4362-REP-006 Fig06 Recorded Peat Depths

SCOTTISHPOWER RENEWABLES

- Site Boundary
- Peat Probe Locations

Cables and Roads
- Existing cable
- Proposed New Cable
- Link/Haul Road (S36)

Site Infrastructure
- Proposed BESS Temp Compound
- Proposed Electrolyser
- Proposed Electrolyser Laydown Area
- Proposed BESS Compound
- Proposed Temporary Compound
- Whitelee Extension Substation
- Proposed PV Layout

Interpolated Peat Depths (m)
- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 1.50
- 1.51 - 2.00
- 2.01 - 2.50
- 2.51 - 3.00
- 3.01 - 3.50
- 3.51 - 4.00
- 4.01 - 4.50
- 4.51 - 5.00
- 5.01 - 5.50

1:18,500 Scale @ A3

0 250 500 M

NORTH

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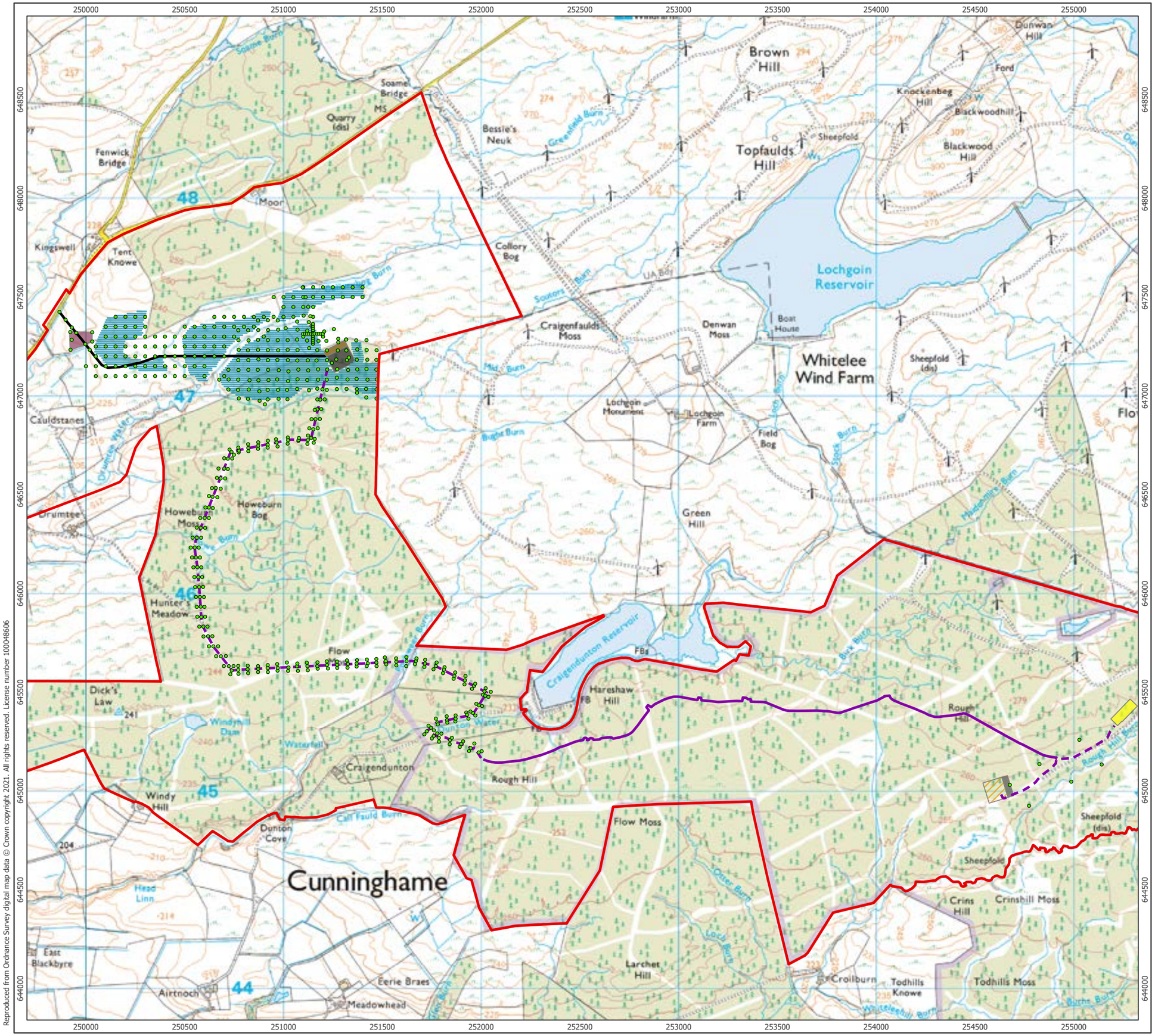
Checked By: SC	Date: 04/06/2021

Interpolated Peat Depths
Figure 7

Whitelee Windfarm Extension Solar, PV, Green Hydrogen Production and Battery Storage Facilities Peat Slide Risk Assessment

P:\GIS\Engineering\Projects\4362 Whitelee Solar and Hydrogen\4362 Whitelee Solar and Hydrogen.aprx\4362-REP-007 Fig07 Interpolated Peat Depths



SCOTTISHPOWER RENEWABLES

- Site Boundary

Cables and Roads

- Existing cable
- Proposed New Cable
- Link/Haul Road (S36)

Site Infrastructure

- Proposed BESS Temp Compound
- Proposed Electrolyser
- Proposed Electrolyser Laydown Area
- Proposed PV Layout
- Proposed BESS Compound
- Proposed Temporary Compound
- Whitelee Extension Substation

Factor of Safety

- Low Risk
- Moderate Risk
- High Risk

1:18,500 Scale @ A3

0 250 500 M

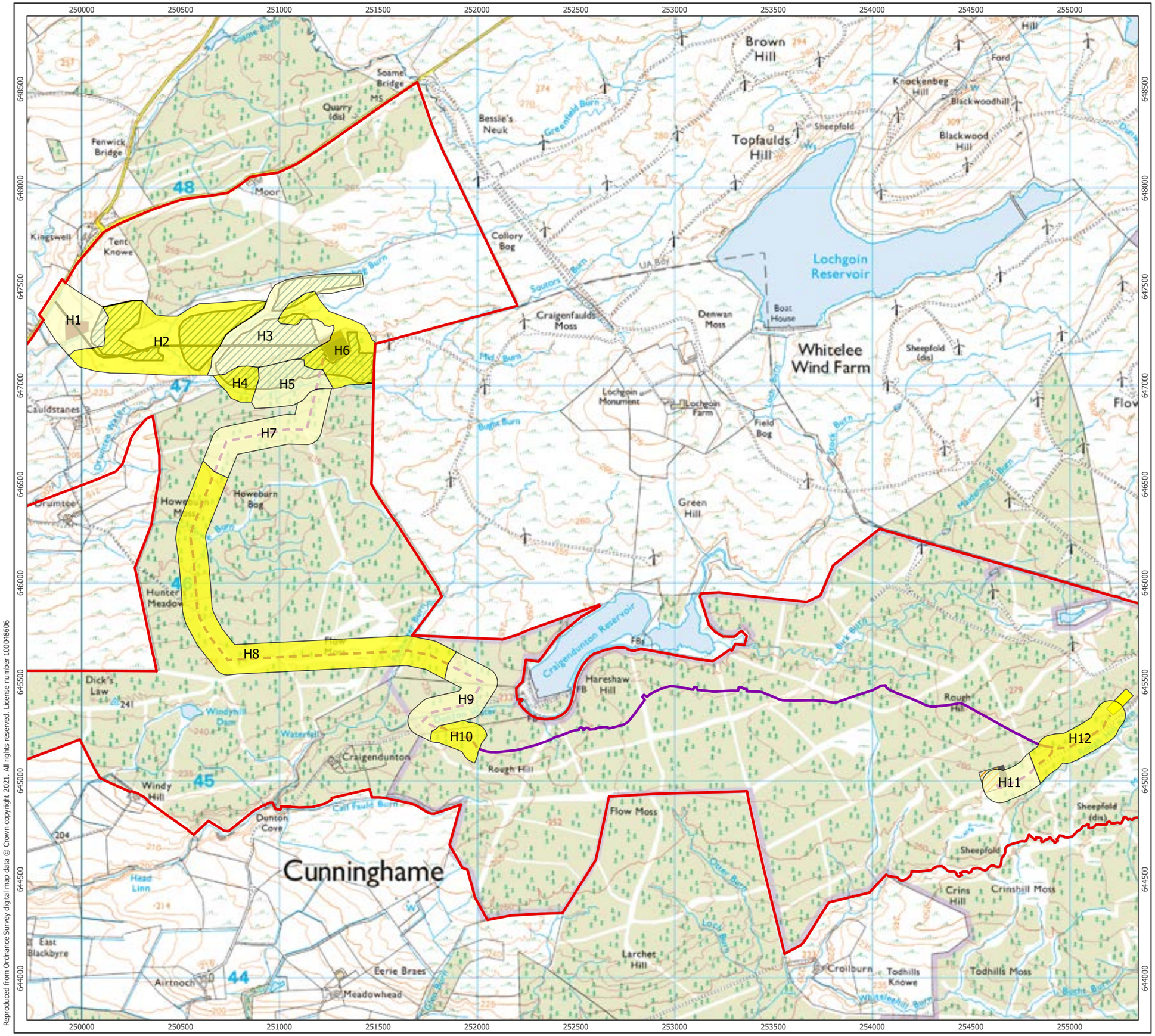
NORTH

Produced By: BM	Ref: 4362-REP-008
Checked By: SC	Date: 04/06/2021

Factor of Safety Plan
Figure 8

Whitelee Windfarm Extension Solar, PV, Green Hydrogen Production and Battery Storage Facilities Peat Slide Risk Assessment

P:\GIS\Engineering\Projects\4362 Whitelee Solar and Hydrogen\4362 Whitelee Solar and Hydrogen.aprx\4362-REP-008 Fig08 Factor of Safety Plan



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SCOTTISHPOWER RENEWABLES

Site Boundary

Cables and Roads

- Existing cable
- Proposed New Cable
- Link/Haul Road (S36)

Site Infrastructure

- Proposed BESS Temp Compound
- Proposed Electrolyser
- Proposed Electrolyser Laydown Area
- Proposed BESS Compound
- Proposed Temporary Compound
- Whitelee Extension Substation
- Proposed PV Layout

Hazard Rank Zonation Plan

- Negligible
- Low

1:18,500 Scale @ A3

0 250 500 M

NORTH

Produced By: BM	Ref: 4362-REP-009
Checked By: SC	Date: 04/06/2021

Hazard Rank Zonation Plan
Figure 9

Whitelee Windfarm Extension Solar, PV, Green Hydrogen Production and Battery Storage Facilities Peat Slide Risk Assessment

P:\GIS\Engineering\Projects\4362 Whitelee Solar and Hydrogen\4362 Whitelee Solar and Hydrogen.aprx\4362-REP-009 Fig09 Hazard Rank Zonation Plan

APPENDIX B - HAZARD RANK ASSESSMENT RECORDS

4362 - Whitelee Windfarm Extension Solar PV, Green Hydrogen Production and Battery Storage Facilities -PSRA - Tabulated Peat Probe Data

ID	X	Y	Z	SLOPE	Slope Co-efficient	PEAT DEPTH	Peat Co-efficient	Gen Substrate	Substrate Co-eff.	Risk Rating Coefficient	Risk Rating Normalisation	Receptor	Receptor Co-eff.	Z Receptor	Distance	Receptor Dist Co-eff.	Z Difference (remove =/-)	Receptor elevation Co-eff	Impact Rating	Impact Rating Normalisation	Hazard Ranking
1	251317	647286	251.187223	0.489674	1	2.1	3	C	2	6	2	Electrolyser-NewCable-BESScompound	6	251.145911	9.130103	4	0.041312	1	24	3	6
2	251317	647285	251.181323	0.530382	1	2.1	3	C	2	6	2	Electrolyser-NewCable-BESScompound	6	251.145911	9.034397	4	0.035412	1	24	3	6
3	251368	647281	250.869005	0.597488	1	2.6	3	C	2	6	2	PV Layout	3	250.709013	14.16776	3	0.159992	1	9	2	4
4	251420	647282	250.593879	0.215236	1	3	3	G	1	3	1	PV Layout	3	250.548552	33.579543	3	0.045327	1	9	2	2
5	251421	647232	249.811969	1.763701	1	3.5	8	C	2	16	3	Blanket Bog	8	249.81996	1.121492	4	-0.007991	1	32	5	15
6	251471	647231	249.891383	1.271356	1	3	3	G	1	3	1	Blanket Bog	8	249.605094	13.804898	3	0.286289	1	24	3	3
7	251470	647182	248.591232	2.156102	2	2	3	R	1.5	9	2	Blanket Bog	8	248.649453	2.482886	4	-0.058221	1	32	5	10
8	251470	647133	246.691932	2.333617	2	2.6	3	G	1	6	2	PV Layout	3	246.627766	1.602571	4	0.064166	1	12	2	4
9	251472	647083	244.834402	5.373805	4	2.2	3	G	1	12	2	PV Layout	3	245.245178	4.452999	4	-0.410776	1	12	2	4
10	251471	647033	239.870699	5.785862	4	0.4	1	R	1.5	6	2	PV Layout	3	240.122087	2.566632	4	-0.251388	1	12	2	4
11	251471	646986	238.414531	0.297059	1	1	2	C	2	4	1	Minor Water Feature	6	238.40244	2.891811	4	0.012091	1	24	3	3
12	251419	646992	238.5249	0.256226	1	1.1	3	C	2	6	2	Minor Water Feature	6	238.506847	4.867622	4	0.018053	1	24	3	6
13	251418	647035	240.10031	6.121882	4	0.3	1	G	1	4	1	PV Layout	3	240.141314	0.697602	4	-0.041004	1	12	2	2
14	251425	647082	244.526642	4.727601	4	2.5	3	G	1	12	2	PV Layout	3	244.273763	3.311384	4	0.252879	1	12	2	4
15	251420	647136	247.059953	2.447241	2	1.5	3	R	1.5	9	2	PV Layout	3	246.860468	4.791185	4	0.199485	1	12	2	4
16	251424	647183	248.51558	1.368845	1	2.6	3	C	2	6	2	Blanket Bog	8	248.52454	0.430192	4	-0.00896	1	32	5	10
17	251373	647235	250.305797	0.429602	1	3.3	8	G	1	8	2	PV Layout	3	250.307289	0.842972	4	-0.001492	1	12	2	4
18	251371	647183	249.14071	1.704809	1	3	3	G	1	3	1	PV Layout	3	249.151221	0.600815	4	-0.010511	1	12	2	2
19	251373	647134	246.195829	5.38617	4	1	2	C	2	16	3	PV Layout	3	245.945466	2.624971	4	0.250363	1	12	2	6
20	251370	647086	242.467821	5.746257	4	0.2	1	C	2	8	2	PV Layout	3	242.755319	3.229094	4	-0.287498	1	12	2	4
21	251371	647034	239.212541	0.932777	1	0.2	1	R	1.5	1.5	1	PV Layout	3	239.218205	1.149125	4	-0.005664	1	12	2	2
22	251372	647016	238.946038	0.955507	1	0.2	1	C	2	2	1	Minor Water Feature	6	238.904205	5.798175	4	0.041833	1	24	3	3
23	251319	647035	238.550615	2.139493	2	1	2	R	1.5	6	2	Minor Water Feature	6	238.567878	6.317057	4	-0.017263	1	24	3	6
24	251324	647083	240.752269	4.461719	4	0.1	1	C	2	8	2	PV Layout	3	240.442043	4.168579	4	0.310226	1	12	2	4
25	251327	647131	245.033485	5.346122	4	0.1	1	R	1.5	6	2	PV Layout	3	245.011308	0.961797	4	0.022177	1	12	2	4
26	251321	647181	249.204129	2.916821	2	3	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	249.220094	0.861518	4	-0.015965	1	24	3	6
27	251318	647230	250.220833	0.762431	1	3.6	8	R	1.5	12	2	Electrolyser-NewCable-BESScompound	6	250.213793	0.965809	4	0.00704	1	24	3	6
28	251277	647271	251.128761	1.183299	1	1.2	3	C	2	6	2	Electrolyser-NewCable-BESScompound	6	250.98287	8.067664	4	0.145891	1	24	3	6
29	251275	647230	250.313548	1.224652	1	2.2	3	R	1.5	4.5	1	Electrolyser-NewCable-BESScompound	6	250.324073	1.182883	4	-0.010525	1	24	3	3
30	251267	647184	248.938232	2.832709	2	2.3	3	C	2	12	2	Electrolyser-NewCable-BESScompound	6	248.934254	0.876259	4	0.003978	1	24	3	6
31	251272	647135	244.919692	5.814963	4	0.6	2	R	1.5	12	2	Electrolyser-NewCable-BESScompound	6	244.884505	0.778029	4	0.035187	1	24	3	6
32	251270	647092	241.221166	4.452378	4	0.1	1	C	2	8	2	PV Layout	3	240.994616	2.949658	4	0.22655	1	12	2	4
33	251270	647034	236.079953	3.290513	2	0.6	2	C	2	8	2	Minor Water Feature	6	236.037046	2.296795	4	0.042907	1	24	3	6
34	251219	647030	235.434545	3.460307	2	0.1	1	C	2	4	1	Minor Water Feature	6	235.240186	5.031086	4	0.194359	1	24	3	3
35	251219	647082	240.251085	4.075649	4	0.4	1	C	2	8	2	PV Layout	3	240.078457	2.710763	4	0.172628	1	12	2	4
36	251221	647133	244.336658	4.579832	4	0.2	1	R	1.5	6	2	Electrolyser-NewCable-BESScompound	6	244.321058	0.550742	4	0.0156	1	24	3	6
37	251220	647181	248.151809	4.651201	4	1	2	R	1.5	12	2	PV Layout	3	248.277889	4.286239	4	-0.12608	1	12	2	4
38	251220	647230	250.52826	1.202042	1	0.5	1	C	2	2	1	Electrolyser-NewCable-BESScompound	6	250.540875	0.618711	4	-0.012615	1	24	3	3
39	251217	647278	251.136488	0.513541	1	1	2	R	1.5	3	1	PV Layout	3	250.840553	36.701866	3	0.295935	1	9	2	2
40	251177	647278	250.816059	0.734368	1	0.9	2	C	2	4	1	PV Layout	3	250.809545	1.158933	4	0.006514	1	12	2	2
41	251171	647232	250.594514	0.34157	1	0.8	2	R	1.5	3	1	PV Layout	3	250.611628	3.267899	4	-0.017114	1	12	2	2
42	251167	647179	247.610231	4.54845	4	0.4	1	R	1.5	6	2	PV Layout	3	247.959818	4.447424	4	-0.349587	1	12	2	4
43	251175	647134	243.958827	4.543817	4	0.8	2	R	1.5	12	2	PV Layout	3	243.760117	2.758002	4	0.19871	1	12	2	4
44	251175	647082	240.486499	3.134839	2	1.5	3	C	2	12	2	PV Layout	3	240.306898	3.306631	4	0.179601	1	12	2	4
45	251171	647036	236.218239	7.360274	4	0.3	1	R	1.5	6	2	PV Layout	3	237.568514	11.146878	3	-1.350275	1	9	2	4
46	251129	647028	235.906441	5.193735	4	0.1	1	R	1.5	6	2	PV Layout	3	236.581487	7.613422	4	-0.675046	1	12	2	4
47	251120	647080	240.098545	3.255428	2	1.7	3	R	1.5	9	2	PV Layout	3	240.056086	1.06501	4	0.042459	1	12	2	4
48	251125	647129	243.54951	5.208746	4	0.1	1	C	2	8	2	PV Layout	3	243.554066	0.942356	4	-0.004556	1	12	2	4
49	251123	647180	248.16565	4.250761	4	0.1	1	C	2	8	2	PV Layout	3	248.359089	2.703205	4	-0.193439	1	12	2	4
50	251070	647179	248.481657	4.817402	4	0.1	1	R	1.5	6	2	PV Layout	3	248.813014	4.408386	4	-0.331357	1	12	2	4
51	251075	647133	243.721565	6.503941	4	0.1	1	C	2	8	2	PV Layout	3	243.490265	2.030424	4	0.2313	1	12	2	4
52	251071	647084	239.76577	2.79437	2	1	2	R	1.5	6	2	PV Layout	3	239.577533	4.505054	4	0.188237	1	12	2	4
53	251069	647035	236.954465	4.86781	4	1	2	R	1.5	12	2	PV Layout	3	237.024537	1.100813	4	-0.070072	1	12	2	4
54	251020	646983	232.999538	5.112413	4	0.3	1	R	1.5	6	2	PV Layout	3	233.921427	9.788614	4	-0.921889	1	12	2	4
55	250975	646985	231.255422	6.876388	4	0.1	1	R	1.5	6	2	PV Layout	3	232.264499	8.434973	4	-1.009077	1	12	2	4
56	250972	647030	235.86968	2.333119	2	1.5	3	C	2	12	2	PV Layout	3	235.808155	2.810541	4	0.061525	1	12	2	4
57	251018	647030	236.815412	2.601574	2	1.8	3	G	1	6	2	PV Layout	3	236.663887	3.33956	4	0.151525	1	12	2	4
58	251023	647075	238.659199	3.159443	2	1.4	3	G	1	6	2	PV Layout	3	238.714941	1.787737	4	-0.055742	1	12	2	4
59	251025	647124	242.192439	6.188244	4	0.2	1	R	1.5	6	2	PV Layout	3	241.865421	2.942008	4	0.327018	1	12	2	4
60	250976	647130	242.623866	6.579589	4	0.2	1	G	1	4	1	PV Layout	3	242.736409	0.971344	4	-0.112543	1	12	2	2
61	250968	647083	237.693374	2.574863	2	1.1	3	G	1	6	2	PV Layout	3	237.531985	4.375228	4	0.161389	1	12	2	4
62	250924	647080	236.41965	4.322716	4	0.3	1	R	1.5	6	2	PV Layout	3	236.339509	1.209194	4	0.080141	1	12	2	4
63	250920	647030	234.021793	3.424612	2	0.8	2	G	1	4	1	PV Layout	3	233.874951	3.261274	4	0.146842	1	12	2	2
64	250920	646982	230.767079	4.63171	4	0.1	1	R	1.5	6	2	PV Layout	3	230.861053	1.225596	4	-0.093974	1	12	2	4
65	250906	646957	228.596267	3.949053	2	0.2	1	G	1	2	1	Minor Water Feature	6	228.263435	14.413267	3	0.332832	1	18	3	3
66	250879	646975	228.728145	4.398216	4	0.3	1	R	1.5	6	2	PV Layout	3	229.157736	7.898106	4	-0.429591	1	12	2	4
67	250878	647023	231.710699	4.524963	4	0.9	2	G	1	8	2	PV Layout	3	231.851666	2.12384	4	-0.140967	1	12	2	4
68	250873	647079	234.541874	4.672747	4	0.4	1	R	1.5	6	2	PV Layout	3	234.574107	0.810547	4	-0.032233	1	12	2	4
69	250828	647079	232.766281	4.601488	4	0.8	2	C	2	16	3	PV Layout	3	232.792222	0.469512	4	-0.025941	1	12	2	6
70	250824	647032	230.050601	5.977143	4	0.1	1	C	2	8	2	PV Layout	3	230.339229	3.464488	4	-0.288628	1	12	2	4
71	250820	646985	225.475738	6.655128	4	0.1	1	R	1.5	6	2	PV Layout	3	226.204565	8.594878	4	-0.728827	1	12	2	4
72	250774	646987	223.453831	4.431175	4	0.8	2	R	1.5	12	2	Minor Water Feature	6	223.246803	12.936871	3	0.207028	1	18	3	6
73	250770	647030	226.995573	5.452169	4	0.1	1	R	1.5	6	2	PV Layout	3	226.803807	2.757582	4	0.191766	1	12	2	4
74	251277	647289	251.395847	0.409312	1	1.8	3	G	1	3	1	Electrolyser Lay Down Area	FALSE	251.00687	23.494238	3	0.388977	1	0	1	1
75	251130	647242	250.717973	1.111317	1	0.4	1	G	1	1	1	PV Layout	3	250.687575	3.352957	4	0.030398	1	12	2	2
76	251119	647280	249.574987	1.990774	1	0.5	1	R	1.5	1.5	1	PV Layout	3	249.592198	1.694636	4	-0.017211	1	12	2	2
77	251120	647330	248.154038	2.038383	2	0.9	2	C	2	8	2	PV Layout	3	248.121457	0.992763	4	0.032581	1	12	2	4
78	251128	647373	248.172594	1.231568	1	1.2	3	C	2	6	2	Minor Water Feature	6	248.205032	1.89802	4	-0.032438	1	24	3	6
79	251069	647376	245.879227	4.407885	4	1	2	C	2	16	3	Minor Water Feature	6	246.040396	3.041823	4	-0.161169	1	24	3	9
80	251071	647335	245.68852	3.236666	2	0.9	2	C	2	8	2	PV Layout	3	245.593371	3.780914	4	0.095149	1	12	2	4
81	251069	647285	247.656419	4.088505	4	0.9	2	R	1.5	12	2	PV Layout	3	247.532232	2.291514	4	0.124187	1	12	2	4
82	251011	647343	242.69676	2.807086	2	2.7	3	G	1	6	2	PV Layout	3	242.777367	2.327769	4	-0.080607	1	12	2	4
83	251171	646932	238.861337	1.125517	1	0.9	2	G	1	2	1	Electrolyser-NewCable-BESScompound	6	238.869885	1.121568	4	-0.008548	1	24	3	3
84	251197	647033	234.888519	4.179459	4	0.4	1	G	1	4	1	Electrolyser-NewCable-BESScompound	6	234.94732	0.436135	4	-0.058801	1	24	3	3
85	251208	646982	237.823544	2.091514	2	0.3	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	238.201675	20.34299	3	-0.378131	1	18	3	3
86	251186	646981	238.404276	2.216159	2	0.4	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	238.383135	0.763024	4	0.021141	1	24	3	3
87	251171	646982	238.272	2.784662	2	0.3	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	238.349884	12.884083	3	-0.077884	1	18	3	3
88	251158	646929	238.642454	1.135984	1	0.8	2	G	1	2	1	Electrolyser-NewCable-BESScompound	6	238.924417	14.176564	3	-0.281963	1	18	3	3
89	251191	646933	239.159266	0.849594	1	0.1	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	238.935248	14.618385	3	0.224018	1	18	3	3
90	251184	646883	239.878974	3.466483	2	0.2	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	239.182736	19.962422	3	0.696238	1	18	3	3
91	251162	646882	239.537531	3.325171	2	0.2	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	239.584381	0.950191	4	-0.04685	1	24	3	3
92	251142	646882	239.161435	3.326999	2	0.4	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	239.548383	18.466265	3	-0.386948	1	18	3	3
93	251131	646836	240.212386	3.577624	2	0.2	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	241.071855	19.077339	3	-0.859469	1	18	3	3
94	251151	646831	241.145812	1.907453	1	0.2	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	241.119854	0.791467	4	0.025958	1	24	3	3
95	251173	646836	241.763983	1.655142	1	0.2	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	241.173855	18.548711	3	0.590128	1	18	3	3
96	251158	646782	241.537927	2.512462	2	0.2	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	240.960388	17.7432	3	0.577539	1	18	3	3
97	251153	646763	240.379376	4.281937	4	0.4	1	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	240.087917	4.157567	4	0.291459	1	12	2	2
98	251140	646787	240.83489	2.805028	2	0.4	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	240.859347	0.517944	4	-0.024457	1	24	3	3
99	251124	646799	240.285793	2.2764	2	0.6	2	G	1	4	1	Electrolyser-NewCable-BESScompound	6	240.916385	16.65948	3	-0.630592	1	18	3	3
100	251123	646776	239.499514	3.789447	2	0.5	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	239.43298	1.07064	4	0.066534	1	24	3	3
101	251121	646757	238.500248	3.619471	2	2.3	3	G	1	6	2	Existing-Proposed Tracks-TempCompound	3	238.82258	5.83221	4	-0.322332	1	12	2	4
102	251075	646772	238.377662	2.012399	2	0.8	2	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	238.364188	0.846335	4	0.013474	1	12	2	2
103	251076	646777	238.468651	2.032967	2	0.5	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	238.462693	0.209879	4	0.005958	1	24	3	3
104	251078	646787	238.593251	2.044033	2	0.4	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	238.546249	7.682874	4	0.047002	1	24	3	3
105	251022	646789	236.910628	1.25146	1	0.5	1	R	1.5	1.5	1	Electrolyser-NewCable-BESScompound	6	236.914595	11.820309	3	-0.003967	1	18	3	3
106	251023	646775	236.879314	1.158561	1	0.5	1	R	1.5	1.5	1	Electrolyser-NewCable-BESScompound	6	236.870594	0.463821	4	0.00872	1	24	3	3
107	251021	646758	236.514309	3.406269	2	0.6	2	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	236.795822	8.707839	4	-0.281513	1	12	2	2
108	250970	646744	234.86925	2.553673	2	0.4	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	235.442556	17.118816	3	-0.573306	1	9	2	2
109	250965	646764	235.29526	1.708428	1	0.4	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	235.333469	1.193563	4	-0.038209	1	24	3	3
110	250962	646780	235.007726	1.907402	1	0.6	2	G	1	2	1	Electrolyser-NewCable-BESScompound	6	235.181927	14.426095	3	-0.174201	1	18	3	3
111	250921	646773	234.194067	0.358726	1	0.2	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	234.26475	16.419334	3	-0.070683	1	18	3	3
112	250920	646753	234.211528	0.81348	1	0.1	1	C	2	2	1	Existing-Proposed Tracks-TempCompound	3	234.220634	0.730635	4	-0.009106	1	12	2	2
113	250920	646738	233.86159	2.104202	2	0.4	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	234.220634	14.880052	3	-0.359044	1	9	2	2
114	250871	646732	233.289167	1.929107	1	0.7	2	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	233.463847	8.76028	4	-0.17468	1	12	2	2
115	250872	646748	233.475082	0.876131	1	0.1	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	233.484751	0.990816	4	-0.009669	1	24	3	3
116	250872	646765	233.525942	0.87639	1	0.9	2	R	1.5	3	1	Electrolyser-NewCable-BESScompound	6	233.484751	18.359621	3	0.041191	1	18	3	3
117	250821	646755	232.736767	0.902131	1	0.3	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	232.704752	18.432734	3	0.032015	1	18	3	3
118	250822	646736	232.701097	0.879885	1	0.4	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	232.696935	0.821193	4	0.004162	1	24	3	3
119	250822	646720	232.476708	1.912741	1	0.7	2	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	232.668414	7.357939	4	-0.191706	1	12	2	2
120	250773	646714	231.857714	1.056346	1	0.4	1	R	1.5	1.5	1	Existing-Proposed Tracks-TempCompound	3	231.845466	1.122196	4	0.012248	1	12	2	2
121	250774	646723	231.85239	1.053337	1	0.2	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	231.841471	1.728233	4	0.010919	1	24	3	3
122	250771	646738	231.723825	1.097343	1	0.1	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	231.797471	11.145473	3	-0.073646	1	18	3	3
123	250727	646728	231.414916	1.279922	1	0.3	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	231.46667	11.44824	3	-0.051754	1	18	3	3
124	250737	646716	231.490373	0.857826	1	0	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	231.475478	1.77162	4	0.014895	1	24	3	3
125	250749	646702	231.579874	0.717308	1	0.4	1	G	1	1	1	Existing-Proposed Tracks-TempCompound	3	231.45126	11.530987	3	0.128614	1	9	2	2
126	250740	646683	231.686484	2.86494	2	0.2	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	231.675006	14.059348	3	0.011478	1	9	2	2
127	250718	646682	231.3299	4.345325	4	0.01	1	G	1	4	1	Electrolyser-NewCable-BESScompound	6	231.403518	1.020011	4	-0.073618	1	24	3	3
128	250700	646684	231.059501	3.975868	2	0.4	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	230.720844	16.524965	3	0.338657	1	18	3	3
129	250671	646632	227.755626	7.823118	4	0.01	1	G	1	4	1	Electrolyser-NewCable-BESScompound	6	226.410314	24.678491	3	1.345312	1	18	3	3
130	250700	646632	227.500779	6.133539	4	0.01	1	G	1	4	1	Electrolyser-NewCable-BESScompound	6	227.480771	0.627633	4	0.020008	1	24	3	3
131	250718	646630	227.780847	3.703911	2	0.1	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	227.905791	10.092961	3	-0.124944	1	9	2	2
132	250704	646582	225.821843	1.338605	1	2.4	3	G	1	3	1	Existing-Proposed Tracks-TempCompound	3	225.803764	14.273609	3	0.018079	1	9	2	2
133	250682	646582	225.689997	1.299103	1	3	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	225.703691	1.78232	4	-0.013694	1	24	3	3
134	250663	646585	225.659915	1.484533	1	2.9	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	225.59096	14.393196	3	0.068955	1	18	3	3
135	250638	646533	224.138995	2.139285	2	3.9	8	C	2	32	4	Electrolyser-NewCable-BESScompound	6	224.194962	19.324127	3	-0.055967	1	18	3	12
136	250657	646534	224.450397	1.322281	1	3.3	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	224.447764	1.18393	4	0.002633	1	24	3	6
137	250682	646530	224.586314	1.205438	1	3.8	8	G	1	8	2	Existing-Proposed Tracks-TempCompound	3	224.491205	11.437088	3	0.095109	1	9	2	4
138	250665	646487	223.657535	1.203627	1	2.4	3	G	1	3	1	Existing-Proposed Tracks-TempCompound	3	223.638459	12.116088	3	0.019076	1	9	2	2
139	250641	646489	223.418351	1.186522	1	3.4	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	223.432953	1.44414	4	-0.014602	1	24	3	6
140	250623	646493	223.162723	1.1885	1	3.9	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	223.376002	18.61289	3	-0.213279	1	18	3	6
141	250605	646435	222.821845	0.576793	1	3.9	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	222.823728	14.131232	3	-0.001883	1	18	3	6

142	250622	646435	222.838597	0.651117	1	2.9	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	222.837357	0.606545	4	0.00124	1	24	3	3
143	250642	646432	222.68865	0.662466	1	4.2	8	R	1.5	12	2	Existing-Proposed Tracks-TempCompound	3	222.789359	11.910405	3	-0.100709	1	9	2	4
144	251331	647194	249.645499	1.499649	1	3	3	not proven	2	6	2	Electrolyser-NewCable-BESScompound	6	249.634561	1.071583	4	0.010938	1	24	3	6
145	251245	647167	247.338948	4.827575	4	0.7	2	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	247.30231	0.524548	4	0.036638	1	24	3	9
146	251071	647232	249.355292	1.5922	1	0.1	1	G	1	1	1	PV Layout	3	249.338111	2.959091	4	0.017181	1	12	2	2
147	251021	647233	247.726898	3.748516	2	0.01	1	C	2	4	1	PV Layout	3	247.564197	2.759623	4	0.162701	1	12	2	2
148	251021	647282	245.241981	4.331466	4	0.1	1	C	2	8	2	PV Layout	3	245.479026	3.512989	4	-0.237045	1	12	2	4
149	250971	647282	242.565494	4.935436	4	0.01	1	R	1.5	6	2	PV Layout	3	242.684609	3.186222	4	-0.119115	1	12	2	4
150	250973	647335	240.799623	3.216595	2	1.9	3	C	2	12	2	PV Layout	3	240.778334	3.701879	4	0.021289	1	12	2	4
151	250971	647382	240.195189	3.791127	2	1.9	3	C	2	12	2	PV Layout	3	240.280518	1.669843	4	-0.085329	1	12	2	4
152	250921	647383	238.051999	3.48858	2	0.01	1	G	1	2	1	PV Layout	3	238.06437	5.083225	4	-0.012371	1	12	2	2
153	250871	647382	238.309024	3.519888	2	0.8	2	C	2	8	2	PV Layout	3	238.225026	1.548345	4	0.083998	1	12	2	4
154	250872	647333	235.479796	1.564125	1	0.9	2	G	1	2	1	Minor Water Feature	6	235.511345	0.840451	4	-0.031549	1	24	3	3
155	250922	647333	237.767871	4.343844	4	0.7	2	G	1	8	2	PV Layout	3	238.127709	4.708951	4	-0.359838	1	12	2	4
156	250921	647282	238.98435	5.933853	4	0.3	1	G	1	4	1	PV Layout	3	239.162764	2.982129	4	-0.178414	1	12	2	2
157	250921	647232	242.590891	4.794001	4	0.01	1	C	2	8	2	PV Layout	3	242.475831	2.964015	4	0.11506	1	12	2	4
158	250973	647231	245.376244	3.730929	2	0.01	1	C	2	4	1	PV Layout	3	245.15461	4.395545	4	0.221634	1	12	2	2
159	251022	647181	246.224854	4.849212	4	0.1	1	G	1	4	1	PV Layout	3	246.362802	1.986026	4	-0.137948	1	12	2	2
160	250969	647182	245.444962	3.146648	2	0.01	1	C	2	4	1	PV Layout	3	245.450588	1.141609	4	-0.005626	1	12	2	2
161	250921	647181	244.286707	2.568202	2	0.01	1	G	1	2	1	PV Layout	3	244.318683	2.219584	4	-0.031976	1	12	2	2
162	250922	647132	241.362688	6.144713	4	0.01	1	C	2	8	2	PV Layout	3	241.287719	0.778825	4	0.074969	1	12	2	4
163	250870	647132	240.181064	6.007305	4	0.01	1	G	1	4	1	PV Layout	3	240.058483	1.283593	4	0.122581	1	12	2	2
164	250873	647185	242.060884	3.006556	2	0.01	1	G	1	2	1	PV Layout	3	242.046967	2.039523	4	0.013917	1	12	2	2
165	250871	647233	239.225796	5.561061	4	0.1	1	G	1	4	1	PV Layout	3	239.161453	2.128527	4	0.064343	1	12	2	2
166	250871	647283	236.657747	4.65788	4	0.7	2	G	1	8	2	PV Layout	3	236.948939	3.530709	4	-0.291192	1	12	2	4
167	250821	647332	235.772335	5.220887	4	0.1	1	G	1	4	1	PV Layout	3	235.48563	3.221124	4	0.286705	1	12	2	2
168	250771	647332	236.189536	3.644284	2	0.3	1	G	1	2	1	PV Layout	3	235.998179	3.035428	4	0.191357	1	12	2	2
169	250772	647282	232.601857	3.562186	2	0.1	1	G	1	2	1	PV Layout	3	232.85039	3.590812	4	-0.248533	1	12	2	2
170	250823	647281	233.822444	2.1424	2	0.01	1	C	2	4	1	PV Layout	3	234.069071	14.348456	3	-0.246627	1	9	2	2
171	250820	647231	235.431792	5.526551	4	0.3	1	G	1	4	1	PV Layout	3	235.227356	4.452156	4	0.204436	1	12	2	2
172	250773	647233	231.892088	3.130743	2	0.3	1	G	1	2	1	PV Layout	3	232.050186	7.650521	4	-0.158098	1	12	2	2
173	250771	647181	233.967562	6.268351	4	0.01	1	G	1	4	1	PV Layout	3	233.774303	2.186785	4	0.193259	1	12	2	2
174	250822	647181	238.855268	5.511871	4	0.01	1	C	2	8	2	PV Layout	3	238.745918	2.252168	4	0.10935	1	12	2	4
175	250822	647132	238.497944	6.413434	4	0.01	1	G	1	4	1	PV Layout	3	238.428134	1.154525	4	0.06981	1	12	2	2
176	250772	647131	235.622354	6.231383	4	0.01	1	G	1	4	1	PV Layout	3	235.623329	0.128073	4	-0.000975	1	12	2	2
177	250771	647082	230.129991	5.03492	4	0.01	1	C	2	8	2	PV Layout	3	230.102023	2.805663	4	0.027968	1	12	2	4
178	250721	647032	224.793017	4.624709	4	0.2	1	G	1	4	1	PV Layout	3	224.978454	2.752561	4	-0.185437	1	12	2	2
179	250722	647083	226.541463	5.775226	4	0.1	1	G	1	4	1	PV Layout	3	226.490734	3.46983	4	0.050729	1	12	2	2
180	250721	647132	231.35433	6.728987	4	0.01	1	G	1	4	1	PV Layout	3	231.334737	1.61584	4	0.019593	1	12	2	2
181	250675	647082	224.709057	4.552947	4	0.1	1	G	1	4	1	PV Layout	3	224.82532	8.027787	4	-0.116263	1	12	2	2
182	250622	646382	222.338948	0.667734	1	4.8	8	C	2	16	3	Existing-Proposed Tracks-TempCompound	3	222.464162	12.047883	3	-0.125214	1	9	2	6
183	250601	646382	222.46809	0.563139	1	2.9	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	222.478297	0.968937	4	-0.010207	1	24	3	3
184	250579	646382	222.343359	0.565011	1	4.7	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	222.420684	18.381306	3	-0.077325	1	18	3	6
185	250561	646333	220.657053	2.422733	2	2.5	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	220.973332	17.241768	3	-0.316279	1	18	3	6
186	250581	646332	221.28605	2.113971	2	3.3	8	G	1	16	3	Electrolyser-NewCable-BESScompound	6	221.302794	0.873216	4	-0.016744	1	24	3	9
187	250603	646332	221.617838	1.706394	1	3.9	8	C	2	16	3	Existing-Proposed Tracks-TempCompound	3	221.606348	13.112451	3	0.01149	1	9	2	6
188	250583	646282	219.782694	2.089567	2	3	3	C	2	12	2	Existing-Proposed Tracks-TempCompound	3	219.594526	10.653498	3	0.188168	1	9	2	4
189	250561	646282	219.331302	3.614027	2	1.6	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	219.39725	1.084469	4	-0.065948	1	24	3	6
190	250540	646282	217.966727	4.359995	4	1	2	G	1	8	2	Minor Water Feature	6	217.705399	4.070903	4	0.261328	1	24	3	6
191	250531	646232	219.423046	2.367226	2	1.3	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	218.975023	19.082679	3	0.448023	1	18	3	6
192	250551	646232	218.990457	2.5087	2	3.3	8	C	2	32	4	Electrolyser-NewCable-BESScompound	6	218.975023	1.271684	4	0.015434	1	24	3	12
193	250571	646232	218.518377	2.786005	2	1.3	3	C	2	12	2	Minor Water Feature	6	218.688468	5.354022	4	-0.170091	1	24	3	6
194	250577	646182	219.836501	2.813023	2	3.6	8	C	2	32	4	Existing-Proposed Tracks-TempCompound	3	220.673539	17.750427	3	-0.837038	1	9	2	8
195	250557	646182	220.594775	2.458285	2	1.7	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	220.58137	0.778365	4	0.013405	1	24	3	6
196	250537	646182	221.06767	2.36723	2	3.9	8	G	1	16	3	Existing-Proposed Tracks-TempCompound	3	220.470745	17.216564	3	0.596925	1	9	2	6
197	250544	646132	222.26727	1.440746	1	2.3	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	221.799575	18.052	3	0.467695	1	18	3	3
198	250564	646133	221.759799	1.957589	1	2.7	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	221.726005	0.73706	4	0.033794	1	24	3	3
199	250584	646132	221.344268	2.28682	2	1.9	3	G	1	6	2	Minor Water Feature	6	221.482085	6.451834	4	-0.137817	1	24	3	6
200	250588	646083	221.537818	0.811538	1	0.5	1	G	1	1	1	Existing-Proposed Tracks-TempCompound	3	221.900878	17.753406	3	-0.36306	1	9	2	2
201	250569	646082	221.779685	1.484387	1	1.4	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	221.766411	0.80743	4	0.013274	1	24	3	3
202	250549	646083	221.858462	1.450929	1	1.3	3	C	2	6	2	Minor Water Feature	6	221.851378	0.583227	4	0.007084	1	24	3	6
203	250553	646032	223.651737	3.262922	2	2	3	C	2	12	2	Electrolyser-NewCable-BESScompound	6	223.902828	18.92934	3	-0.251091	1	18	3	6
204	250573	646032	223.947304	2.566049	2	2	3	R	1.5	9	2	Electrolyser-NewCable-BESScompound	6	223.902828	0.939647	4	0.044476	1	24	3	6
205	250593	646033	224.141972	1.857194	1	1.6	3	C	2	6	2	Existing-Proposed Tracks-TempCompound	3	223.956537	16.551102	3	0.185435	1	9	2	4
206	250597	645982	225.987265	2.284914	2	2.8	3	G	1	6	2	Existing-Proposed Tracks-TempCompound	3	225.965505	14.829189	3	0.02176	1	9	2	4
207	250577	645982	225.906881	2.257749	2	2.5	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	225.871168	1.16939	4	0.035713	1	24	3	6
208	250557	645982	225.779409	2.403128	2	2.5	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	225.871168	18.877094	3	-0.091759	1	18	3	6
209	250581	645933	228.190677	3.734032	2	1.2	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	228.148789	0.67458	4	0.041888	1	24	3	6
210	250561	645932	227.998558	3.728697	2	0.5	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	227.872028	18.339097	3	0.12653	1	18	3	3
211	250600	645932	228.394513	3.825489	2	0.6	2	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	228.226707	11.874765	3	0.167806	1	9	2	2
212	250603	645882	231.604189	3.635087	2	0.2	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	231.489443	6.893816	4	0.114746	1	12	2	2
213	250584	645881	231.486593	3.687823	2	0.9	2	C	2	8	2	Electrolyser-NewCable-BESScompound	6	231.497447	0.235555	4	-0.010854	1	24	3	6
214	250564	645882	231.207869	3.679331	2	1	2	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	231.504524	6.189977	4	-0.296655	1	12	2	2
215	250615	645832	234.290025	2.936423	2	1.4	3	G	1	6	2	Existing-Proposed Tracks-TempCompound	3	234.162738	3.23425	4	0.127287	1	12	2	4
216	250594	645832	234.213295	2.868233	2	2.4	3	R	1.5	9	2	Electrolyser-NewCable-BESScompound	6	234.248921	0.725761	4	-0.035626	1	24	3	6
217	250574	645832	234.013557	2.688913	2	2.6	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	233.819772	17.721153	3	0.193785	1	18	3	6
218	250595	645782	236.513072	2.695171	2	1.4	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	236.364668	18.300892	3	0.148404	1	18	3	6
219	250618	645783	236.713872	2.695154	2	1.3	3	C	2	12	2	Electrolyser-NewCable-BESScompound	6	236.700207	0.785922	4	0.013665	1	24	3	6
220	250640	645783	236.93674	2.720403	2	1.7	3	G	1	6	2	Existing-Proposed Tracks-TempCompound	3	236.93067	2.669214	4	0.00607	1	12	2	4
221	250669	645732	239.140107	2.436474	2	2.1	3	G	1	6	2	Existing-Proposed Tracks-TempCompound	3	239.104118	1.418354	4	0.035989	1	12	2	4
222	250645	645732	239.09393	2.22664	2	1.9	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	239.072078	1.133273	4	0.021852	1	24	3	6
223	250623	645732	238.988531	2.223304	2	1.7	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	238.726367	17.751902	3	0.262164	1	18	3	6
224	250659	645682	241.044309	1.822317	1	1.9	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	240.686393	17.207352	3	0.357916	1	18	3	3
225	250683	645682	240.75535	1.868363	1	0.2	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	240.750713	1.138201	4	0.004637	1	24	3	3
226	250708	645683	240.213076	1.882663	1	1.9	3	G	1	3	1	Existing-Proposed Tracks-TempCompound	3	240.15418	2.110455	4	0.058896	1	12	2	2
227	250747	645632	240.907402	1.249878	1	2.9	3	C	2	6	2	Existing-Proposed Tracks-TempCompound	3	240.798398	5.839169	4	0.109004	1	12	2	4
228	250723	645632	240.943814	1.385148	1	3	3	C	2	6	2	Electrolyser-NewCable-BESScompound	6	240.931915	0.893614	4	0.011899	1	24	3	6
229	250698	645632	241.668095	1.868326	1	3.1	8	C	2	16	3	Electrolyser-NewCable-BESScompound	6	241.034558	18.110037	3	0.633537	1	18	3	9
230	250731	645591	241.815684	1.21493	1	3	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	241.41731	18.969455	3	0.398374	1	18	3	3
231	250772	645593	241.658966	0.713983	1	2.7	3	G	1	3	1	Existing-Proposed Tracks-TempCompound	3	241.513488	11.614308	3	0.145478	1	9	2	2
232	250771	645613	241.27941	1.222231	1	2.9	3	C	2	6	2	Electrolyser-NewCable-BESScompound	6	241.278446	0.815832	4	0.000964	1	24	3	6
233	250738	645610	241.403758	1.22753	1	2.9	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	241.4138	0.572994	4	-0.010042	1	24	3	3
234	250771	645633	240.857066	1.22228	1	2.8	3	C	2	6	2	Existing-Proposed Tracks-TempCompound	3	240.998088	10.883105	3	-0.141022	1	9	2	4
235	254676	645031	255.763845	1.930982	1	0.01	1	R	1.5	1.5	1	Electrolyser-NewCable-BESScompound	6	255.76691	0.804626	4	-0.003065	1	24	3	3
236	254826	645136	259.507818	3.780878	2	1.1	3	G	1	6	2	Existing-Proposed Tracks-TempCompound	3	261.044297	37.795206	3	-1.536479	1	9	2	4
237	255028	645259	260.71796	3.669246	2	1.4	3	G	1	6	2	Existing-Proposed Tracks-TempCompound	3	256.762271	70.086052	3	3.955689	1	9	2	4
238	255141	645134	255.861868	4.915907	4	2.4	3	G	1	12	2	Minor Water Feature	6	254.260574	20.15914	3	1.601294	1	18	3	6
239	254987	645047	253.787907	3.938569	2	2.4	3	G	1	6	2	Minor Water Feature	6	253.005826	13.178437	3	0.782081	1	18	3	6
240	254773	644925	249.402942	1.474379	1	0.4	1	G	1	1	1	Minor Water Feature	6	249.386606	19.309249	3	0.016336	1	18	3	3
241	249866	647425	216.586973	2.719141	2	0.01	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	216.601343	0.301006	4	-0.01437	1	12	2	2
242	249897	647385	217.880939	2.705755	2	0.01	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	217.861345	0.525417	4	0.019594	1	12	2	2
243	249929	647346	219.257413	2.722701	2	0.01	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	219.23965	1.091206	4	0.017763	1	12	2	2
244	249951	647319	221.548004	7.066258	4	0.01	1	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	221.442968	0.920458	4	0.105036	1	12	2	2
245	250032	647322	223.845897	1.624956	1	0.01	1	G	1	1	1	Existing-Proposed Tracks-TempCompound	3	223.864445	0.982245	4	-0.018548	1	12	2	2
246	250032	647275	224.081958	0.804129	1	0.3	1	G	1	1	1	Existing-Proposed Tracks-TempCompound	3	224.063975	1.289201	4	0.017983	1	12	2	2
247	249997	647262	223.245095	1.944839	1	0.01	1	G	1	1	1	Existing-Proposed Tracks-TempCompound	3	223.291462	1.383823	4	-0.046367	1	12	2	2
248	250019	647233	223.310129	2.590741	2	0.01	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	223.273598	0.983929	4	0.036531	1	12	2	2
249	249922	647233	218.679394	4.264422	4	0.3	1	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	218.686126	0.40425	4	-0.006732	1	12	2	2
250	249928	647284	221.989715	5.056203	4	0.01	1	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	222.043947	0.99933	4	-0.054232	1	12	2	2
251	249921	647323	219.333166	2.649353	2	0.01	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	219.298175	0.986759	4	0.034991	1	12	2	2
252	250819	645634	240.77506	1.228154	1	3.2	8	C	2	16	3	Electrolyser-NewCable-BESScompound	6	241.09472	16.449328	3	-0.31966	1	18	3	9
253	250818	645616	241.104887	0.700238	1	3	3	C	2	6	2	Electrolyser-NewCable-BESScompound	6	241.10672	0.886715	4	-0.001833	1	24	3	6
254	250821	645596	241.180079	0.626287	1	3	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	241.086719	19.24907	3	0.09336	1	18	3	3
255	250871	645602	240.790755	0.292166	1	3.4	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	240.70751	15.49005	3	0.083245	1	18	3	6
256	250872	645618	240.702766	0.292176	1	3.3	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	240.700103	0.90657	4	0.002663	1	24	3	6
257	250871	645632	240.638291	0.242577	1	3.2	8	C	2	16	3	Electrolyser-NewCable-BESScompound	6	240.696044	13.208064	3	-0.057753	1	18	3	9
258	250920	645637	240.328652	1.088812	1	3.4	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	240.537201	13.771129	3	-0.208549	1	18	3	6
259	250920	645622	240.555675	1.135501	1	3.9	8	C	2	16	3	Electrolyser-NewCable-BESScompound	6	240.569202	0.712836	4	-0.013527	1	24	3	9
260	250921	645602	240.844994	0.577206	1	4.7	8	R	1.5	12	2	Electrolyser-NewCable-BESScompound	6	240.6492	17.429439	3	0.195794	1	18	3	6
261	250970	645609	240.28815	1.200632	1	5	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	239.993987	14.103481	3	0.294163	1	18	3	6
262	250971	645623	239.987261	1.123829	1	4.3	8	C	2	16	3	Electrolyser-NewCable-BESScompound	6	239.993987	0.782008	4	-0.006726	1	24	3	9
263	250968	645642	239.694591	1.088818	1	4	8	C	2	16	3	Electrolyser-NewCable-BESScompound	6	239.957575	16.581516	3	-0.262984	1	18	3	9
264	251017	645650	239.606458	1.228759	1	5	8	C	2	16	3	Electrolyser-NewCable-BESScompound	6	240.072116	22.461664	3	-0.465658	1	18	3	9
265	251025	645625	240.097054	0.791841	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	240.098393	0.785826	4	-0.001339	1	24	3	9
266	251023	645608	240.323997	0.737335	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	240.103857	17.309739	3	0.22014	1	18	3	9
267	251073	645608	240.077733	0.505197	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	239.911288	18.752746	3	0.166445	1	18	3	9
268	251068	645631	239.886244	0.742611	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	239.905041	1.437197	4	-0.018797	1	24	3	9
269	251070	645645	239.698808	0.748761	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	239.898323	15.963912	3	-0.199515	1	18	3	9
270	251118	645649	239.489186	0.767534	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	239.628395	16.130341	3	-0.139209	1	18	3	9
271	251121	645632	239.585064	0.617689	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	239.574313	1.12149	4	0.010751	1	24	3	9
272	251123	645611	239.533969	0.62148	1	4.9	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	239.653869	19.506142	3	-0.1199	1	18	3	6
273	251173	645619	239.167144	0.4391	1	4.9	8	C	2	16	3	Electrolyser-NewCable-BESScompound	6	239.191843	14.583572	3	-0.024699	1	18	3	9
274	251171	645632	239.198504	0.45552	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	239.191843	1.121491	4	0.006661	1	24	3	9
275	251172	645651	239.069619	0.833168	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	239.191843	15.592115	3	-0.122224	1	18	3	9
276	251219	645656	238.63807	0.832274	1	5.3	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	238.84304	18.690466	3	-0.20497	1	18	3	6
277	251220	645638	238.828967	0.476908	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	238.827037	0.928487	4	0.00193	1	24	3	9
278	251225	645620	238.772147	0.446179	1	5	8	C	2	16	3	Electrolyser-NewCable-BESScompound	6	238.791036	15.418464	3	-0.018889	1	18	3	9
279	251272	645623	238.413175	0.433725	1	4.3	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	238.421839	14.539671	3	-0.008664	1	18	3	6
280	251271	645639	238.419259	0.531211	1	4.3	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	238.428255	0.96099	4	-0.008996	1	24	3	6
281	251271	645655	238.35963	0.179403	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	238.368259	15.407156	3	-0.008629	1	18	3	9
282	251321	645661	238.173172	0.968237	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	237.973935	17.873027	3	0.199237	1	18	3	9
283	251326	645643	237.910868	0.967122	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	237.901938	0.526695	4	0.00893	1	24	3	9
284	251324	645624	237.704462	0.923294	1	5.1	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	237.901938	17.21205	3	-0.197476	1	18	3	6
285	251370	645630	237.23414	0.926938	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	237.383938	12.988611	3	-0.149798	1	18	3	9
286	251370	645645	237.413935	0.967852	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	237.407937	0.648605	4	0.005998	1	24	3	9

287	251372	645662	237.582794	0.918205	1	5.3	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	237.383938	16.544666	3	0.198856	1	18	3	6
288	251422	645665	236.951083	1.229584	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	236.749314	17.936404	3	0.201769	1	18	3	9
289	251427	645646	236.645835	1.239302	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	236.653318	1.005222	4	-0.007483	1	24	3	9
290	251421	645632	236.588432	1.206763	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	236.725315	12.747446	3	-0.136883	1	18	3	9
291	251471	645632	235.698235	1.238949	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	235.859315	14.743741	3	-0.16108	1	18	3	9
292	251470	645650	235.92485	1.202104	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	235.916119	0.921402	4	0.008731	1	24	3	9
293	251470	645668	236.130155	1.23912	1	5.3	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	235.828124	17.488473	3	0.302031	1	18	3	6
294	251513	645676	235.459838	1.234582	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	235.123869	23.531301	3	0.335969	1	18	3	9
295	251517	645657	235.167037	1.374908	1	5.3	8	not proven	2	16	3	Electrolyser-NewCable-BESScompound	6	235.123869	4.013071	4	0.043168	1	24	3	9
296	251520	645641	234.884247	1.449301	1	5	8	C	2	16	3	Electrolyser-NewCable-BESScompound	6	235.106969	9.420853	4	-0.222722	1	24	3	9
297	251571	645636	233.498331	2.140152	2	2.2	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	233.799317	16.984049	3	-0.300986	1	18	3	6
298	251570	645671	234.218662	2.099863	2	3.2	8	C	2	32	4	Electrolyser-NewCable-BESScompound	6	233.903317	16.25509	3	0.315345	1	18	3	12
299	251571	645654	233.856586	2.137827	2	2.2	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	233.903317	1.270134	4	-0.046731	1	24	3	6
300	251622	645677	233.614163	1.49745	1	2	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	233.110494	19.406036	3	0.503669	1	18	3	3
301	251623	645657	233.105772	1.496375	1	2	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	233.110494	0.643628	4	-0.004722	1	24	3	3
302	251621	645632	232.481276	1.497741	1	1.2	3	not proven	2	6	2	Minor Water Feature	6	232.676461	8.457186	4	-0.195185	1	24	3	6
303	251665	645642	233.406327	2.239638	2	1.9	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	233.47229	11.501878	3	-0.065963	1	18	3	6
304	251670	645658	233.643615	2.224787	2	1.9	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	233.633331	2.823351	4	0.010284	1	24	3	6
305	251673	645671	233.715756	2.128907	2	2	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	233.711409	15.701348	3	0.004347	1	18	3	6
306	251717	645664	235.234814	1.999304	1	2.6	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	235.232875	17.877509	3	0.001939	1	18	3	3
307	251716	645645	235.361849	2.070656	2	3.8	8	G	1	16	3	Electrolyser-NewCable-BESScompound	6	235.380229	0.508353	4	-0.01838	1	24	3	9
308	251713	645628	235.239439	2.239991	2	4	8	G	1	16	3	Electrolyser-NewCable-BESScompound	6	235.315216	15.328512	3	-0.075777	1	18	3	9
309	251759	645616	236.977508	2.225108	2	3.7	8	G	1	16	3	Electrolyser-NewCable-BESScompound	6	237.257394	18.140913	3	-0.279886	1	18	3	9
310	251771	645632	237.353802	2.011453	2	3.6	8	G	1	16	3	Electrolyser-NewCable-BESScompound	6	237.377395	1.121493	4	-0.023593	1	24	3	9
311	251775	645650	237.305358	2.033584	2	2.9	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	237.225393	16.561862	3	0.079965	1	18	3	6
312	251815	645626	238.943986	2.175893	2	2	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	238.856129	13.60158	3	0.087857	1	18	3	6
313	251812	645614	238.90519	2.084258	2	2	3	R	1.5	9	2	Electrolyser-NewCable-BESScompound	6	238.856129	1.83421	4	0.049061	1	24	3	6
314	251807	645596	238.712038	2.150919	2	1.5	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	238.952131	13.787301	3	-0.240093	1	18	3	6
315	251861	645568	238.798524	1.980436	1	2.1	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	239.298251	14.524652	3	-0.499727	1	18	3	3
316	251865	645582	239.305499	1.981931	1	1.7	3	R	1.5	4.5	1	Electrolyser-NewCable-BESScompound	6	239.298251	1.137148	4	0.007248	1	24	3	3
317	251869	645600	239.619551	0.666671	1	1.2	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	239.381889	15.365034	3	0.237662	1	18	3	3
318	251921	645582	240.204831	0.962021	1	1.9	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	239.432245	24.024456	3	0.772586	1	18	3	3
319	251918	645560	239.534937	1.999824	1	3.1	8	G	1	8	2	Electrolyser-NewCable-BESScompound	6	239.441791	3.285039	4	0.093146	1	24	3	6
320	251916	645540	238.90782	1.987495	1	2.1	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	239.357789	13.278575	3	-0.449969	1	18	3	3
321	251954	645517	238.826663	1.988605	1	1.8	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	239.394249	16.429909	3	-0.567586	1	18	3	3
322	251964	645533	239.477849	1.995949	1	1.7	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	239.490563	0.738807	4	-0.012714	1	24	3	3
323	251970	645543	239.901527	1.954887	1	1.5	3	G	1	3	1	Electrolyser-NewCable-BESScompound	6	239.490563	11.770328	3	0.410964	1	18	3	3
324	252023	645520	240.249916	3.331796	2	1	2	R	1.5	6	2	Electrolyser-NewCable-BESScompound	6	239.42556	14.494013	3	0.824356	1	18	3	6
325	252017	645504	239.314654	3.290871	2	0.9	2	G	1	4	1	Electrolyser-NewCable-BESScompound	6	239.324018	1.130475	4	-0.009364	1	24	3	3
326	252010	645487	238.313881	3.302446	2	1	2	G	1	4	1	Electrolyser-NewCable-BESScompound	6	238.273328	8.889548	4	0.040553	1	24	3	3
327	252049	645502	240.391917	3.336932	2	1	2	R	1.5	6	2	Existing-Proposed Tracks-TempCompound	3	240.702261	7.498356	4	-0.310344	1	12	2	4
328	252021	645482	238.515434	3.30776	2	1	2	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	238.579153	1.121494	4	-0.063719	1	12	2	2
329	252037	645476	238.807098	3.311597	2	1	2	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	238.565553	14.199997	3	0.241545	1	9	2	2
330	251988	645434	235.881549	3.020274	2	1.1	3	R	1.5	9	2	Electrolyser-NewCable-BESScompound	6	235.931012	1.162354	4	-0.049463	1	24	3	6
331	251976	645441	236.236977	3.014492	2	0.9	2	G	1	4	1	Electrolyser-NewCable-BESScompound	6	235.928994	11.899335	3	0.307983	1	18	3	3
332	252005	645430	235.661027	3.233658	2	0.2	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	235.946623	8.475831	4	-0.285596	1	12	2	2
333	251971	645382	233.105151	3.668397	2	0.01	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	233.14736	1.121494	4	-0.042209	1	12	2	2
334	251958	645395	233.840839	3.056166	2	0.1	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	233.748185	1.777164	4	0.092654	1	12	2	2
335	251946	645402	234.213402	2.836625	2	0.4	1	R	1.5	3	1	Existing-Proposed Tracks-TempCompound	3	233.645312	14.941842	3	0.56809	1	9	2	2
336	251925	645397	233.427088	3.050601	2	0.4	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	233.039345	15.830941	3	0.387743	1	18	3	3
337	251929	645386	233.082599	3.006063	2	0.1	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	233.039345	4.591302	4	0.043254	1	24	3	3
338	251936	645366	231.71316	4.437534	4	0.01	1	G	1	4	1	Minor Water Feature	6	231.820553	0.777742	4	-0.107393	1	24	3	3
339	251870	645352	231.197509	2.754107	2	0.01	1	G	1	2	1	Minor Water Feature	6	231.192981	1.006373	4	0.004528	1	24	3	3
340	251871	645366	231.60902	1.483169	1	0.01	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	231.623383	1.072224	4	-0.014363	1	24	3	3
341	251871	645382	231.953699	1.291237	1	0.01	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	231.934244	13.208112	3	0.019455	1	18	3	3
342	251826	645378	231.961367	0.941433	1	0.01	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	231.653893	18.718275	3	0.307474	1	18	3	3
343	251827	645358	231.635385	0.968558	1	0.01	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	231.621105	1.238698	4	0.01428	1	24	3	3
344	251829	645346	231.094095	5.840222	4	0.01	1	G	1	4	1	Minor Water Feature	6	230.499894	4.527598	4	0.594201	1	24	3	3
345	251771	645366	231.090354	1.298486	1	0.01	1	G	1	1	1	Existing-Proposed Tracks-TempCompound	3	230.736714	15.70736	3	0.35364	1	9	2	2
346	251779	645347	230.622646	1.344734	1	0.01	1	G	1	1	1	Electrolyser-NewCable-BESScompound	6	230.63271	0.506074	4	-0.010064	1	24	3	3
347	251781	645337	230.321744	2.551772	2	0.01	1	G	1	2	1	Minor Water Feature	6	230.078342	3.663525	4	0.243402	1	24	3	3
348	251746	645320	231.850952	2.377152	2	0.01	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	231.843392	1.21811	4	0.00756	1	24	3	3
349	251761	645307	232.069592	2.556656	2	0.01	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	232.881734	18.370101	3	-0.812142	1	18	3	3
350	251734	645330	230.557736	4.349243	4	0.01	1	G	1	4	1	Minor Water Feature	6	230.829541	2.662939	4	-0.271805	1	24	3	3
351	251778	645291	232.62632	3.125295	2	0.01	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	233.0525	11.373339	3	-0.42618	1	18	3	3
352	251725	645302	231.897073	2.465329	2	0.01	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	231.88962	1.020315	4	0.007453	1	24	3	3
353	251713	645287	232.40746	2.691171	2	0.01	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	232.296895	3.061732	4	0.110565	1	12	2	2
354	251760	645278	233.17015	2.524112	2	0.01	1	G	1	2	1	Electrolyser-NewCable-BESScompound	6	232.960678	5.289103	4	0.209472	1	24	3	3
355	251751	645266	233.774424	2.205893	2	0.01	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	233.794344	1.089447	4	-0.01992	1	12	2	2
356	251786	645269	233.871804	3.137685	2	1.2	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	233.785698	1.831819	4	0.086106	1	24	3	6
357	251799	645290	232.984021	3.139073	2	1.5	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	233.981698	18.56651	3	-0.997677	1	18	3	6
358	251787	645250	234.896562	2.488144	2	1.2	3	G	1	6	2	Existing-Proposed Tracks-TempCompound	3	234.637696	5.339989	4	0.258866	1	12	2	4
359	251843	645258	235.445975	3.141728	2	1.7	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	235.38232	1.14883	4	0.063655	1	24	3	6
360	251852	645269	235.033292	3.139728	2	1.2	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	235.454778	11.460329	3	-0.421486	1	18	3	6
361	251841	645237	236.311305	2.396571	2	1	2	G	1	4	1	Existing-Proposed Tracks-TempCompound	3	236.030681	10.948422	3	0.280624	1	9	2	2
362	251892	645223	237.831412	2.514213	2	1.2	3	G	1	6	2	Existing-Proposed Tracks-TempCompound	3	237.648223	6.876347	4	0.183189	1	12	2	4
363	251900	645238	237.437436	2.469313	2	1.1	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	237.485424	1.131464	4	-0.047988	1	24	3	6
364	251909	645251	237.093371	2.992757	2	1.5	3	R	1.5	9	2	Electrolyser-NewCable-BESScompound	6	237.573424	14.944096	3	-0.480053	1	18	3	6
365	251939	645202	239.646589	2.358786	2	0.3	1	G	1	2	1	Existing-Proposed Tracks-TempCompound	3	239.498229	8.686739	4	0.14836	1	12	2	2
366	251947	645217	239.274643	2.464854	2	0.9	2	G	1	4	1	Electrolyser-NewCable-BESScompound	6	239.291416	0.970576	4	-0.016773	1	24	3	3
367	251966	645240	238.821948	2.578583	2	1.2	3	R	1.5	9	2	Electrolyser-NewCable-BESScompound	6	239.53622	18.952723	3	-0.714272	1	18	3	6
368	252003	645201	240.985366	2.224758	2	2.1	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	241.075319	18.319982	3	-0.089953	1	18	3	6
369	251988	645195	240.858667	2.224783	2	1.6	3	G	1	6	2	Electrolyser-NewCable-BESScompound	6	240.797075	3.506597	4	0.061592	1	24	3	6
370	250050	647100	222.915001	1.279453	1	3.09	8	not proven	2	16	3	Existing-Proposed Tracks-TempCompound	3	224.370669	62.142269	3	-1.455668	1	9	2	6
371	250100	647100	224.334999	1.703017	1	3.17	8	not proven	2	16	3	Existing-Proposed Tracks-TempCompound	3	225.033534	42.366656	3	-0.698535	1	9	2	6
372	250150	647100	225.224998	1.043149	1	2.51	3	not proven	2	6	2	Existing-Proposed Tracks-TempCompound	3	225.987384	43.103857	3	-0.762386	1	9	2	4
373	250200	647100	225.587498	1.29988	1	3.28	8	not proven	2	16	3	PV Layout	3	226.436243	42.279422	3	-0.848745	1	9	2	6
374	250250	647100	225.639999	1.456534	1	2.79	3	not proven	2	6	2	PV Layout	3	226.436506	32.685452	3	-0.796507	1	9	2	4
375	250300	647100	225.557499	2.958774	2	3.68	8	not proven	2	32	4	PV Layout	3	226.66983	27.102399	3	-1.112331	1	9	2	8
376	250350	647100	225.214996	3.188553	2	2.56	3	not proven	2	12	2	PV Layout	3	226.533211	27.102404	3	-1.318215	1	9	2	4
377	250450	647100	225.610001	2.391895	2	2.69	3	not proven	2	12	2	Minor Water Feature	6	223.860467	44.284604	3	1.749534	1	18	3	6
378	250000	647150	221.900002	3.490728	2	2.71	3	not proven	2	12	2	Minor Water Feature	6	219.058832	61.744262	3	2.84117	1	18	3	6
379	250050	647150	223.415001	1.741569	1	2.99	3	not proven	2	6	2	Existing-Proposed Tracks-TempCompound	3	224.137536	26.432615	3	-0.722535	1	9	2	4
380	250100	647150	224.834999	1.676116	1	1.84	3	not proven	2	6	2	Existing-Proposed Tracks-TempCompound	3	224.833535	0.941918	4	0.001464	1	12	2	4
381	250150	647150	226.107502	1.05266	1	2.27	3	not proven	2	6	2	Existing-Proposed Tracks-TempCompound	3	226.023382	4.910329	4	0.08412	1	12	2	4
382	250200	647150	226.634998	1.239104	1	1.87	3	not proven	2	6	2	PV Layout	3	226.621995	0.941918	4	0.013003	1	12	2	4
383	250250	647150	226.915001	2.555735	2	1.06	3	not proven	2	12	2	PV Layout	3	226.875656	0.941919	4	0.039345	1	12	2	4
384	250300	647150	227.285	2.552726	2	1.27	3	not proven	2	12	2	PV Layout	3	227.245653	0.941919	4	0.039347	1	12	2	4
385	250350	647150	227.607502	2.722743	2	1.55	3	not proven	2	12	2	PV Layout	3	227.567079	0.941919	4	0.040423	1	12	2	4
386	250400	647150	227.977501	2.705745	2	2.66	3	not proven	2	12	2	PV Layout	3	227.938159	0.941919	4	0.039342	1	12	2	4
387	250450	647150	227.895	3.476131	2	2.18	3	not proven	2	12	2	Minor Water Feature	6	225.847406	20.412276	3	2.047594	1	18	3	6
388	250500	647150	225.279999	12.139936	6	0.89	2	not proven	2	24	3	Minor Water Feature	6	224.007578	7.846701	4	1.272421	1	24	3	9
389	250550	647150	227.224998	2.627739	2	1.53	3	not proven	2	12	2	PV Layout	3	227.180623	0.94192	4	0.044375	1	12	2	4
390	250600	647150	226.014999	2.762965	2	1.45	3	not proven	2	12	2	PV Layout	3	225.970627	0.94192	4	0.044372	1	12	2	4
391	250050	647200	223.714996	2.596211	2	2.27	3	not proven	2	12	2	Existing-Proposed Tracks-TempCompound	3	223.627597	1.951494	4	0.087399	1	12	2	4
392	250100	647200	225.32	1.632324	1	1.65	3	not proven	2	6	2	PV Layout	3	225.331945	1.130533	4	-0.011945	1	12	2	4
393	250150	647200	226.714996	1.682452	1	1.55	3	not proven	2	6	2	PV Layout	3	226.733531	1.130534	4	-0.018535	1	12	2	4
394	250200	647200	228.175003	3.37134	2	1.81	3	not proven	2	12	2	PV Layout	3	228.23687	1.130534	4	-0.061867	1	12	2	4
395	250250	647200	229.695	2.577573	2	2.39	3	not proven	2	12	2	PV Layout	3	228.84802	16.906544	3	0.84698	1	9	2	4
396	250350	647200	230.75	1.775589	1	2.48	3	not proven	2	6	2	Existing-Proposed Tracks-TempCompound	3	230.529097	4.910333	4	0.220903	1	12	2	4
397	250450	647200	229.052498	6.229713	4	2.25	3	not proven	2	24	3	Existing-Proposed Tracks-TempCompound	3	228.998007	0.941919	4	0.054491	1	12	2	6
398	250550	647200	229.315002	2.270779	2	3.05	8	not proven	2	32	4	Existing-Proposed Tracks-TempCompound	3	229.281015	0.94192	4	0.033987	1	12	2	8
399	250650	647200	227.687504	3.07268	2	0.98	2	not proven	2	8	2	Existing-Proposed Tracks-TempCompound	3	227.636996	0.94192	4	0.050508	1	12	2	4
400	250050	647250	224.324997	0.813932	1	1.65	3	not proven	2	6	2	PV Layout	3	224.329438	3.109818	4	-0.004441	1	12	2	4
401	250100	647250	225.529999	1.620145	1	1.4	3	not proven	2	6	2	PV Layout	3	225.549949	3.109819	4	-0.01995	1	12	2	4
402	250150	647250	227.27	2.319019	2	1.05	3	not proven	2	12	2	PV Layout	3	227.323624	3.109819	4	-0.053624	1	12	2	4
403	250200	647250	229.162498	2.352152	2	3.33	8	not proven	2	32	4	PV Layout	3	228.833626	10.212557	3	0.328872	1	9	2	8
404	250250	647250	230.540001	0.338613	1	3.31	8	not proven	2	16	3	PV Layout	3	230.745581	35.14466	3	-0.20558	1	9	2	6
405	250300	647250	230.514999	0.331506	1	1.84	3	not proven	2	6	2	PV Layout	3	230.857587	60.417941	3	-0.342588	1	9	2	4
406	250350	647250	230.517498	0.259645	1	4.21	8	not proven	2	16	3	Minor Water Feature	6	228.838278	49.849332	3	1.67922	1	18	3	9
407	250400	647250	228.837498	2.169996	2	2.09	3	not proven	2	12	2	Minor Water Feature	6	228.778292	6.50193	4	0.059206	1	24	3	6
408	250450	647250	230.427502	2.15305	2	3.78	8	not proven	2	32	4	Minor Water Feature	6	229.378954	22.415225	3	1.048548	1	18	3	12
409	250500	647250	231	1.436496	1	3.89	8	not proven	2	16	3	PV Layout	3	231.07368	3.109823	4	-0.07368	1	12	2	6
410	250550	647250	230.824997	1.784867	1	3.05	8	not proven	2	16	3	PV Layout	3	230.921165	3.109824	4	-0.096168	1	12	2	6
411	250600	647250	231.075005	3.050108	2	1.07	3	not proven	2	12	2	PV Layout	3	231.226104	3.109824	4	-0.151099	1	12	2	4
412	250650	647250	230.227497	3.133234	2	1.47	3	not proven	2	12	2	PV Layout	3	230.382009	3.109825	4	-0.154512	1	12	2	4
413	250700	647250	230.767502	2.396952	2	0.81	2	not proven	2	8	2	PV Layout	3	230.8918	3.109825	4	-0.124298	1	12	2	4
414	250100	647300	226.09	2.324588	2	0.65	2	not proven	2	8	2	PV Layout	3	226.087624	0.941918	4	0.002376	1	12	2	4
415	250150	647300	227.984997	2.339404	2	0.87	2	not proven	2	8	2	PV Layout	3	227.980817	0.941918	4	0.00418	1	12	2	4
416	250200	647300	229.8475	1.641938	1	2.46	3	not proven	2	6	2	PV Layout	3	229.842271	0.941918	4	0.005229	1	12	2	4
417	250250	647300	230.832504	0.330522	1	2.89	3	not proven	2	6	2	PV Layout	3	230.827821	0.941919	4	0.004683	1	12	2	4
418	250350	647300	231.3825	1.740252	1	4.74	8	not proven	2	16	3	PV Layout	3	230.965515	65.991936	3	0.416985	1	9	2	6
419	250450	647300	231.032501	3.580202	2	0.65	2	not proven	2	8	2	Minor Water Feature	6	231.014034	1.951496	4	0.018467	1	24	3	6
420	250550	647300	233.099998	4.13547	4	1.14	3	not proven	2	24	3	PV Layout	3	232.896296	2.915186	4	0.203702	1	12	2	6
421	250650	647300	233.127502	2.862866	2	0.59	2	not proven	2	8	2	PV Layout	3	232.989872	2.915187	4	0.13763	1	12	2	4
422	250750	647300	233.755001	4.242676	4	0.42	1	not proven	2	8	2	PV Layout	3	233.542834	2.915188	4	0.212167	1	12	2	4
423	250100	647350	226.490005	3.449443	2	0.75	2	not proven	2	8	2	PV Layout	3	226.475464	1.130533	4	0.014541	1	12	2	4
424	250150	647350	228.669998	2.335919	2	0.79	2	not proven	2	8	2	PV Layout	3	228.689574	1.130534	4	-0.019576	1	12	2	4
425	250200	647350	230.440002	1.630832	1	1.25	3	not proven	2	6	2	PV Layout	3	230.473402	1.130534	4	-0.0334	1	12	2	4
426	250250	647350	231.342503	1.710123	1	1.73	3	not proven	2	6	2	PV Layout	3	231.375531	1.130534	4	-0.033028	1	12	2	4
427	250300	647350	232.040001	1.742066	1	1.22	3	not proven	2	6	2	PV Layout	3	231.904315	11.782808	3	0.135686	1	9	2	4
428	250500	647350	233.182503	5.577758	4	0	1	not proven	2	8	2	Minor Water Feature	6	233.065673	9.102836	4	0.11683	1	24	3	6
429	250550	647350	236.454998	2.919225	2	1.31	3	not proven	2	12	2	PV Layout	3	236.424798	0.94192	4	0.0302	1	12	2	4
430	250600	647350	236.895	4.68107	4	1.68	3	not proven	2	24	3	PV Layout	3	236.814872	0.94192	4	0.080128	1	12	2	6
431	250650	647350	236.34	5.103717	4	2.04	3	not proven	2	24	3	PV Layout	3	236.254305	0.94192	4	0.085695	1	12	2	6

432	250700	647350	236.525002	3.275002	2	1.3	3	not proven	2	12	2	PV Layout	3	236.477172	0.94192	4	0.04783	1	12	2	4
433	250750	647350	237.055	3.280697	2	2.08	3	not proven	2	12	2	PV Layout	3	237.007171	0.94192	4	0.047829	1	12	2	4
434	250800	647350	237.495003	3.505641	2	1.64	3	not proven	2	12	2	PV Layout	3	237.439777	0.94192	4	0.055226	1	12	2	4
435	250850	647350	236.647495	3.611064	2	0.69	2	not proven	2	8	2	PV Layout	3	236.587769	0.941921	4	0.059726	1	12	2	4
436	250150	647400	229.515003	3.187881	2	1.25	3	not proven	2	12	2	PV Layout	3	229.375347	4.910329	4	0.139656	1	12	2	4
437	250200	647400	231.400002	2.098653	2	1.28	3	not proven	2	12	2	PV Layout	3	231.3302	4.91033	4	0.069802	1	12	2	4
438	250250	647400	232.670002	1.720077	1	1.56	3	not proven	2	6	2	PV Layout	3	232.546319	4.910331	4	0.123683	1	12	2	4
439	250300	647400	233.369999	2.024268	2	2.17	3	not proven	2	12	2	PV Layout	3	233.565152	5.105472	4	-0.195153	1	12	2	4
440	250650	647400	239.555	2.322593	2	2.78	3	not proven	2	12	2	PV Layout	3	237.906305	30.065933	3	1.648695	1	9	2	4
441	250750	647400	239.770004	2.598772	2	3.82	8	not proven	2	32	4	PV Layout	3	238.857359	19.381002	3	0.912645	1	9	2	8
442	250850	647400	239.674999	3.552539	2	1.89	3	not proven	2	12	2	PV Layout	3	239.736002	1.130537	4	-0.061003	1	12	2	4
443	250950	647400	239.482498	4.138357	4	0.27	1	not proven	2	8	2	PV Layout	3	239.986061	17.675696	3	-0.503563	1	9	2	4
444	251050	647400	245.380001	2.929103	2	2.03	3	not proven	2	12	2	PV Layout	3	245.399882	1.130537	4	-0.019881	1	12	2	4
445	251102	647406	247.521004	2.326724	2	2.33	3	not proven	2	12	2	PV Layout	3	247.572784	7.10373	4	-0.05178	1	12	2	4
446	251150	647400	248.867504	1.265155	1	3.45	8	not proven	2	16	3	Minor Water Feature	6	249.039142	21.336676	3	-0.171638	1	18	3	9
447	251000	647450	243.920002	3.020135	2	0.43	1	not proven	2	4	1	PV Layout	3	243.901094	4.910345	4	0.018908	1	12	2	2
448	251050	647450	246.064999	2.245792	2	0.47	1	not proven	2	4	1	PV Layout	3	246.046475	4.910345	4	0.018524	1	12	2	2
449	251100	647450	247.900002	2.2005	2	2.35	3	not proven	2	12	2	PV Layout	3	247.833816	4.910346	4	0.066186	1	12	2	4
450	251150	647450	249.452499	1.351992	1	2.84	3	not proven	2	6	2	PV Layout	3	249.531763	5.105488	4	-0.079264	1	12	2	4
451	250950	647500	242.915001	2.72122	2	1.11	3	not proven	2	12	2	Minor Water Feature	6	244.722192	37.010666	3	-1.807191	1	18	3	6
452	251050	647500	245.265003	2.686012	2	0.51	FALSE	not proven	2	0	1	PV Layout	3	245.292386	0.941921	4	-0.027383	1	12	2	2
453	251150	647500	248.985001	2.410231	2	2.02	3	not proven	2	12	2	PV Layout	3	249.015834	0.941922	4	-0.030833	1	12	2	4
454	251250	647500	251.414997	1.025757	1	1.52	3	not proven	2	6	2	PV Layout	3	251.411557	0.941922	4	0.00344	1	12	2	4
455	251350	647500	252.782501	0.529017	1	2.23	3	not proven	2	6	2	PV Layout	3	252.748852	3.83817	4	0.033649	1	12	2	4
456	251100	647550	246.7925	2.164058	2	0.46	1	not proven	2	4	1	PV Layout	3	246.818061	8.907519	4	-0.025561	1	12	2	2
457	251150	647550	248.552502	1.41409	1	0.83	2	not proven	2	4	1	PV Layout	3	248.703536	8.907521	4	-0.151034	1	12	2	2
458	251200	647550	249.535	1.69565	1	1.09	3	not proven	2	6	2	PV Layout	3	249.701718	8.907522	4	-0.166718	1	12	2	4
459	251250	647550	250.6675	1.686824	1	1.62	3	not proven	2	6	2	PV Layout	3	250.690755	0.941922	4	-0.023255	1	12	2	4
460	251300	647550	251.555	1.084081	1	1.61	3	not proven	2	6	2	PV Layout	3	251.57087	0.941922	4	-0.01587	1	12	2	4
461	251350	647550	252.714996	1.637501	1	1.13	3	not proven	2	6	2	PV Layout	3	252.72075	0.941922	4	-0.005754	1	12	2	4
462	251400	647550	253.700001	0.782659	1	2.57	3	not proven	2	6	2	PV Layout	3	253.712988	0.941923	4	-0.012987	1	12	2	4
463	250300	647200	230.189999	3.399407	2	2.76	3	not proven	2	12	2	Existing-Proposed Tracks-TempCompound	3	229.146208	20.634767	3	1.043791	1	9	2	4
464	250300	647300	230.805	0.524511	1	3.84	8	not proven	2	16	3	PV Layout	3	230.857587	20.970528	3	-0.052587	1	9	2	6
465	250400	647100	225.472504	3.171653	2	1.98	3	not proven	2	12	2	PV Layout	3	226.93473	27.102409	3	-1.462226	1	9	2	4
466	250400	647200	229.665001	10.512594	6	1.96	3	not proven	2	36	4	Existing-Proposed Tracks-TempCompound	3	229.846133	0.941919	4	-0.181132	1	12	2	8
467	250400	647300	231.120003	2.057713	2	4.26	8	not proven	2	32	4	Minor Water Feature	6	230.473084	45.598254	3	0.646919	1	18	3	12
468	250500	647100	223.140003	5.216237	4	0.56	2	not proven	2	16	3	Minor Water Feature	6	223.47702	4.726791	4	-0.337017	1	24	3	9
469	250500	647200	229.347504	2.73487	2	2.67	3	not proven	2	12	2	Existing-Proposed Tracks-TempCompound	3	229.304739	0.941919	4	0.042765	1	12	2	4
470	250500	647300	232.635002	2.602352	2	1.18	3	not proven	2	12	2	PV Layout	3	232.501498	2.915186	4	0.133504	1	12	2	4
471	250600	647100	224.699997	1.330553	1	1.48	3	not proven	2	6	2	PV Layout	3	224.689725	0.94192	4	0.010272	1	12	2	4
472	250600	647200	228.532497	3.072659	2	2.11	3	not proven	2	12	2	Existing-Proposed Tracks-TempCompound	3	228.481795	0.94192	4	0.050702	1	12	2	4
473	250600	647300	232.982498	2.744108	2	1.62	3	not proven	2	12	2	PV Layout	3	232.861611	2.915187	4	0.120887	1	12	2	4
474	250700	647100	226.934998	5.464202	4	0.41	1	not proven	2	8	2	PV Layout	3	226.865851	0.94192	4	0.069147	1	12	2	4
475	250700	647200	228.0425	4.125448	4	0.31	1	not proven	2	8	2	Existing-Proposed Tracks-TempCompound	3	227.986157	0.94192	4	0.056343	1	12	2	4
476	250700	647300	233.334999	3.808032	2	0.1	1	not proven	2	4	1	PV Layout	3	233.140157	2.915188	4	0.194842	1	12	2	2
477	250700	647400	239.344997	3.540448	2	3.48	8	not proven	2	32	4	PV Layout	3	237.719174	28.907181	3	1.625823	1	9	2	8
478	250800	647400	239.800003	2.576719	2	4.2	8	not proven	2	32	4	PV Layout	3	239.4875	7.266874	4	0.312503	1	12	2	8
479	250900	647300	237.262501	2.521542	2	0.75	2	not proven	2	8	2	PV Layout	3	237.291878	0.941921	4	-0.029377	1	12	2	4
480	250900	647400	239.195	3.224449	2	0.9	2	not proven	2	8	2	PV Layout	3	239.250863	1.130537	4	-0.055863	1	12	2	4
481	251000	647400	241.897499	3.523492	2	0.3	1	not proven	2	4	1	PV Layout	3	241.955611	1.130537	4	-0.058112	1	12	2	2
482	251000	647500	243.145004	1.892743	1	0.5	1	not proven	2	2	1	PV Layout	3	243.130274	4.364746	4	0.01473	1	12	2	2
483	251100	647300	248.585007	2.26863	2	2.65	3	not proven	2	12	2	PV Layout	3	248.616209	0.941922	4	-0.031202	1	12	2	4
484	251100	647500	247.25	2.436763	2	0.69	2	not proven	2	8	2	PV Layout	3	247.28137	0.941922	4	-0.03137	1	12	2	4
485	251200	647300	251.125	0.583973	1	1.73	3	not proven	2	6	2	PV Layout	3	250.606951	27.948106	3	0.518049	1	9	2	4
486	251200	647500	250.365002	1.352144	1	2.02	3	not proven	2	6	2	PV Layout	3	250.374548	0.941922	4	-0.009546	1	12	2	4
487	251300	647500	252.145	0.771323	1	1.76	3	not proven	2	6	2	PV Layout	3	252.152388	0.941922	4	-0.007388	1	12	2	4
488	251400	647500	253.247498	1.090897	1	1.25	3	not proven	2	6	2	PV Layout	3	253.335031	7.103738	4	-0.087533	1	12	2	4
489	251097	647549	246.664577	2.113455	2	0.35	1	not proven	2	4	1	PV Layout	3	246.742065	7.659783	4	-0.077488	1	12	2	2
490	251099	647314	248.103399	3.20754	2	1.15	3	not proven	2	12	2	PV Layout	3	248.26598	4.956997	4	-0.162581	1	12	2	4
491	251109	647314	248.378001	2.119761	2	0.63	2	not proven	2	8	2	PV Layout	3	248.509002	4.956997	4	-0.131001	1	12	2	4
492	251112	647500	247.669027	2.420577	2	0.29	1	not proven	2	4	1	PV Layout	3	247.693834	1.378352	4	-0.024807	1	12	2	2
493	251119	647314	248.595003	2.073839	2	0.78	2	not proven	2	8	2	PV Layout	3	248.721711	4.956997	4	-0.126708	1	12	2	4
494	251125	647451	248.820452	2.193155	2	0.96	2	not proven	2	8	2	PV Layout	3	248.902084	3.854779	4	-0.081632	1	12	2	4
495	251129	647314	248.805003	2.072168	2	0.69	2	not proven	2	8	2	PV Layout	3	248.931717	4.956997	4	-0.126714	1	12	2	4
496	251136	647403	248.651945	1.191228	1	2.88	3	not proven	2	6	2	PV Layout	3	248.294382	18.69072	3	0.357563	1	9	2	4
497	251139	647314	249.022201	2.067469	2	0.57	2	not proven	2	8	2	PV Layout	3	249.141709	4.956998	4	-0.119508	1	12	2	4
498	251142	647354	248.737738	2.390306	2	1.85	3	not proven	2	12	2	PV Layout	3	248.762011	3.011586	4	-0.024273	1	12	2	4
499	251149	647264	250.626102	1.774261	1	0.62	2	not proven	2	4	1	PV Layout	3	250.535173	3.18298	4	0.090929	1	12	2	2
500	251149	647274	250.374004	1.912146	1	0.71	2	not proven	2	4	1	PV Layout	3	250.277398	3.18298	4	0.096606	1	12	2	2
501	251149	647284	250.100101	2.034432	2	0.8	2	not proven	2	8	2	PV Layout	3	249.996788	3.18298	4	0.103313	1	12	2	4
502	251149	647294	249.808002	2.072147	2	0.69	2	not proven	2	8	2	PV Layout	3	249.699006	3.18298	4	0.108996	1	12	2	4
503	251149	647304	249.522201	2.047465	2	0.58	2	not proven	2	8	2	PV Layout	3	249.641709	4.956998	4	-0.119508	1	12	2	4
504	251149	647324	249.206	2.251318	2	0.8	2	not proven	2	8	2	PV Layout	3	249.218457	2.993103	4	-0.012457	1	12	2	4
505	251149	647334	249.084698	2.277011	2	0.65	2	not proven	2	8	2	PV Layout	3	249.084973	2.993103	4	-0.000275	1	12	2	4
506	251149	647344	249.098001	2.371316	2	0.82	2	not proven	2	8	2	PV Layout	3	249.067207	2.993103	4	0.030794	1	12	2	4
507	251149	647354	249.017999	2.390465	2	1.16	3	not proven	2	12	2	PV Layout	3	248.762011	7.330159	4	0.255988	1	12	2	4
508	251149	647364	248.941002	2.388331	2	1.44	3	not proven	2	12	2	Minor Water Feature	6	248.740016	11.430028	3	0.200986	1	18	3	6
509	251149	647314	249.343001	2.188313	2	0.45	1	not proven	2	4	1	PV Layout	3	249.385351	4.956998	4	-0.04235	1	12	2	2
510	251157	647315	249.609642	2.243521	2	0.67	2	not proven	2	8	2	PV Layout	3	249.541673	4.19816	4	0.067969	1	12	2	4
511	251169	647314	250.075996	2.251335	2	0.99	2	not proven	2	8	2	PV Layout	3	249.971345	6.813089	4	0.104651	1	12	2	4
512	251179	647314	250.4439	2.236836	2	1.12	3	not proven	2	12	2	PV Layout	3	249.971345	15.526417	3	0.472555	1	9	2	4
513	251189	647314	250.813002	2.220854	2	1.74	3	not proven	2	12	2	PV Layout	3	250.324312	23.938269	3	0.48869	1	9	2	4
514	251199	647314	251.158998	1.436684	1	2.55	3	not proven	2	6	2	PV Layout	3	250.324312	32.369173	3	0.834686	1	9	2	4
515	251206	647326	251.309709	1.794305	1	2.91	3	not proven	2	6	2	PV Layout	3	249.629037	43.623396	3	1.680672	1	9	2	4
516	251255	647338	251.559765	0.172526	1	3.04	8	not proven	2	16	3	Minor Water Feature	6	251.013836	60.556609	3	0.545929	1	18	3	9

APPENDIX C – SITE PHOTOGRAPHS

APPENDIX D – PEAT CORE RECORDS

Appendix D – Peat Coring Records

Background

A series of peat cores were obtained from the proposed electrolyser location at Whitelee Wind Farm on 26th May 2021 to characterise the properties of the peatland in accordance with the *Peatland Survey. Guidance on Developments on Peatland (2017).* The document, which was published jointly by the Scottish Government, Scottish Natural Heritage and SEPA, defines a consistent sampling methodology to quantify and qualify the peat material on site. It also provides advice on how to publish peat surveys as part of wider site investigations for development management applications, with a particular focus on wind farm developments.

The parameters used to determine the characteristics of the peat materials are outlined below.

i. Surface firmness estimation

An average man standing on one foot applies a pressure to the ground of between 5 and 6 lbs / p.s.i. and this fact is used to estimate the bearing capacity. The following symbols are used to denote the pressure the ground will stand.

Firmness of surface (P)

PO = Surface too soft to walk on

P1 = Surface just passable

P2 = Surface fairly firm

P3 = Surface firm

ii. Observations on the vegetation

Ecological Surveys were undertaken as part of the wider Environmental Impact Assessment, details of which are included in Chapter 6: Ecology and the associated Technical Appendices.

iii. Observations on the peat

a. Botanical observations
   Ecological Surveys were undertaken as part of the wider Environmental Impact Assessment, details of this are included in Chapter 6: Ecology and the associated Technical Appendices.

b. Degree of humification - von POST SCALE
   The degree of humification of peat samples is estimated in the field according to the method devised by the Swedish botanist L. von Post by squeezing a small amount of peat in the hand and the water and / or peat exuded indicates, by its colour and consistency, the degree to which the peat has undergone humification or, more correctly, a type of decomposition which includes breakdown under anaerobic conditions. The von Post scale ranges from 1 to 10, the higher the number the higher the degree of humification. The full scale is as follows:

Von Post Scale (H)	
H1	Completely undecomposed peat free of amorphous material. On squeezing, clear colourless water is pressed out.
H2	Nearly undecomposed peat, free of amorphous material, yielding only yellowish brown water on pressing.
H3	Very slightly decomposed peat, containing a little amorphous material. On squeezing, muddy brown water but no peat passes between the fingers. Residue is not pasty.
H4	Slightly decomposed peat containing some amorphous material. Strongly muddy brown water but no peat passes between the fingers. Residue is somewhat pasty.
H5	Moderately decomposed peat containing a fair amount of amorphous material. Plant structure recognisable though somewhat vague. On squeezing, some peat but mainly muddy water issues. Residue is strongly pasty.
H6	Moderately decomposed peat with a fair amount of amorphous material and indistinct plant structure. On pressing, about one third of the peat passes between the fingers. Residue is strongly pasty, but shows the plant structure more distinctly than in unsqueezed peat.
H7	Strongly decomposed peat with much amorphous material and faintly recognisable plant structure. On squeezing, about one half of the peat is extruded. The water is very dark in colour.
H8	Strongly decomposed peat with much amorphous material and very indistinct plant structure. On squeezing, two thirds of the peat and some water passes between the fingers. Residue consists of plant tissues capable of resisting decomposition (roots, fibres, wood, etc.).
H9	Practically fully decomposed peat with almost no recognisable plant structure. Nearly all the peat squeezed between the fingers as a uniform paste.
H10	Completely decomposed peat with no discernible plant structure. On squeezing, all the peat, without water, passes between the fingers.

iv. Fibre

The fibre content of each peat sample is estimated visually and the amounts of the two types (classified 'fine' or 'coarse') are noted on a scale ranging from 0 to 3 as shown below.

Fine fibres, mainly derived from *Eriophorum spp*. (F)

F0 = Nil
Fl = Low content
F2 = Moderate content
F3 = High content

Coarse fibres, mainly rootlets (R)

R0 = Nil
Rl = Low content
R2 = Moderate content
R3 = High content

v. Wood

Wood remains, especially if they are large and resistant, may conceivably cause a certain amount of difficulty during the exploitation of a bog. An attempt is therefore made when sampling to assess the extent of wood. It is estimated on a scale ranging from 0 to 3 as detailed below.

Wood remains (W)
W0= Nil
Wl = Low content
W2 = Moderate content
W3 = High content

vi. Other observations

When peat is freshly sampled and before it darkens by oxidation, note is taken of its colour, stratification, the presence of visible mineral matter and any other features of interest.

Photographs of the peat cores obtained from Whitelee along with information relating to the parameters outlined above are presented overleaf with a summary of the information gathered during the peat coring process presented in the main body of text of the Peat Slide Risk Assessment (PSRA).

Electrolyser (Eastern Area)	
Core Samples	Detail
	 

Location	Depth (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
Electrolyser East	0.0-0.5	3	3	3	2	0	Dark brown
	0.5-1.0	3	4	2	1	0	Dark brown
	1.0-1.5	3	7	2	1	0	Dark brown
	1.5-2.0	3	8	2	1	1	Black brown
	2.0-2.3	3	9	2	1	0	Black brown

Electrolyser (Western Area)	
Core Samples	Detail
	

Location	Depth (m)	Firmness of Surface (P)	Von Post (H)	Fine Fibres (F)	Coarse Fibres (R)	Wood Remains (W)	Other Observations (Colour)
Electrolyser West	0.0-0.5	3	2	3	2	0	Dark brown
	0.5-0.9	3	4	3	2	0	Dark brown

wood.