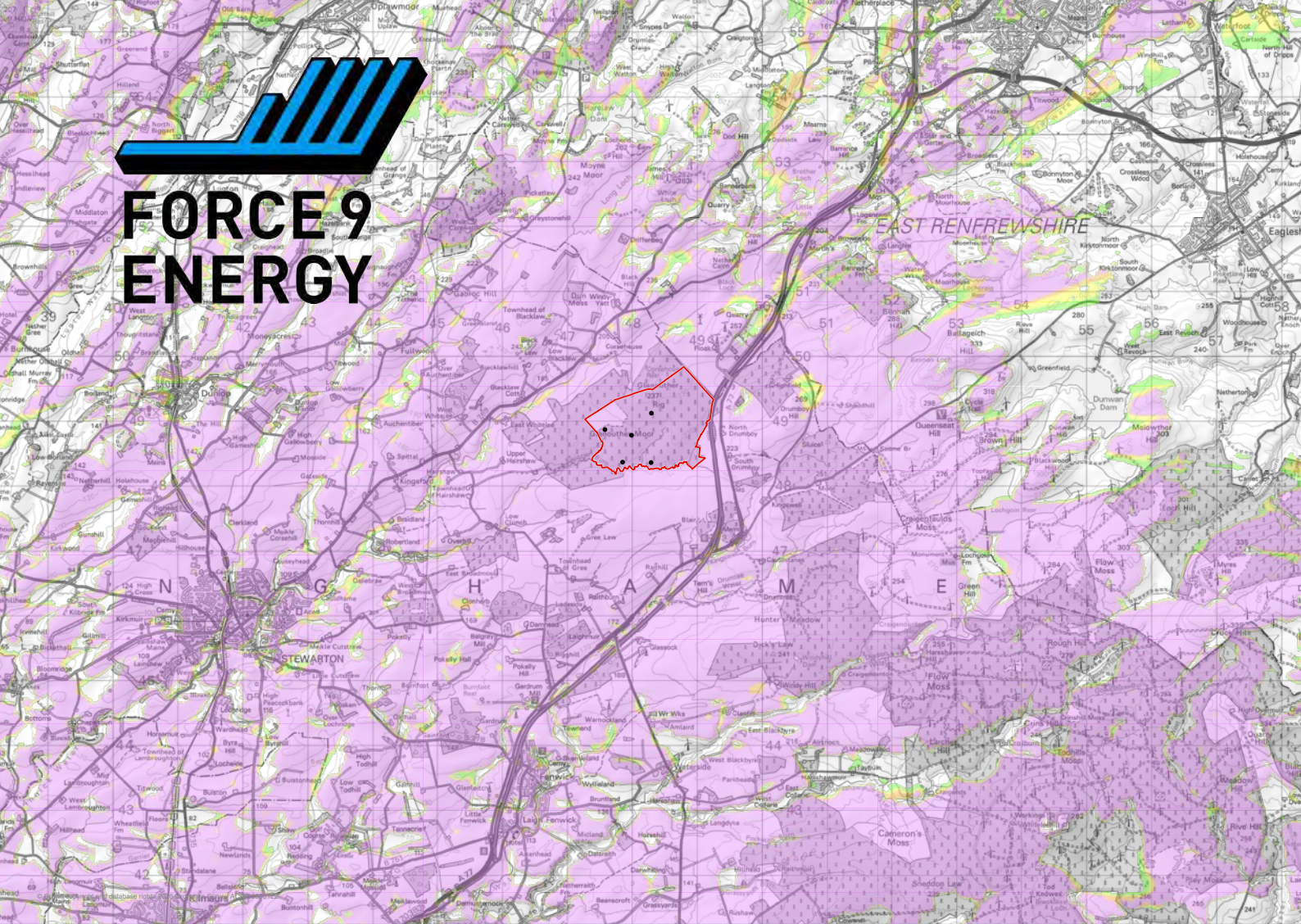




Glenouther Wind Farm

Environmental Impact Assessment Report (EIA Report)

Volume 1: Non – Technical Summary (NTS)



August 2026

Glenouther Wind Farm

Environmental Impact Assessment (EIA) Report

Volume 1: Non-Technical Summary (NTS)

Prepared by LUC

On behalf of

Wind Power North Four Limited

August 2026



Preface

This Non-Technical Summary (NTS) forms part of the Environmental Impact Assessment Report (EIA Report) which has been prepared by LUC on behalf of Wind Power North Four Limited ('the Applicant') to accompany a planning application being made to East Ayrshire Council (EAC) under the Town and Country Planning (Scotland) Act 1997 as amended ('the Act') to construct and operate the Glenouther Wind Farm ('the Proposed Development') for a period of 35 years. The Proposed Development is located on Glenouther Moor approximately 4.5 kilometres (km) north-east of Stewarton within the EAC administrative area. The Proposed Development will comprise up to five wind turbines and other ancillary infrastructure.

The EIA Report comprises the following volumes:

- Volume 1: Non-Technical Summary (this volume);
- Volume 2: Main Report;
- Volume 3a: Figures;
- Volume 3b: Landscape and Visual Impact Assessment Visualisations (Part 1);
- Volume 3c: Landscape and Visual Impact Assessment Visualisations (Part 2) and Cultural Heritage Visualisations;
- Volume 4: Technical Appendices; and
- Volume 5: Confidential Documents.

In addition to the above, the application is supported by a Planning Statement, a Pre-Application Consultation (PAC) Report, a Design and Access Statement, and a Socio-Economic, Tourism and Recreation Impact Assessment Report.

A hard copy of the EIA Report (excluding Volume 5) and the other supporting application documents will be available for public viewing during the application consultation period within business opening hours at the following addresses:

The Johnnie Walker Bond
Strand Street
Kilmarnock
East Ayrshire
KA1 1HU

Stewarton Community Library
17 Avenue Street, Stewarton
Kilmarnock
East Ayrshire
KA3 5AP

A hard copy of the EIA Report (excluding Volume 5) can be obtained at a cost of £1,200.00. Alternatively, a USB memory stick is available for £15.00. Any requests should be made using the following email address: glenouther@mucklemedia.co.uk. An electronic version of the EIA Report (excluding Volume 5) and supporting documents will also be available to view and download from the project website at: <https://glenouther.vestaswindprojects.com/> and the EAC planning portal: <https://eplanning.east-ayrshire.gov.uk/online/>.

Any public representations to the application may be submitted via the EAC planning portal at <https://eplanning.east-ayrshire.gov.uk/online/> or by email to submittoPlanning@east-ayrshire.gov.uk, identifying the proposal and specifying the grounds for representation. EAC will advertise the submission of the EIA Report in the local and national press and the EAC planning portal. The advert will state the deadline for submitting representations to the EAC in relation to the planning application.

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Chapter 1

Introduction

Background

1.1 Wind Power North Four Ltd (hereafter referred to as 'the Applicant') is seeking planning permission from East Ayrshire Council (EAC) under the Town and Country Planning (Scotland) Act 1997 as amended ('the Act') to construct and operate Glenouther Wind Farm (hereafter referred to as the 'the Proposed Development') comprising up to five wind turbines each with a maximum height of 200 metres (m) and an indicative output capacity of 36 megawatts (MW). The location of the Proposed Development ('the Site') is on Glenouther Moor, approximately 4.5 kilometres (km) north-east of Stewarton and directly adjacent to the M77 motorway – see **Figure 1**.

1.2 The Site was subject to a previous planning application by Gamesa Energy UK Limited (a part of Gamesa Corporación Tecnológica) in July 2015, for the construction and operation of the Glenouther Renewable Energy Park, comprising 12 turbines with a maximum height of 126.5 m, and an indicative installed capacity of 30 MW (application reference: 15/0584/PP). The Site proposed for Glenouther Renewable Energy Park largely corresponded with the wider current landownership boundary (see **Figure 1**), however, access was proposed to be taken from Clunch Road to the south-west and so the site boundary extended to this area. The previous planning application was refused by EAC in 2016 due to landscape and visual impacts (including cumulative considerations) and residential visual amenity impacts on the surrounding properties. An appeal was lodged against the decision to the (then) Department of Planning and Environmental Appeals (DPEA) division of the Scottish Government on 4th August 2016 (appeal reference: PPA-190-2059-1). The refusal by EAC was upheld for the same reasons and the appeal was dismissed and planning permission refused on 2nd October 2018. The Applicant has since reviewed the previous reasons for refusal of the Glenouther Renewable Energy Park, and in light of the latest climate change and planning policies context, is bringing forward a new proposal which seeks to positively respond to policy change and the reasons for refusal, whilst establishing more modern and efficient turbine technology.

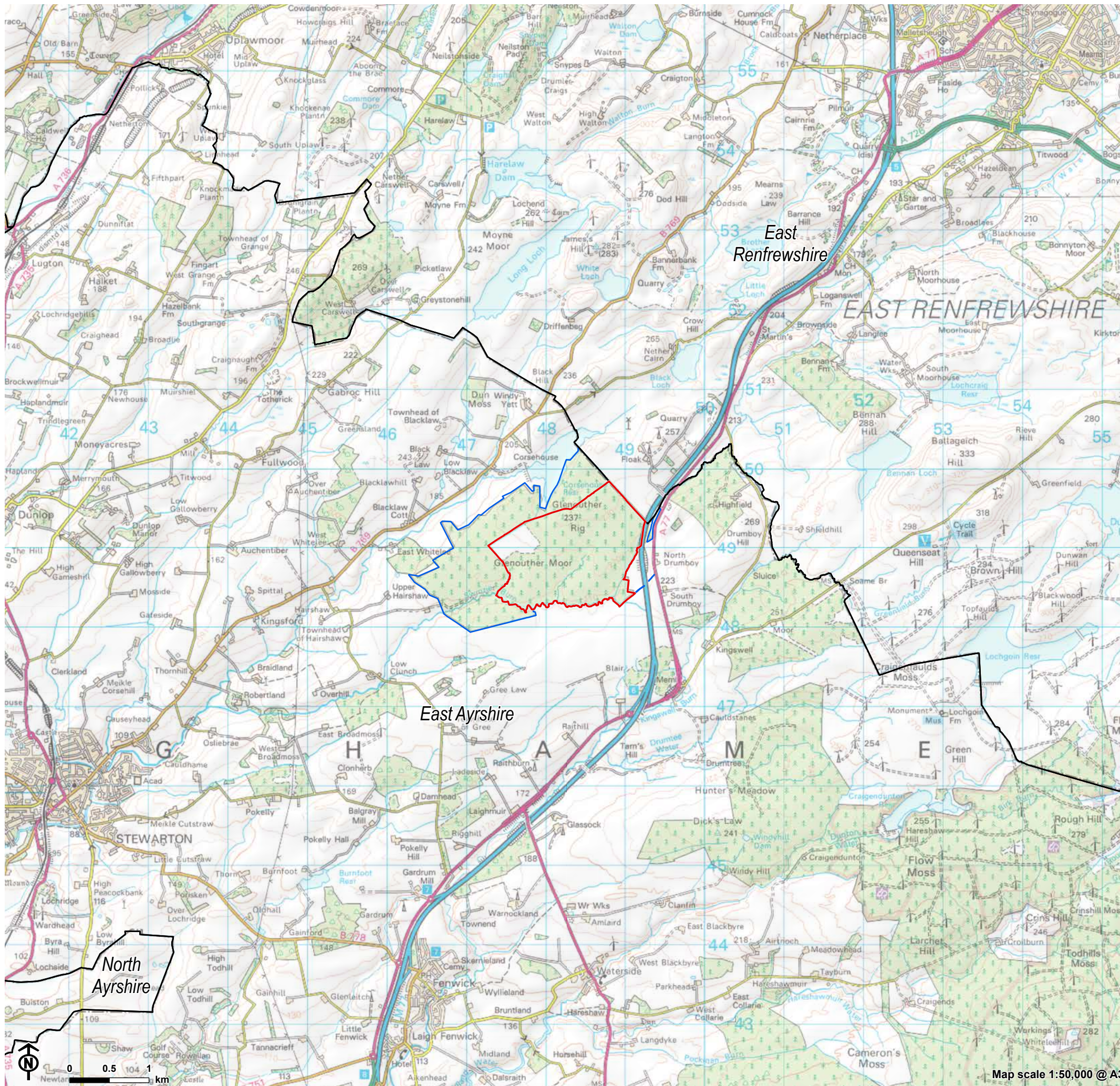
1.3 The application for planning permission is accompanied by an Environmental Impact Assessment Report (hereafter referred to as the 'EIA Report') which presents the findings of the Environmental Impact Assessment (EIA). The EIA has been undertaken by LUC and specialist subconsultants on behalf of the Applicant in accordance with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (hereafter referred to as 'the EIA Regulations') to assess the likely significant environmental effects of the construction, operation and decommissioning (including with other cumulative developments) of the Proposed Development, and will be used by EAC to form a decision on the application. The EIA Report has also assessed the likely significant effects of the proposed grid connection route (hereafter referred to as 'The Likely Grid Connection Route') as both it and the Proposed Development can be considered to be a 'single project' for the purposes of the EIA Regulations. However, the planning application only relates to the Proposed Development.

1.4 This document is a Non-Technical Summary (NTS) of the EIA Report which presents an overview of the Proposed Development and summarises the key findings of the EIA Report in a concise and simplified format.

The Applicant

1.5 Wind Power North Four Limited is a wholly owned subsidiary company of Vestas Development A/S which is in turn owned by Vestas Wind Systems A/S. The project is being developed under the terms of an agreement between Force 9 Energy Limited and Vestas Development A/S. Through the agreement, Force 9 leads on the development process of wind farm proposals up to consent. Force 9 is supported during this period by Vestas both financially and with staff resources requested by Force 9 on issues such as access, engineering design, turbine selection, wind flow, and optimisation of energy capture.

1.6 Vestas is the leading global manufacturer and supplier of wind turbines, and has installed over 91,000 turbines with a capacity of over 189,000 MW in 88 countries worldwide. In addition, Vestas has a broad range of experience of project development issues including turbine siting and optimisation, grid connection and construction management. Force 9 Energy is a successful, independent UK wind farm developer. Wind farms developed by the Force 9 team and in operation already contribute more than 200 MW of clean, renewable, generating capacity in the UK. Force 9 also has a development pipeline of over 300 MW of consented potential installed capacity, 72 MW (installed wind capacity) of developments in planning and is bringing forward a portfolio of over 400 MW of potential generating capacity (including Glenouther).



Glenouther Wind Farm
Non-Technical Summary
for Wind Power North Four Limited



Figure 1: Site Location

- Site boundary
- Landownership area
- Local authority boundary



Chapter 2

Approach to the EIA

2.1 An EIA is a requirement where a proposed development has the potential to result in significant environmental effects. As it is considered that the Proposed Development may result in significant environmental effects, an EIA has been undertaken on behalf of the Applicant to accompany the planning application.

2.2 EIA involves the compilation, evaluation and presentation of any likely significant environmental effects resulting from a proposed development, to assist the decision maker (in this case EAC), statutory consultees, and the wider public when considering an application.

2.3 EIA is an iterative process which means that the early identification of potentially significant effects can also inform the design of a proposed development so that adverse environmental effects can be avoided, reduced and if possible, removed in the early stages. EIA also identifies where additional mitigation may be required in order to address likely significant effects.

2.4 The EIA Report presents the likely significant environmental effects of the Proposed Development and Likely Grid Connection Route for a number of environmental topics. The significance of these effects has been assessed using criteria defined in the topic chapters of the EIA Report. In most cases, the significance of effects has been categorised as Major, Moderate, Minor or Negligible. In the context of the EIA Regulations, likely effects assessed as being of 'Major' or 'Moderate' significance are considered to be significant effects, and where possible, will require additional mitigation measures to be implemented to reduce the level of effect. It should be noted that a significant environmental effect does not automatically mean that a proposal should be refused planning permission. Rather, these will be considerations to be taken into account by EAC in determination of the application for planning permission.

2.5 To determine which effects would need to be assessed in the EIA Report, LUC, on behalf of the Applicant, submitted a request to EAC on 29th August 2025 for an EIA Scoping Opinion (25/002/EIASCP). This request was accompanied by a Scoping Report which set out a summary of the proposals, identified the issues proposed to be included in the EIA Report and proposed an approach to the assessment of effects for each proposed topic area. EAC adopted an EIA Scoping Opinion on 11th December 2025. The scope and content of the EIA was informed by the EIA Scoping exercise, professional judgement and experience, environmental surveys, desk-based research and consultation.

2.6 As required by the EIA Regulations, the EIA Report has been prepared by 'competent experts' in relevant specialisms.

2.7 Further details of the EIA process can be found in **Chapter 2: Approach to the EIA** of **Volume 2** of the EIA Report.

Chapter 3

Development Description

Site Overview

3.1 The Site (defined by the redline application boundary shown in **Figure 1**) is located on Glenouther Moor, south of Corsehouse reservoir and west of the M77 motorway and covers a total area of 205 hectares (ha). The Site forms part of the wider landownership boundary (Glenouther Forest) with a total area of 378 ha over which the Applicant has control. The Site slopes gently from the north to the south and mostly falls within the Swinzie Burn catchment. The Site is located within an area of privately owned commercial plantation forestry with areas of open bog habitat. As such, deep peat is present on the Site. The Site is completely within the EAC administrative area but is directly adjacent to the East Renfrewshire Council (ERC) administrative boundary. Other operational wind farms within 5 km of the Site include Whitelee Wind Farm and Extensions 1 and 2 (to the east), Middleton Wind Farm (to the north) and Neilston Community Wind Farm (to the north-west). The Site is not covered by any landscape or ecological designations.

3.2 There are no residential properties within the Site; however, there are 38 known properties within 2 km of the turbines. These are accessed by Floak Road, the A77 to the east, Clunch Road to the south/south-west and the B769 to the north. The nearest residential property is approximately 1.1 km away from the nearest turbine. The closest settlement to the Site is Stewarton located approximately 4.5 km to the south-west.

The Proposed Development

3.3 The main components of the Proposed Development, for which planning permission is being sought, comprise:

- Up to five wind turbines each with a maximum tip height of up to 200 metres (m) and an indicative combined site output capacity of 36 MW;
- Visible medium intensity (2000 candela (cd) steady red aviation warning lights installed on the hubs of Turbines (T)1, T3, T4 and T5¹ which will be reduced to 200 cd in clear weather conditions, and infra-red (non-visible) warning lights on all turbines;
- Foundations supporting each turbine (comprising a mixture of piled and excavated construction methods to reduce impacts on peat);
- Permanent crane hardstandings at each turbine location (comprising a mixture of piled and excavated construction methods to reduce impacts on peat);
- A site access point which links to an existing track which runs alongside the M77 motorway to the unclassified road at Floak Bridge;
- Approximately 4.1 km of new onsite access track comprising approximately 1.3 km of excavated track and 2.8 km of floated track);
- Up to 12 new watercourse crossings (comprising two mapped watercourses, five minor watercourses (not mapped) and five artificial drains);
- A control building and substation;
- A network of underground cables to connect the turbines to the onsite substation; and
- A Biodiversity Enhancement Management Plan (BEMP).

¹ As approved by the Civil Aviation Authority

3.4 In addition to the above components associated with the operation of the Proposed Development, construction will also require the following components/works:

- A temporary construction compound including car parking;
- Approximately 0.3 km of temporary floated track north-east of the substation which will be used as a dedicated passing place for construction vehicles as they enter and exit the Site;
- Temporary auxiliary hardstandings at each turbine (comprising a mixture of excavated, piled and floated construction methods); and
- The removal of forestry to physically construct the Proposed Development, support wider woodland management and enable forest-to-bog restoration as part of the BEMP.

3.5 The layout of the Proposed Development, including the components detailed above, is shown in **Figure 3: Site Layout Plan) (Overview)** and **Figure 3a-b: Site Layout Plan (Detailed)**.

3.6 Further details can be found in **Chapter 4: Development Description** of **Volume 2** the EIA Report.

Access

3.7 Access to the Site for general construction traffic including heavy goods vehicles (HGVs) and staff vehicles (which are assumed to come from both Glasgow and Ayrshire directions), will be taken from the existing junction off the A77 to the west of North Drumboy Quarry. Construction vehicles will then use the minor road (Floak Road) and existing bridge (Floak Bridge) crossing the M77 which serves properties at Floak and Floak Quarry. From there, vehicles will use the existing M77 service road to travel south-west towards the Site.

3.8 It is anticipated that turbine components will be delivered to King George V Docks in Glasgow and relocated via Abnormal Indivisible Load (AIL) vehicles to the Site by way of the M8, M77 (exiting at junction 6) and the A77 before joining Floak Road to the west of Drumboy (see **Image 1**). A blade lifter vehicle (see **Image 2**) will be used to transport the turbine blades from port to the Site to enable safe passage over Floak Bridge. Turbine towers will be transported using tower clamp trailers (see **Image 3**). Again, the existing M77 service road will be used by these abnormal load vehicles to reach the Site entrance.

3.9 Approximately 4.1 km of new onsite permanent access track with a width of 6 m is anticipated to be required to facilitate access for construction vehicles to the turbines, construction compound, and substation, and this will commence at the Site entrance off the existing M77 service road. To minimise disturbance to deep peat, approximately 2.8 km of the new track will use a floated design where ground conditions allow. The remaining 1.3 km of track will be constructed using a conventional excavated design method. An additional section of approximately 0.3 km of temporary floated track is proposed north-east of the substation and will act as a temporary passing place for construction vehicles entering and exiting the Site. This section of track will be approximately 12 m wide but will be restored to 6 m following construction.





Image 2: Typical Blade Lifter Vehicle



Image 3: Typical Tower Clamp Trailer

The Likely Grid Connection Route

3.10 The Proposed Development will be connected to the electricity grid network. At this stage, it is anticipated that the connection to the grid will be via an underground connection to the existing Crookston substation located approximately 11.6 km north of the Site. Consent is not being sought for the Likely Grid Connection Route as part of the Proposed Development planning application as it will be subject to a separate application for consent.

3.11 The connection is assumed to comprise the installation of a 33 kilovolt (kV) underground cable run within or along roadside verges for the most part. The roads that will be used for the connection include the A77, Malletsheuch Road, B769, Aurs and the A736. The Likely Grid Connection Route assessed in the EIA is shown on **Image 4**.

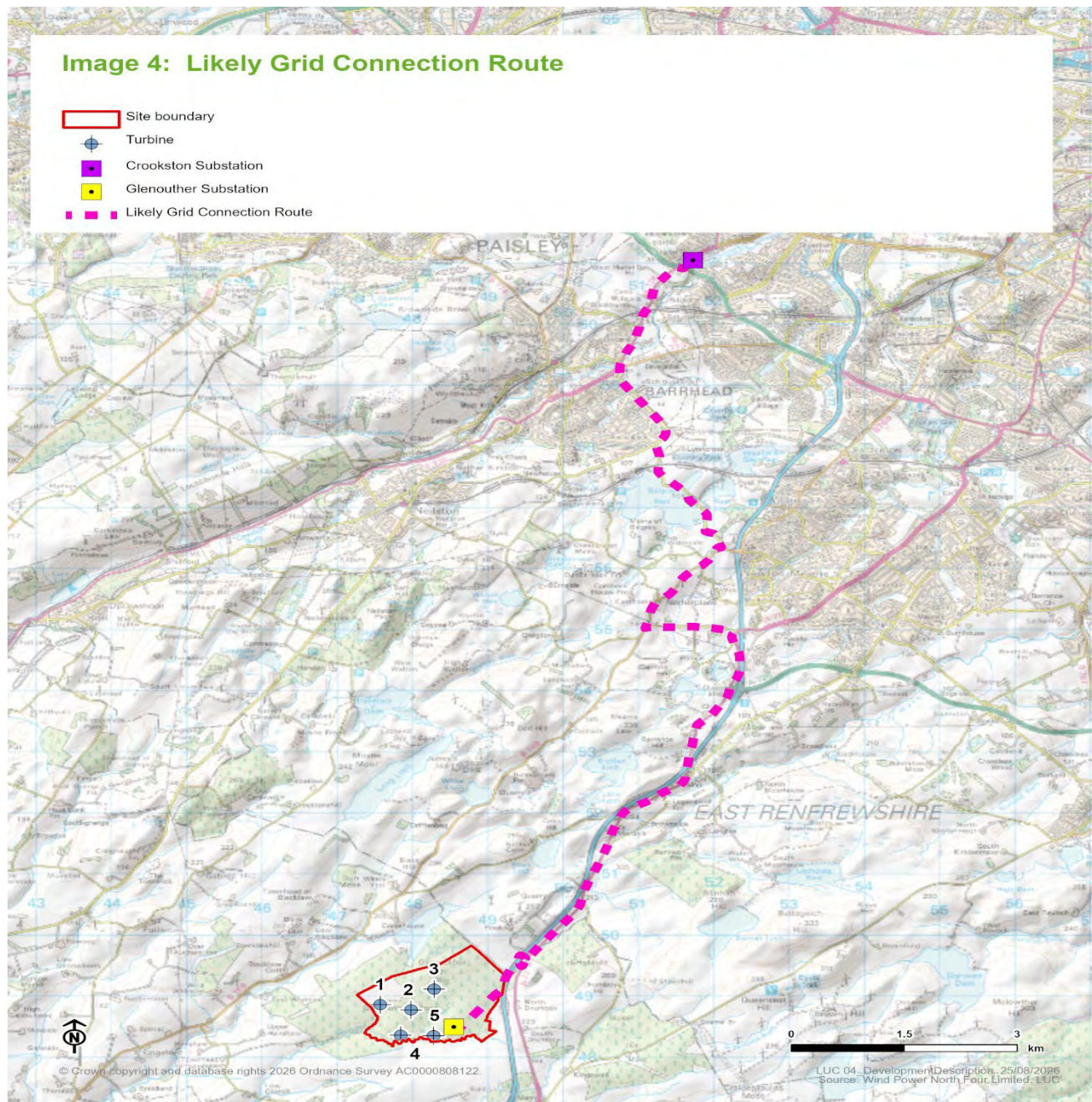


Image 4: Likely Grid Connection Route

Wind Farm Forestry Plan

3.12 There is currently approximately 163.5 ha of coniferous forestry within the Site redline boundary and this makes up 65% of the Site area (205 ha). The Site forms part of the wider Glenouther Forest which has an area of 378 ha. The construction phase of the Proposed Development will involve the removal of approximately 105 ha of existing forestry within the Site to physically construct the Proposed Development, for management felling purposes and to facilitate the proposed forest-to-bog restoration proposals. The remaining 58.5 ha will be retained – see **Image 5**.

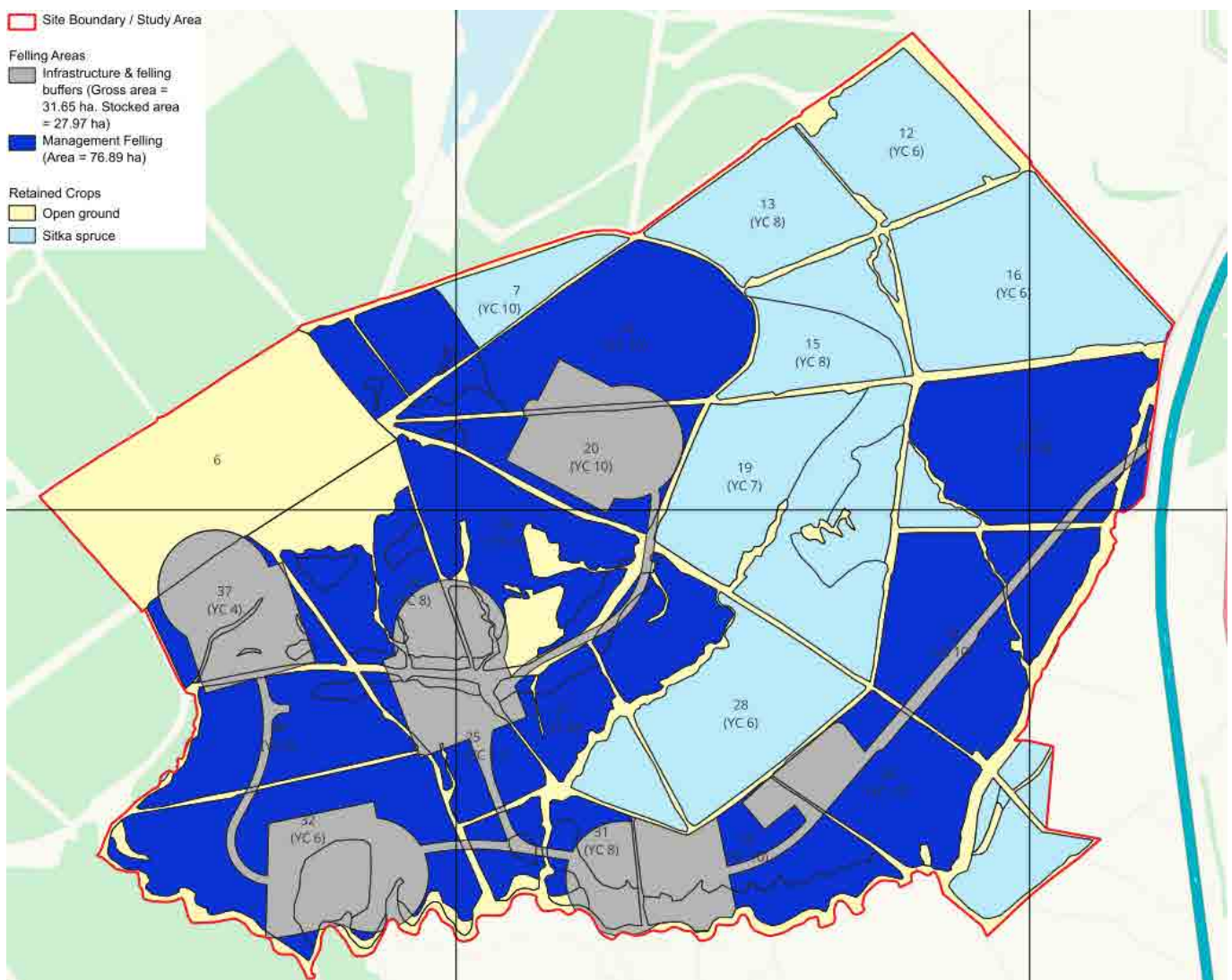


Image 5: Forestry Felling and Retention Proposals

3.13 Of the 105 ha initially felled, approximately 58 ha will be restocked (comprising a mixture of coniferous and broadleaved trees to achieve species diversity) and approximately 47 ha will be left unstocked (comprising approximately 6 ha as long-term open ground for wind farm infrastructure and 41 ha for forest-to-bog restoration). Under the UK Forestry Standard, an area of 6 ha is proposed to be created under a compensatory planting scheme post-construction in full compliance with the Scottish Government's Control of Woodland Removal Policy (CoWRP), and can be secured by a planning condition should planning permission be granted. **Image 6** shows the proposed forestry composition within the Site after construction. Felling and restocking proposals will be governed by a Long-Term Forestry Plan (LTFP) for the Site should planning permission be granted.

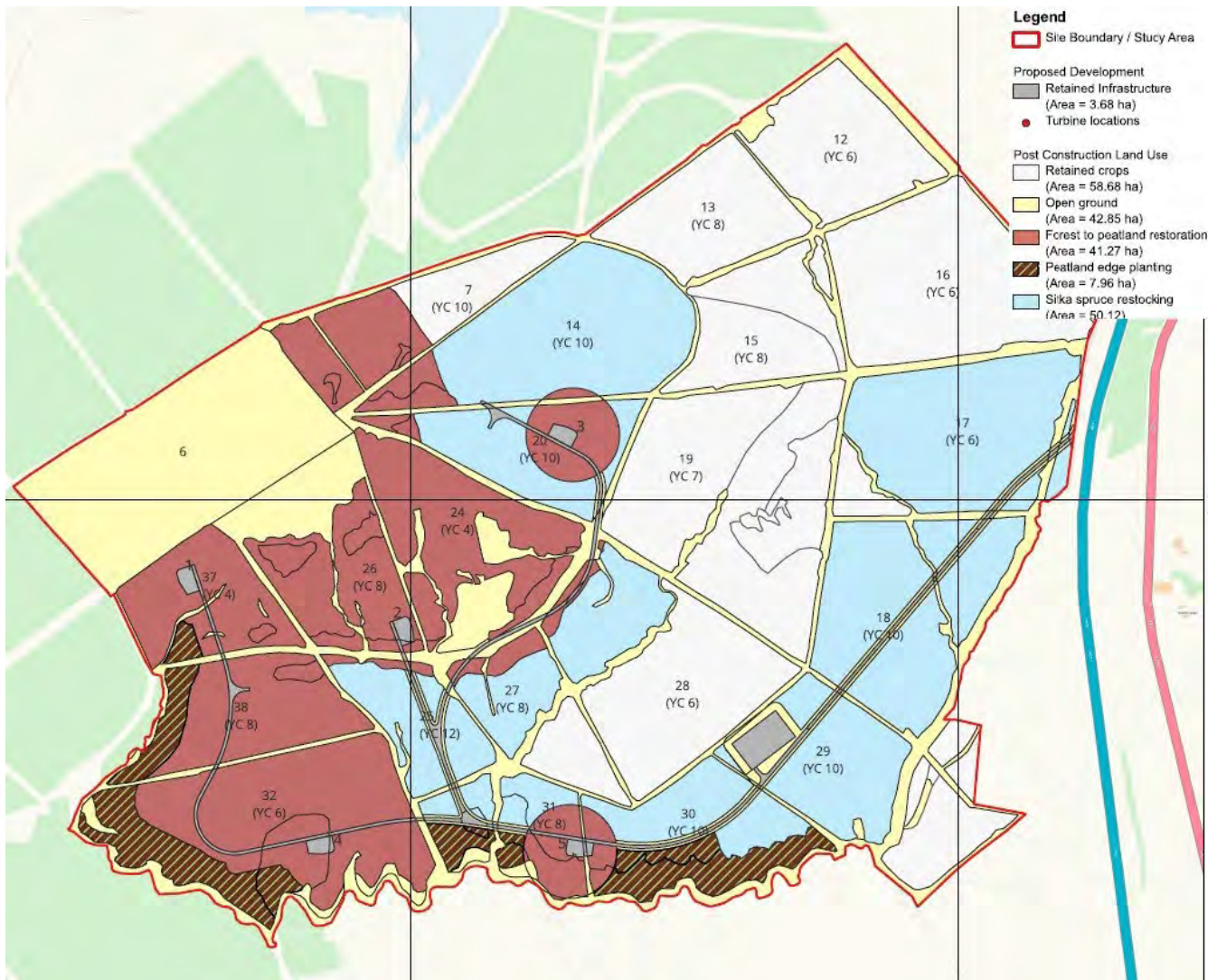


Image 6: Forestry Restocking Proposals

Construction Timeline and Lifespan of the Proposed Development

3.14 It is anticipated that the construction of the Proposed Development will take approximately 20 months (including forestry works). An indicative programme is shown in **Image 7**. Working hours will generally be restricted to 07.00 to 19.00 Monday to Friday and 07.00 to 13.00 on Saturday.

Construction Task	Construction Month																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Mobilisation & enabling works (including forestry felling)																				
Onsite access tracks																				
Wind turbine foundations																				
Crane hardstandings																				
Cabling and electrical Works																				
Substation and control building																				
Wind turbine delivery and erection																				
Commissioning and restoration																				

Image 7: Indicative Construction Programme

3.15 Planning permission is being sought to operate the Proposed Development for a total of 35 years.

3.16 At the end of the Proposed Development's 35-year operational period, a decision will be made to either fully decommission the Site, or extend its operational life through a new application. Decommissioning will involve the following activities:

- Dismantling and removal of turbine components and electrical equipment in a similar way to their delivery and erection;
- Restoration of turbine areas and crane hardstandings;
- Retention of onsite access tracks to allow continued benefit to landowners, or reinstatement; and
- Demolition and removal of substation equipment, to be reused, recycled or disposed of appropriately.

Benefits of the Proposed Development

Environmental Benefits

Carbon Emissions Offset and Homes Powered

3.17 The purpose of the Proposed Development is to generate electricity from a renewable source of energy, offsetting the need for power generation from fossil fuels and ultimately contributing towards Scotland's net zero targets. Consequently, the electricity that will be produced by the Proposed Development will result in a saving in emissions of CO₂ with associated environmental benefit. The 'payback time' is defined as the length of time (in months) required for the Proposed Development to be considered a net avoider of emissions rather than a net emitter.

3.18 Use of the Scottish Government's latest carbon calculator with best estimate values, based on available information, indicates that the Proposed Development will pay back the carbon emissions associated with its construction, operation and decommissioning in roughly 1.2 years (approximately 14.5 months). Over its 35-year

operational life, the Proposed Development will save approximately 1,655,000 tonnes of CO₂ from the displacement of electricity being generated by fossil fuels and peatland enhancement measures.

3.19 The Proposed Development will produce approximately 109,430 Mega-watt hours (MWh) of electricity annually. This is equivalent to the power consumed by approximately 32,931 average UK Households².

Biodiversity Enhancement

3.20 As part of the Proposed Development, consideration has been given to how it can deliver significant enhancements to biodiversity over its lifetime. A Biodiversity Enhancement Management Plan (BEMP) for the Proposed Development will be developed to compensate for habitat loss within the Site, and further enhance habitats, thus delivering significant biodiversity enhancement in line with the requirements of National Planning Framework (NPF) 4. An Outline Biodiversity Enhancement Management Plan (OBEMP) has been prepared with the aim of restoring degraded habitats, enhancing habitats, and creating habitats of ecological value, which in turn will benefit existing flora and fauna as well as increase biodiversity in general. The OBEMP proposes three Habitat Management Units (HMU) to achieve these aims (HMU A-C) and these are summarised below:

- HMU A (68 ha) - Forest to Bog and Peatland Restoration and Enhancement (split into sub-unit A1 and A2; with A1 being forest-to-bog restoration and A2 being existing blanket bog enhancement).
- HMU B (7.96 ha) - Native Broadleaved Woodland & Riparian Corridor Enhancement, Creation and Connectivity (split into sub-units B1-B3 to reflect different types of species that will be planted); and
- Confidential HMU C – Breeding Raptor and Owl Productivity (confidential because these measures relate to protected bird species which may use the area).

3.21 Image 8 shows the HMU A and B proposals.

² Based on the latest Department for Energy Security and Net Zero (DESNZ) figures, which provide an average UK annual household electrical consumption of 3,323 KWh.

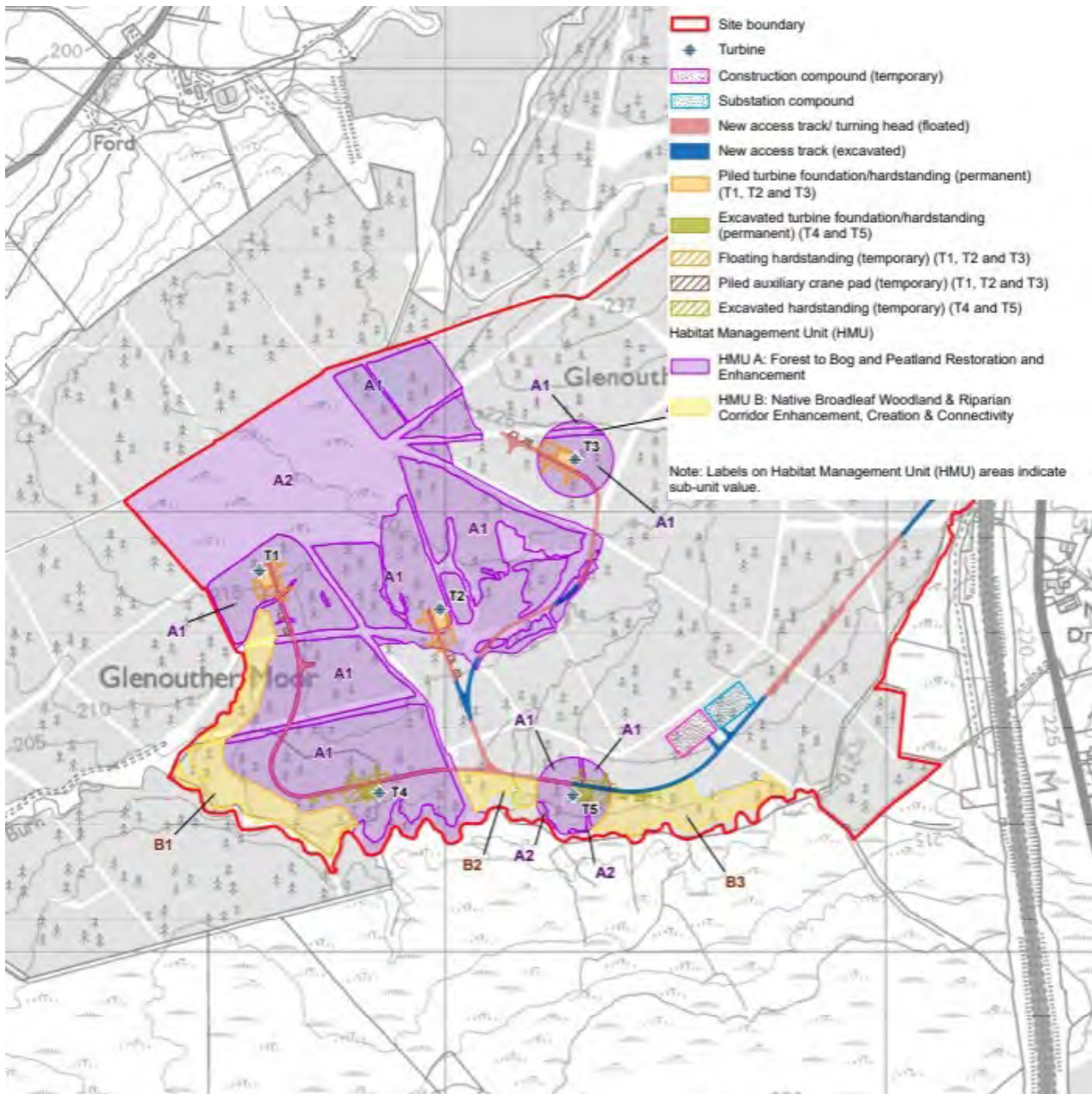


Image 8: Proposed Habitat Management Units A-B

3.22 Further details of the biodiversity restoration and enhancement can be found in **Technical Appendix 7.6: OBEMP** in **Volume 4** of the EIA Report.

3.23 The OBEMP will be refined and developed into a final BEMP post-consent. The final BEMP will confirm the overarching Biodiversity Enhancement Area (BEA) encompassing all habitat management proposals, and any finalised management units (i.e., the refined land parcels/areas for specific habitat management proposals) therein, where the aims, objectives and management prescriptions will apply. The final BEMP will be agreed with EAC in consultation with NatureScot prior to the commencement of construction of the Proposed Development.

Socio-Economic Benefits

3.24 The development and construction phase of the Proposed Development is expected to generate:

- £4.3 million Gross Value Added (GVA) and the equivalent of 50 years of employment in East Ayrshire; and
- £15.4 million GVA and 175 years of employment across Scotland.

3.25 The Applicant has committed to active supply chain engagement, including the creation of a Local Contractor Database to ensure East Ayrshire firms are visible to the main contractor. Once operational, the Proposed Development will continue to provide annual economic benefits, supporting:

- £0.5 million GVA and 3 jobs in East Ayrshire every year; and
- £1.2 million GVA and 8 jobs across Scotland each year.

3.26 These commitments will be implemented through the use of local contractors and suppliers wherever possible. If constructed, the Proposed Development will offer opportunities for local businesses such as accommodation providers, hire companies, fencing contractors, tradespeople and machinery plant owners.

3.27 In accordance with the Scottish Government's Good Practice Principles, the Applicant is committed to providing a voluntary community benefit package that is competitive, deliverable and aligned with good practice at the time of the project. The current Scottish Government recommended value is £5,000/MW of installed capacity per annum. The Applicant will pay £5000/MW for each year of the Proposed Development's operational period of up to 35 years, to help fund local community projects. Based on the up to 36 MW installed capacity, this generates a significant long-term potential revenue stream for the local area of:

- An Annual Fund Value of up to £180,000; and
- A Lifetime Fund Value (35 years) of up to £6.3 million.

3.28 The Applicant is also willing to explore a Local Electricity Discount Scheme out of its community benefit fund to provide direct support to residents, where required by community interests.

3.29 Skills and training are a vital part of Scotland's transition to a green economy that is powered by renewable energy. The Applicant has a significant existing operational footprint in south-west Scotland. With Vestas having a service base in Prestwick and approximately 40-50 technicians already employed in the region, the Applicant is well positioned to offer genuine skills development, local job opportunities through the Proposed Development and long-term career pathways.

3.30 Further details of the socio-economic benefits can be found in the **Socio-Economic, Tourism, and Recreation Impact Assessment Report** which accompanies the application for planning permission.

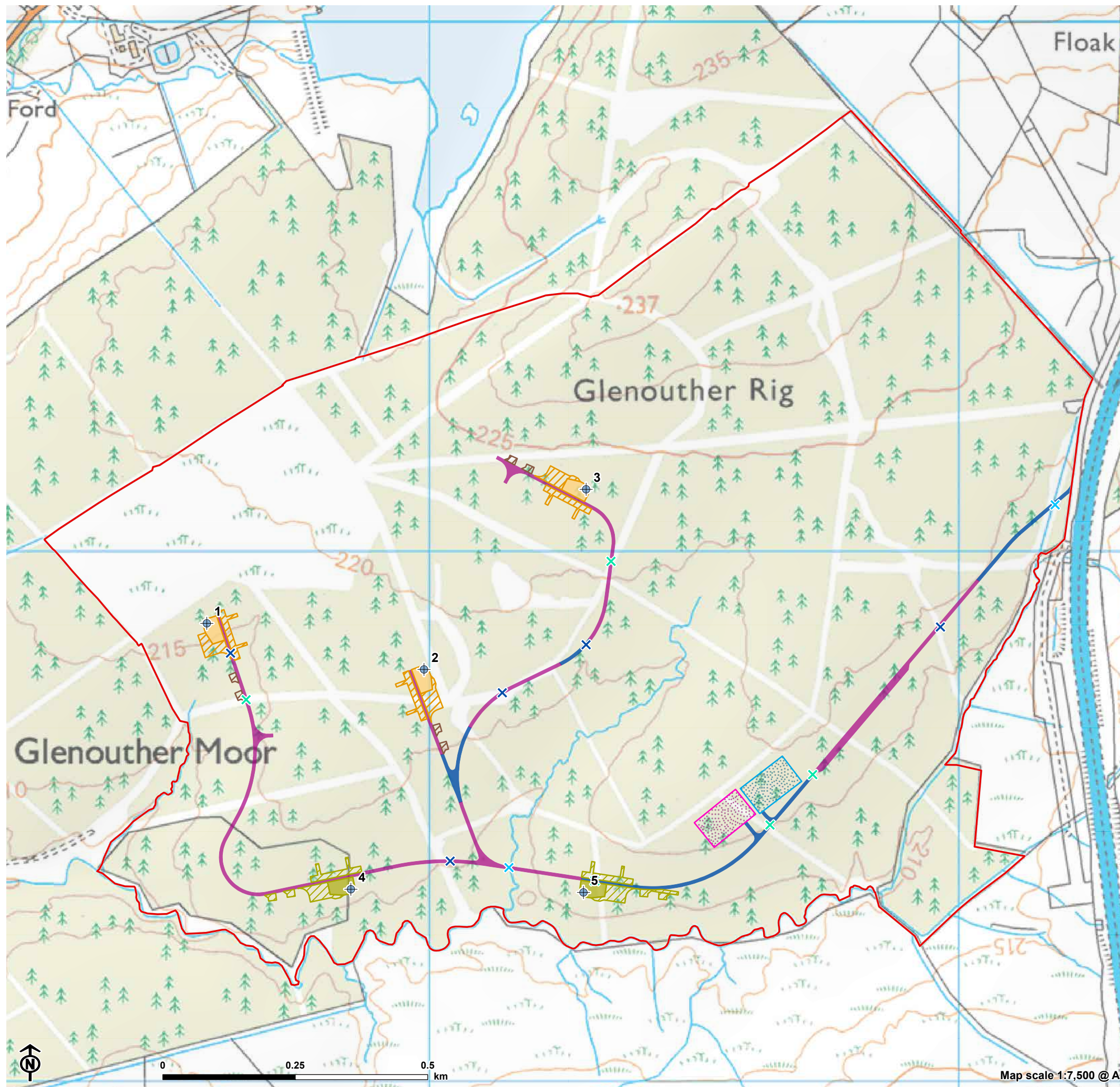


Figure 3: Site Layout Plan (Overview)

- Site boundary
- +

 Turbine
- Construction compound (temporary)
- Substation compound
- New access track/ turning head (floated)
- New access track (excavated)
- Piled turbine foundation/hardstanding (permanent) (T1, T2 and T3)
- Excavated turbine foundation/hardstanding (permanent) (T4 and T5)
- Floating hardstanding (temporary) (T1, T2 and T3)
- Piled auxiliary crane pad (temporary) (T1, T2 and T3)
- Excavated hardstanding (temporary) (T4 and T5)
- New watercourse crossing
 - × Watercourse crossing (Ordnance Survey 1:25K)
 - × Minor watercourse crossing
 - × Artificial drain crossing

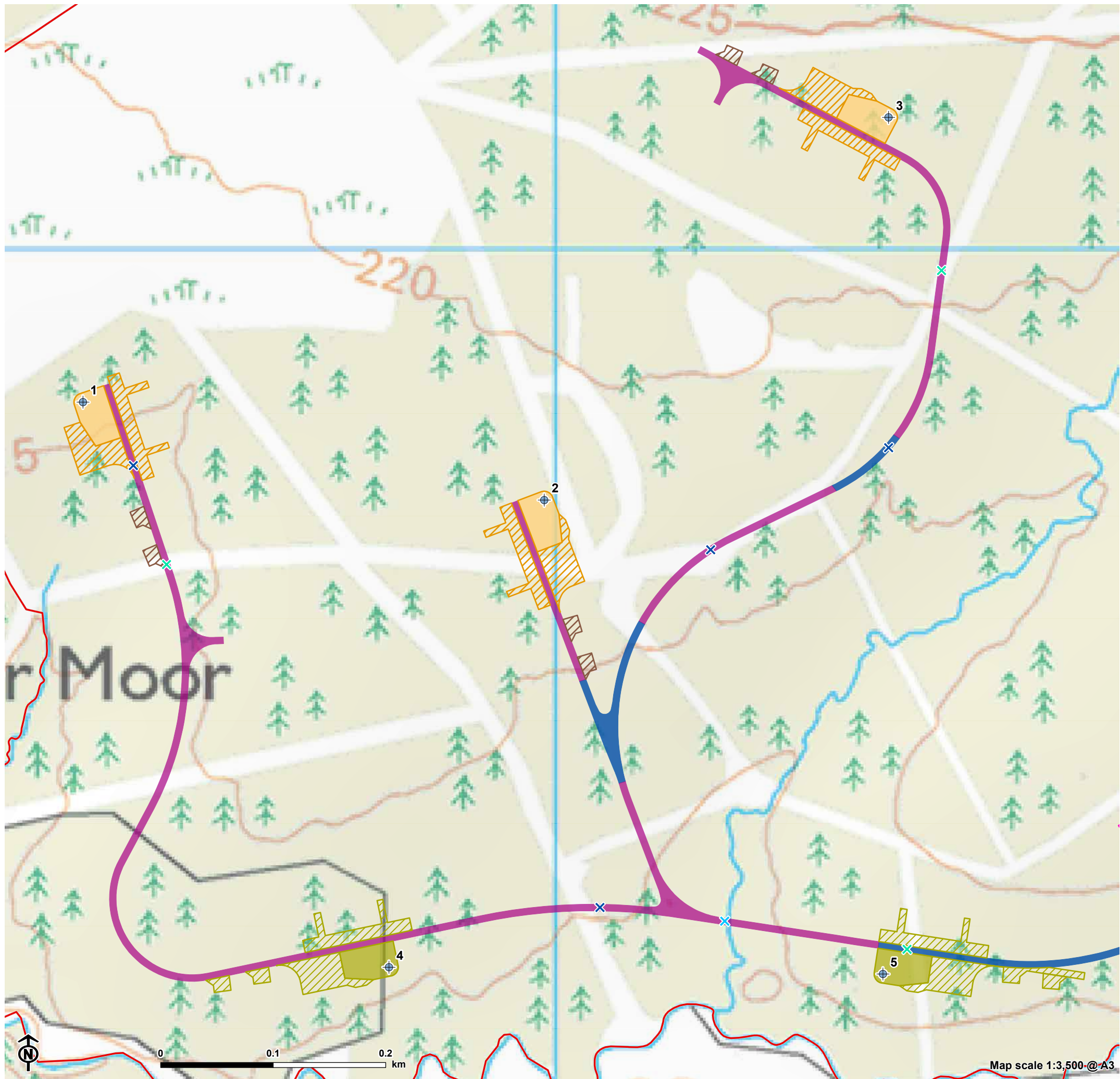
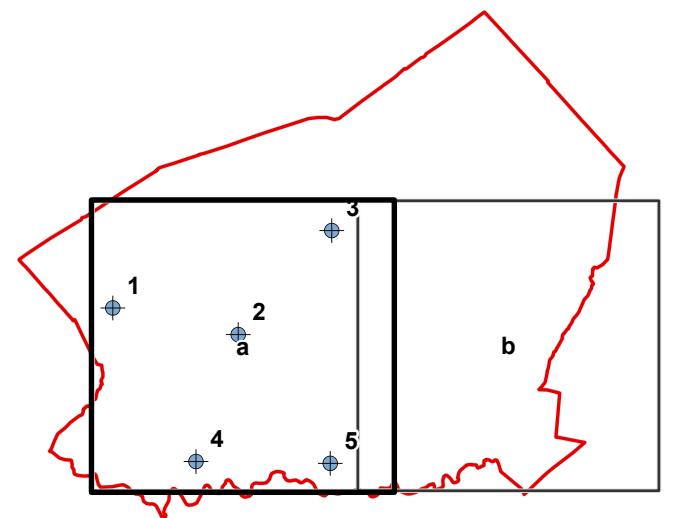


Figure 3a: Site Layout Plan (Detailed)

- Site boundary
- Turbine
- New access track/ turning head (floated)
- New access track (excavated)
- Piled turbine foundation/hardstanding (permanent) (T1, T2 and T3)
- Excavated turbine foundation/hardstanding (permanent) (T4 and T5)
- Floating hardstanding (temporary) (T1, T2 and T3)
- Piled auxiliary crane pad (temporary) (T1, T2 and T3)
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 - Minor watercourse crossing
 - Artificial drain crossing



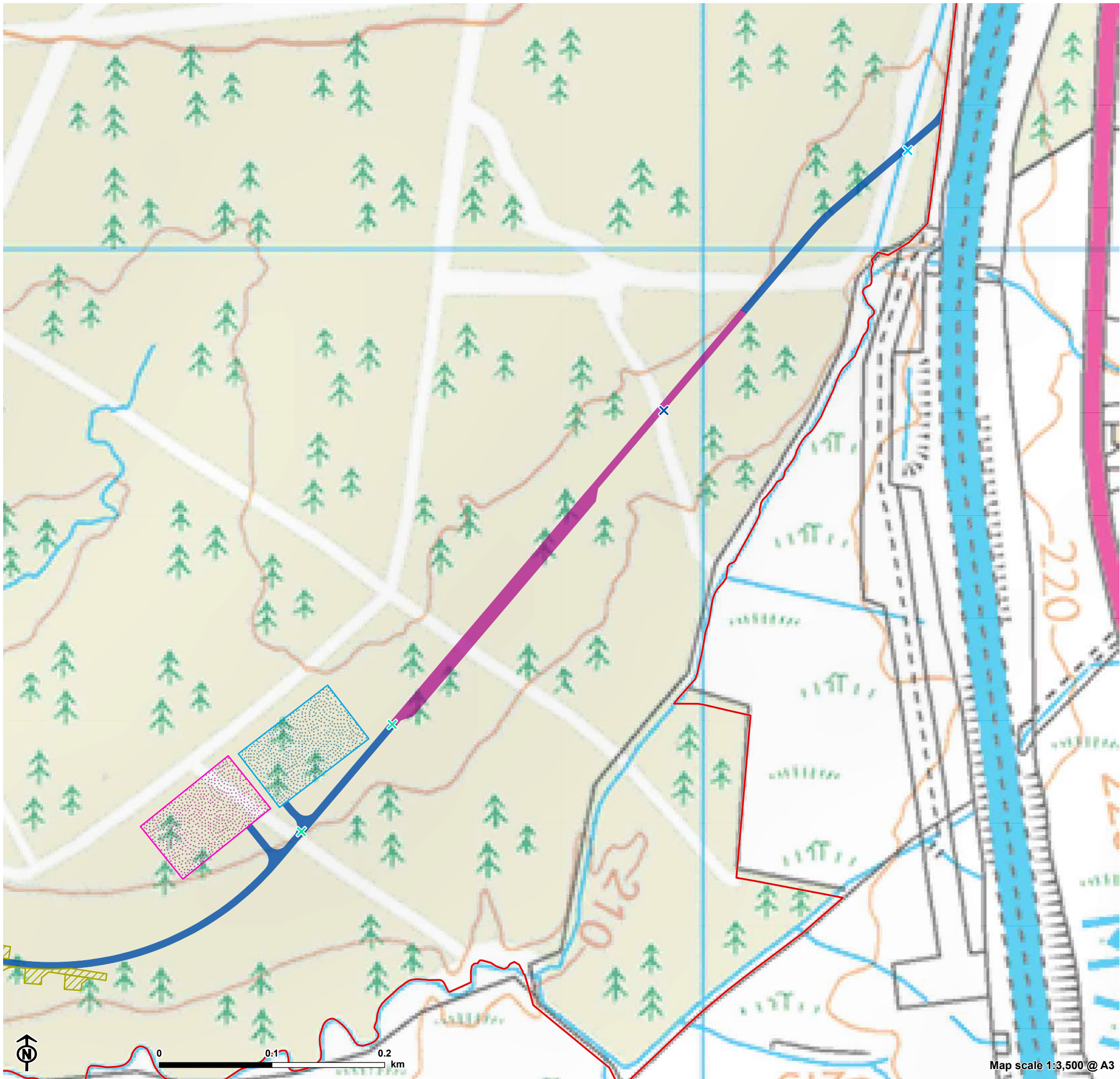
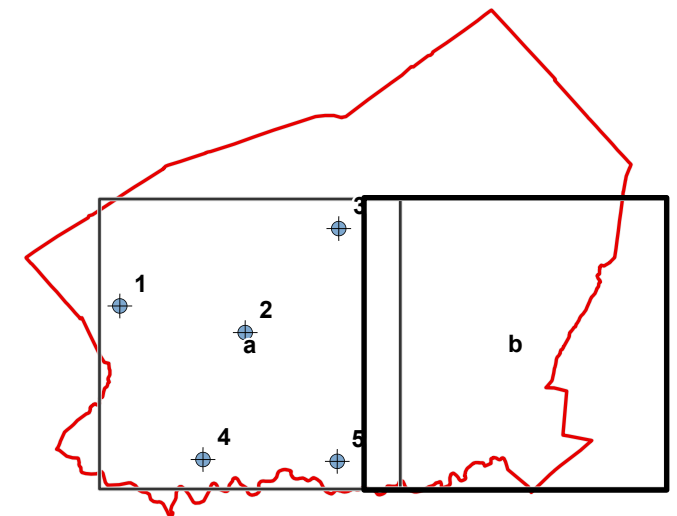


Figure 3b: Site Layout Plan (Detailed)

- Site boundary
- Construction compound (temporary)
- Substation compound
- New access track/ turning head (floated)
- New access track (excavated)
- Excavated hardstanding (temporary) (T4 and T5)
- New watercourse crossing
 - Watercourse crossing (Ordnance Survey 1:25K)
 - Minor watercourse crossing
 - Artificial drain crossing



Chapter 4

Site Selection and Design Strategy

Site Selection

4.1 The Proposed Development Site is considered suitable for a wind farm for the following reasons:

- The Site's location offers a good wind resource;
- It is in proximity of an area that can potentially support a grid connection to the electricity network;
- The Site's location in relation to M77 and A77 allows for good access routes;
- The Site is near to two existing quarries which provides opportunities for sourcing aggregate materials locally;
- The Site is not within a National Park or National Scenic Area (NSA);
- There are no international or national natural heritage designations within the Site or in the immediate surrounding area;
- The existing land use of a commercial forestry plantation is compatible with the development of a renewable energy scheme;
- Removal of the existing woodland will give the opportunity to restore peatland condition within the Site;
- The Site is at distance from major residential areas with the nearest being Stewarton, approximately 4.5 km to the southwest;
- The surrounding landscape is already defined by the existing wind farms; Whitelee Wind Farm and Extensions, Sneddon Law, Middleton, and Neilston. These existing wind farms with key transport routes (M77 and A77) have established a landscape with a strong sense of human influence through man-made development which reduces the sense of wildness and remoteness which would otherwise be typical of alternative upland landscapes.
- Knowledge of the Site and the surrounding area show that there are no major environmental constraints that would restrict the Proposed Development, or which cannot be avoided through design.

The Design Strategy

4.2 The design strategy outlines the overall approach to the design of the Proposed Development and provides a starting point for the subsequent design iterations in response to various environmental constraints that are identified during the EIA process.

4.3 The design strategy for the Proposed Development aims to provide a balance between maximising the Site's energy yield and creating a layout that responds to its setting in terms of landform and pattern with other existing and proposed wind farm schemes, whilst minimising environmental impacts on sensitive receptors (including landscape, visual, peat, and residential visual amenity).

4.4 A key element of the design strategy has been revisiting the reasons for refusal of the previous Glenouther Renewable Energy Park, and therefore seeking an appropriate balance between maximising energy generation of the Site and minimising landscape and visual and residential visual amenity impacts, whilst responding positively to current local and national planning policy, particularly with regards to peatland and biodiversity enhancement.

4.5 The overarching design objectives were as follows:

- To maximise the potential energy output of the Site and create a competitive and financially viable project;

- To use the latest wind turbine technology consisting of more efficient and larger turbines where these can be reasonably accommodated within the landscape, as supported by the Onshore Wind Policy Statement (OWPS)³ and National Planning Framework 4 (NPF4);
- To create a layout and use a turbine option that ensures thresholds for visual impact, noise and shadow flicker are not breached in regard to surrounding residential properties;
- To design a small and well composed group of turbines that is seen as a discrete development and does not materially increase the perceived extent of wind farm development across the landscape from key views;
- To design a balanced and coherent layout that minimises stacking or overlap of turbines in key views, and reduces notable gaps and outliers;
- To explore opportunities to restore and enhance biodiversity including for birds and peat; and
- To develop a layout that fulfils the above objectives whilst respecting other environmental and technical constraints including noise; ecological, ornithological; hydrological and ground conditions (including peat), telecommunications links and aviation related constraints identified during the EIA and consultation process.

4.6 The main elements of the Proposed Development considered in the initial design iterations were the turbines. The locations of other infrastructure components were largely dictated by the positioning of the turbines and were designed around onsite environmental constraints, particularly peat depth and hydrological considerations. Later iterations to the turbine layout involved several alterations to turbine and infrastructure locations, which were reviewed against all constraints.

4.7 Based on a review of the Site and its landscape context, identified environmental constraints (see **Image 9**), the Site's previous planning history/reasons for the original refusal of the Glenouther Renewable Energy Park, initial design work undertaken by the Applicant and advice contained in good practice guidance, site-specific design principles were adopted and used to guide the design process. Key principles included:

- Where possible in the context of other competing environmental constraints, maintain a minimum 1.2 km buffer from key residential properties (as noted above) in order to reduce residential visual amenity impacts and achieve operational noise limits (including cumulatively with other wind farms)⁴. Whilst 1.2 km was used as an initial rule of thumb, site specific conditions relating both to the properties themselves and on the Site, were also filtered into decision making about design.
- Ensure a well composed and coherent layout is achieved from nearby settlements, including Stewarton and Fenwick (where visible).
- Ensure a well-balanced layout from key transport and recreational routes where there is widespread theoretical visibility, including the M77/A77 (including cycling route), A735 (including Glasgow to Kilmarnock Railway), A719, B778 and B769, and core paths within 5 km.
- Seek to develop a reduced visible aviation lighting scheme, including mitigation which reduces the intensity of lightings to help minimise night-time effects including for nearby residents.
- Avoid deep peat >1m and priority peatland habitats (including near natural blanket bog within the Site) as far as possible within the context of other environmental constraints. Where avoiding deep peat is not possible, propose alternative solutions to limit peat excavation where technically feasible.
- Maintain the appropriate disturbance distances to identified breeding bird locations; and
- Maximise biodiversity enhancement in accordance with NPF4 Policy 3, including forest-to-bog opportunities, whilst maintaining good forestry management principles.
- Keep overall new track length to a minimum thereby reducing stone imports, excavations and associated potential environmental effects;

³ Scottish Government (2022) Onshore Wind Policy Statement. Available [online] at: <https://www.gov.scot/publications/onshore-wind-policy-statement-2022/documents/> [Accessed: 20th February 2026]

⁴ Following further analysis of other onsite environmental constraints all properties except those at North Drumbo and Blair Farm are at least 1.2 km from the nearest turbine. See Technical Appendix 5.2.

- Minimise the need for new watercourse crossings, and, where necessary, ensure any new crossing structures minimise the impact on biodiversity and flood risk; and
- Choose a site access point which provides the most direct and shortest route to the turbine locations whilst meeting the standards required to maintain road safety.

4.8 Some key outcomes have been achieved through following these design principles:

- Firstly, by maintaining appropriate buffer distances to nearby properties, it is not considered that the Proposed Development will result in an effect on residential visual amenity to such an extent that it will affect living conditions (one of the key reasons for refusal of Glenouther Renewable Energy Park). Adhering to appropriate buffers has also enabled operational noise limits to be met at all properties.
- Through proposing best practice construction techniques to avoid peat loss (piled foundations and hardstandings for Turbines 1-3 and floated tracks), it has been possible to avoid the extraction of approximately 96,000 m³ of peat during construction, providing benefits to the peat as a habitat and also in terms of carbon losses.
- Achieving significant biodiversity enhancement has been a key design principle and has informed discussions on forestry design throughout the project. As a result, approximately 54 ha of peatland enhancement is expected overall once the compensation requirements for peat loss have been considered (14.30 ha), in accordance with NatureScot guidance. This will make a significant contribution to demonstrating the Proposed Development's compliance with NPF4 Policy 3, which requires significant biodiversity enhancement to be delivered for national and major projects.



- Fewer turbines mean fewer turbine foundations, hardstanding and tracks to service turbines, meaning the physical footprint of the project would be smaller in terms of peat disturbance;
- A compressed layout with fewer turbines would narrow the field of view from residential properties compared to the previous Glenouther Renewable Energy Park; and
- Fewer turbines would allow for a well composed and evenly spaced layout which avoids stacking and overlap in key views.

4.10 Further details of the design process, and the alternatives considered (both in terms of turbine and infrastructure layouts) are provided in **Chapter 3: Site Selection and Design Strategy** of **Volume 2** of the EIA Report and the **Design and Access Statement (DAS)**.

4.11 As well as the Proposed Development, the Likely Grid Connection Route design was carefully considered, and a balance between technical feasibility and economic viability with the least disturbance to the environment and to people was sought. On that basis, it was decided that an underground 33 kV cable was the best means to give the optimum balance of environmental, technical and economic factors for a connection of this type. Following the Holford Rules, which are a set of best practice rules guiding the routing of overhead lines, but which generally apply to underground cables too, a likely route for the cable was identified following public roads to the point of connection (PoC) at Crookston Substation. The route selection and placement in public roads are considered the most efficient solution in terms of cost and delivery, and also inherently reduces environmental effects. **Image 4** shows the indicative route of the Likely Grid Connection Route.

4.12 The final design layout of the Proposed Development is displayed in **Figure 3: Site Layout Plan (Overview)** and **Figure 3a-b: Site Layout Plan (Detailed)**.

Chapter 5

Landscape and Visual Impact Assessment

Introduction

5.1 The Landscape and Visual Impact Assessment (LVIA) considers the likely significant effects of the Proposed Development and Likely Grid Connection Route (including in-combination with the Proposed Development) during construction, operation and decommissioning (including cumulatively with other wind farms) on landscape and visual amenity.

5.2 The full assessment can be found in **Chapter 5: Landscape and Visual Impact Assessment** of **Volume 2** of the EIA Report which is accompanied by technical appendices, figures and viewpoint visualisations.

Overview of Methodology

5.3 The assessment was informed by desk-based research, consultation with EAC, fieldwork, photography, visualisations and professional experience. The assessment methodology has followed best practice guidance developed by NatureScot and the Landscape Institute (LI). The Likely Grid Connection Route assessment was desk-based only.

5.4 The assessment focusses on locations where landscape and visual receptors are likely to be affected by the Proposed Development as predicted by a Zone of Theoretical Visibility (ZTV) map which shows areas from where the Proposed Development will be theoretically visible (see **Image 10**). For effects on landscape character and designations, the study area was limited to 20 km. For the assessment of visual effects on settlements and routes, the study area was 10 km. A study area of 45 km has been used for the assessment of effects on wider views as represented by a selection of 18 viewpoints, which have been chosen in consultation with EAC to assess a range of views and distances from different locations where different visual receptors may be present. Visualisations for the chosen 18 viewpoints are provided in EIA Report **Volumes 3b** and **3c**.

Overview of Baseline Conditions

5.5 The Site is located within an area of privately owned coniferous forest, the boundary of which is broadly contained by the M77 to the east and Swinzie Burn to the south. To the north and west, there are further areas of privately owned coniferous forest, then Corsehouse Reservoir to the north and open, gently sloping moorland to the west.

5.6 The landscape character of the wider study area is varied, and includes large urban areas, river valleys, farmland, moorland and upland areas. The Site is located in a large upland plateau which separates the Clyde Valley, to the north, from the Ayrshire basin, to the south-west. The large operational Whitelee Wind Farm is located to the east of the Site (and east of the M77). The Site is located in the Plateau Moorland with Windfarms - Ayrshire (79) Landscape Character Type (LCT). Also, within 20 km and with theoretical visibility of the Proposed Development are 214 - Plateau Moorland with Windfarms - Glasgow & Clyde Valley LCT and 66 - Agricultural Lowlands – Ayrshire LCT.

5.7 Loch Lomond and the Trossachs National Park and the Loch Lomond National Scenic Area (NSA) are located to the far north of the study area (beyond 30 km). North Arran NSA is also on the western edge of the study area (beyond 40 km). Waterhead Moor – Muirsheil Wild Land Area (WLA) is located in the north-west of the study area. These designations have limited theoretical visibility of the Proposed Development given their distance. Local landscape designations within 20 km include Mainland Local Landscape Area (LLA), Uplands and Moorlands LLA and Lower Clyde and Calderglen LLA. Visibility of the Proposed Development is intermittent and distant (beyond 15 km).

5.8 There are 38 properties within 2 km of the turbines which are considered to be key visual receptors and have been assessed in terms of residential visual amenity effects.

5.9 Settlements within 10 km include Dunlop, Stewarton, Fenwick, Kilmarnock, Neilston and Newton Mearns. Routes within 10 km include the M77/A77, A736, A735, A719, local cycle route on A77, the National Cycle Network and core paths.

5.10 Within 10 km, there are a number of operational wind farms, including Whitelee and Extensions 1 and 2 (to the east and south-east), Neilston Community (to the north-west) and Middleton (to the north). Moorshield, Nether Carswell III and Blacklaw Hill are smaller consented cumulative developments within 5 km.

Assessment of Effects

Landscape Effects

5.11 No significant effects are predicted from any national or local landscape designations or WLAs within the study area.

5.12 Significant effects are predicted on the landscape resource of the Site itself during construction (**Major**) and operation (**Major**).

5.13 Significant effects on landscape character are predicted for the host Landscape Character Type (LCT) Plateau Moorland with Windfarms - Ayrshire (79) and the adjacent Plateau Moorland with Windfarms - Glasgow & Clyde Valley (214) LCT. **Moderate** effects will be experienced at the level of the immediate surroundings of the Site and a localised surrounding area between Neilston Community Wind Farm to the north; Whitelee Wind Farm to the east; Glassock Bridge to the south; and (east of) Kingsford to the west.

5.14 Significant (Moderate) effects will also be experienced from the adjacent, to the south-west, Agricultural Lowlands – Ayrshire LCT (66). These effects will be experienced from a localised area to the north-east of the LCT, to the north-east of Stewarton and contained within approximately 5 km.

5.15 No significant effects on other LCTs within 20 km are predicted.

5.16 No significant landscape effects are predicted during construction and operation of the Likely Grid Connection Route (including in-combination with the Proposed Development).

Visual Effects

5.17 Visibility is variable across the study area with the landform providing screening from many locations.

5.18 Significant operational visual effects are predicted for 8 of the 18 representative assessment viewpoints (limited to within 8.5 km) and three routes (limited to within 5 km). No significant visual effects are predicted from settlements within the 10 km study area.

5.19 No significant visual effects are predicted during construction and operation of the Likely Grid Connection Route (including in-combination with the Proposed Development).

Viewpoints

5.20 Major (Significant) effects on views are predicted from:

- Viewpoint 1 - A77 near Drumboy;
- Viewpoint 3 - Harelaw Road; and
- Viewpoint 4 - Kingsford B769.

5.21 Moderate (Significant) effects are predicted from:

- Viewpoint 2 - Glassock Bridge - A77/A719;
- Viewpoint 5 - Queenseat B764;
- Viewpoint 6 - Neilston Pad;
- Viewpoint 7 - Dunlop Road (A735), Stewarton; and
- Viewpoint 10 – Foreside.

5.22 These viewpoints are all within 8.5 km of the turbines.

Routes

5.23 Major to Moderate (Significant) effects are predicted from:

- M77/A77; and
- A719.

5.24 Major (Significant) effects are predicted from:

- Core paths within 5 km.

5.25 For most commercial wind farms, having some residual significant landscape and visual effects is unavoidable. The level and distribution of assessed significant landscape and visual effects for the Proposed Development are considered to be as would be expected for a larger commercial wind farm in this type of landscape, and all effects are considered to be localised in accordance with the geographical extent to which they will be experienced.

Cumulative Effects

5.26 Additional cumulative effects associated with the Proposed Development, in a theoretical future baseline which includes consented and proposed wind farms, are not judged to be notably different to the effects associated with the Proposed Development in the current baseline. Consented cumulative developments will marginally increase the influence of existing wind farm groups in the more immediate context (Moorshield and Nether Carswell III), or in the case of Blacklaw Hill, introduce a further smaller single turbine. In the more local context, the Proposed Development will continue to read as a distinct wind farm, to the west of the M77. As such, cumulative effects will remain unchanged from the current baseline against which the Proposed Development has been assessed.

Residential Visual Amenity

5.27 Technical Appendix 5.2: Residential Visual Amenity Assessment (RVAA) in Volume 4 of EIA Report provides an assessment of effects on residential visual amenity for properties within 2 km of the turbines to determine if the effects from properties are such that they could affect living conditions. Of the 38 properties considered, significant visual effects are predicted for 35 (where there are clear views toward the development). However, of the 10 properties which will be subject to a high magnitude of residential visual change and carried forward to detailed assessment, none are likely to experience effects which affect living conditions and would be widely regarded as unpleasant places to live.

Aviation Lighting

5.28 An assessment of the effects of aviation lighting on landscape and visual amenity during hours of darkness is included in **Technical Appendix 5.3: Aviation Lighting Night-Time Impact Assessment in Volume 4** of the EIA Report.

5.29 Significant night-time effects are predicted from:

- The host LCT '79 - Plateau Moorland with Windfarms - Ayrshire' and the adjacent (and similar in character) LCT '214 - Plateau Moorland with Windfarms - Glasgow & Clyde Valley', within approximately 5 km (**Moderate**);
- The adjacent LCT '66 - Agricultural Lowlands - Ayrshire' to the south-west, within approximately 5 km (**Moderate**);
- Viewpoint 1: A77 near Drumboy (**Major**);
- Viewpoint 3: Harelaw Road (**Major**); and
- Viewpoint 4: Kingsford B769 (**Major**).

Overview of Proposed Additional Mitigation/Enhancement

5.30 No additional mitigation to reduce the identified landscape and visual effects were identified. Landscape and enhancement measures are proposed, and these include areas of 'forest to bog' restoration and riparian edge planting as shown on **Image 8**. Whilst these will result in some localised beneficial effects on the landscape fabric of the Site,

these are not judged to alter the scale of adverse landscape and visual effects associated with the Proposed Development.

Summary of Likely Significant Residual Effects

5.31 As all mitigation for landscape and visual effects is embedded within the final design for the Proposed Development, all effects identified are residual effects.

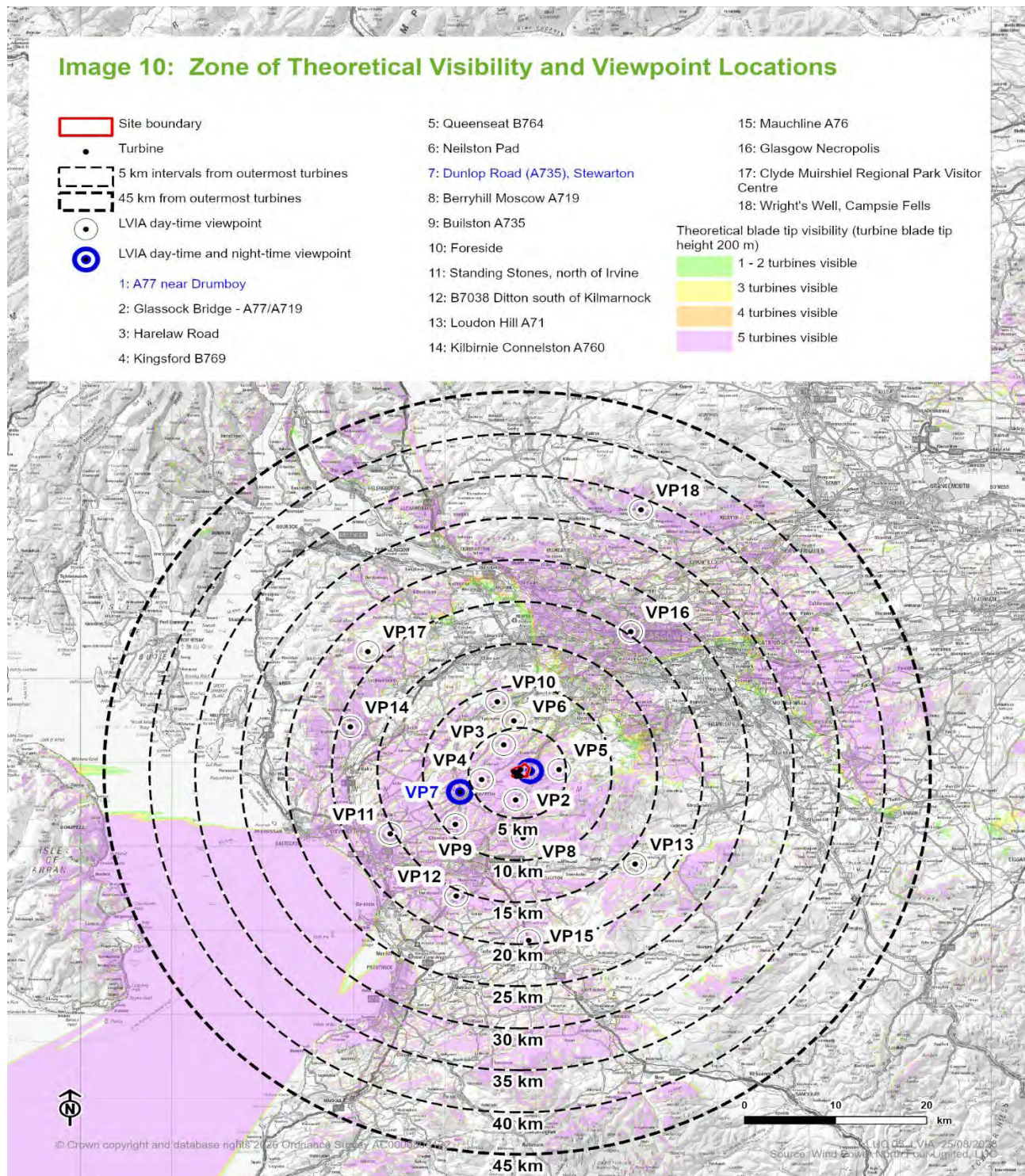


Image 10: Zone of Theoretical Visibility and Viewpoint Locations

Chapter 6 Cultural Heritage

Introduction

6.1 The cultural heritage assessment considers the likely significant construction, operational and decommissioning effects of the Proposed Development and Likely Grid Connection Route (including in-combination with the Proposed Development) on the historic environment (including cumulatively with other developments) in terms of direct physical effects on known heritage assets and effects on setting change⁵.

6.2 The full assessment can be found in **Chapter 5: Cultural Heritage** of **Volume 2** of the EIA Report which is accompanied by technical appendices, figures and visualisations.

Overview of Methodology

6.3 The assessment was informed by desk-based research, consultation with Historic Environment Scotland (HES), fieldwork, photography, visualisations and professional experience. The assessment methodology has followed best practice guidance developed by HES and the Chartered Institute for Archaeologists (CIfA). The Likely Grid Connection Route assessment was desk-based only.

6.4 Direct physical effects have been assessed for assets within the Site and along the Likely Grid Connection Route which could be impacted during construction or decommissioning works. The assessment of effects on setting has considered non-designated and designated assets up to 10 km from the turbines where ZTV mapping indicates that theoretical visibility could result in setting change. Visualisations for eight cultural heritage viewpoints are provided in **Volume 3c** of the EIA Report.

Overview of Baseline Conditions

6.5 No designated heritage assets are located within the Site. Two non-designated heritage assets have been recorded within the Site, including a group of three possible prehistoric roundhouses and a possible medieval/post-medieval dam and water mill (see **Image 11**). There is a low potential for unrecorded buried archaeological remains to be identified during the construction of the Proposed Development.

6.6 Within 5 km, there are 35 designated assets of high importance, including four scheduled monuments, 30 listed buildings and one conservation area. There are seven non-designated heritage assets of high importance. These designated and non-designated heritage assets represent human activities from prehistory to the post-medieval period.

6.7 Between 5-10 km, there are eight scheduled monuments, 268 listed buildings, four gardens and designed landscapes and six conservation areas, all of which are of high importance.

Assessment of Effects

6.8 There will be no construction effects of the Proposed Development and Likely Grid Connection Route (including in-combination with the Proposed Development) to known heritage assets.

6.9 The operation of the Proposed Development may result in setting change to two designated heritage assets and one non-designated heritage asset of high importance within 5 km due to theoretical visibility of the turbines - Scheduled Monument Moyne Cairn (SM12856); Category C Listed Building Harelaw (LB13823) and Black Law fort (WoSAS HER

⁵ Setting relates to the surroundings in which an asset is experienced, understood or appreciated.

6.10 No significant cumulative effects have been identified as a result of the operation of the Proposed Development.

6.11 No mitigation is proposed as there are no likely significant effects identified.

6.12 No likely significant effects have been identified.

Image 11: Heritage Assets within 5 km and Theoretical Visibility

Legend:

- Site boundary
- Turbine
- 0 - 5 km Inner Study Area
- Designated Heritage Assets
 - Listed Building: Category A
 - Listed Building: Category B
- Listed Building: Category C
- Scheduled Monument (SM)
- Conservation Area (CA)
- Non-designated Heritage Assets
 - Non-designated heritage asset of national importance
 - Non-designated heritage asset of regional/local importance

Theoretical blade tip visibility (turbine blade tip height 200 m)

- 1-2 turbines visible
- 3 turbines visible
- 4 turbines visible
- 5 turbines visible

Figure 6.3d extent: Stewarton

Figure 6.3c extent: Fenwick, Laigh Fenwick, Rowallan GDL, and Kilmaurs

5 km

0 1 2 km

Source: Windward

Chapter 7

Ecology

Introduction

7.1 The ecology assessment considers the potential for significant construction, operational and decommissioning effects (including cumulatively with other developments) of the Proposed Development and the Likely Grid Connection Route (including in-combination with the Proposed Development) on species and habitats identified during desk study and survey work that are afforded a high level of protection through legislation.

7.2 The full assessment can be found in **Chapter 7: Ecology** of **Volume 2** of the EIA Report which is accompanied by technical appendices and figures.

Overview of Methodology

7.3 The assessment was informed by desk-based research, field survey (habitat walkover and protected species search) and professional experience. The assessment methodology has followed best practice guidance developed by the Chartered Institute of Ecology and Environmental Management (CIEEM) and NatureScot. The assessment of the Likely Grid Connection Route was informed by desk-based study only.

7.4 Habitat and protected species surveys were undertaken for the full landownership area i.e. across the full extent of Glenouther Forest ('the survey area') to determine the presence of any notable species which could be affected by the Proposed Development. Bat detectors were deployed within the Site boundary to determine the level of bat activity present.

7.5 The assessment considers effects in relation to habitat loss and modification, species mortality and bat collision risk. It was possible to scope out the effects on a number of habitats and species by virtue of their ecology, absence, distance from the Proposed Development and low levels of activity.

Overview of Baseline Conditions

7.6 There are no ecological designations within the Site. One Local Nature Conservation Site (LNCS) marginally overlaps with the Site: Corsehouse Reservoir LNCS. Brother Lochs Site of Special Scientific Interest (SSSI) is approximately 2.5 km from the Site.

7.7 Baseline habitat surveys indicate that the majority of the Site comprises conifer plantation. Key habitats of value identified within the Site were modified bog and blanket bog (see **Image 12**). A small number of other habitat types such as marsh/marshy grassland, acid/neutral flush and acid grassland each respectively cover relatively small areas.

7.8 Baseline protected species surveys found signs of badger, otter, Atlantic salmon and trout within and around the Site. High collision risk bat species were identified during the bat detector surveys including common pipistrelle, soprano pipistrelle, *Nyctalus* spp. and *Nathusius'* pipistrelle. No roost features were identified within the Site. With the exception of high collision risk bat species, the risk to protected species was considered to be low due to the low number of recordings, distance of the feature to construction works and lack of suitable habitat to support them.

Assessment of Effects

7.9 The Proposed Development has been designed to minimise impacts on important habitats and protected species as far as practicable. Embedded design mitigation (including maintaining suitable distances to watercourses to reduce impacts on fish and other protected species, and achieving the necessary buffers between trees and turbine blades to minimise bat collision risk), good practice measures (including pre-construction checks as directed by a suitably qualified

Ecological Clerk of Works (ECoW) and implemented through a Species Protection Plan (SPP)) will enable the protection of protected species during construction works associated with the Proposed Development.

7.10 The most tangible effect during the construction phase of the Proposed Development will be direct habitat loss and potential indirect habitat loss/modification due to the construction of new infrastructure. Effects upon blanket bog and wet modified bog are considered to be **Minor (Not Significant)** due to the low level of impact on the wider site resource. No significant effects on habitats or protected species are predicted during construction of the Likely Grid Connection Route (including in-combination with the Proposed Development). Decommissioning will not lead to any further direct or indirect habitat losses above those that already occurred during construction of the Proposed Development, and effects are assessed as **Minor (Not Significant)**.

7.11 The operational collision risk for bat species is assessed as **Minor (Not Significant)**.

7.12 No significant cumulative effects with other cumulative developments are likely for the receptors assessed (blanket bog, wet modified bog and bats).

7.13 Additional compensation and enhancement measures, such as priority peatland restoration, are proposed for the operational phase as part of the Proposed Development through the implementation of a Biodiversity Enhancement Management Plan (BEMP). The restoration of at least 41.27 ha of existing conifer plantation on deep peat back to bog and enhancement of 26.59 ha of non-planted areas of bog extend is assessed as a **Moderate (Beneficial)(Significant)** effect.

Overview of Proposed Additional Mitigation/Enhancement

7.14 No additional or bespoke mitigation is proposed as no significant effects are identified. However, the Proposed Development provides an opportunity to deliver long-term beneficial habitat enhancement, including specific management for blanket bog (see above) and broadleaved woodland/riparian enhancement. These proposals are set out in the OBEMP (see **Image 8** above and **Technical Appendix 7.6** in **Volume 4** of the EIA Report) which will deliver significant biodiversity enhancement at the Site.

Summary of Likely Significant Residual Effects

7.15 Moderate (Beneficial)(Significant) effects upon blanket bog/wet modified bog during operation are predicted as a result of the implementation of the BEMP for the Proposed Development.



Image 12: Blanket Bog Habitat within the Site

Chapter 8 Ornithology

Introduction

8.1 The ornithology assessment considers the likely significant effects of the Proposed Development and Likely Grid Connection Route (including in-combination with the Proposed Development) during construction, operation and decommissioning (including cumulatively) on bird species identified during desk study and survey work that are afforded a high level of protection through legislation.

8.2 The full assessment can be found in **Chapter 8: Ornithology** of **Volume 2** of the EIA Report which is accompanied by technical appendices and figures.

Overview of Methodology

8.3 The assessment was informed by desk-based research, field survey (breeding and non-breeding season surveys and flight activity surveys) and professional experience. The assessment methodology has followed best practice guidance developed by the CIEEM and NatureScot. The assessment of the Likely Grid Connection Route was informed by desk-based study only.

8.4 Surveys commenced in September 2023 and concluded in August 2025, covering two breeding and non-breeding seasons. Surveys were undertaken up to 2 km from the Site as per the specific species requirements set out in guidance. Flight activity surveys were completed for two strategic vantage points within 500 m of the Site. Winter wildfowl counts were also completed for Corsehouse Reservoir between September 2023 and March 2024.

Overview of Baseline Conditions

8.5 The Site is not within any designation for ornithological interests. The Ailsa Craig Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI) lies approximately 66 km to the south-west of the Proposed Development. This is within the mean foraging range for lesser black-backed gull (236 km) and herring gull (85.6 km), both of which form part of the reason the SPA was designated. NatureScot requested that the SPA be considered in terms of collision risk for the species it supports.

8.6 Baseline surveys provided a clear understanding of the bird species present within the Site and surrounding area, and their patterns of breeding and flight activity. Based on ecological characteristics, absence from the Site, distance from the Proposed Development, low numbers or low levels of activity several species were scoped out of further assessment.

8.7 Walkover surveys identified several breeding wader species including curlew, lapwing and woodcock. Whooper swan, greylag goose, herring gull, lesser black-backed gull, osprey and hen harrier were recorded during flight activity surveys. Breeding bird surveys identified two species which are afforded a high level of protection due to persecution. Details of these species are restricted to **Confidential Technical Appendix 8.3: Confidential Ornithology** in **Volume 5** of EIA Report.

Assessment of Effects

8.8 Three species were taken forward for assessment: herring gull, lesser black backed gull and one of the protected species. Herring gull and lesser black backed gull were assessed in terms of collision mortality due to their presence during flight activity surveys and because they form part of the qualifying features of the Ailsa Craig SPA, which lies within connectivity distance for these species. The assessment found that there would be no adverse effect on the integrity of the SPA through impacts on these species.

8.9 The protected species was assessed in relation to potential habitat loss, displacement, barrier effects and collision mortality. Through a commitment to undertake pre-construction surveys and adoption of measures in a Bird Protection Plan (BPP) to avoid disturbance to any breeding attempt in compliance with legislation, effects are assessed as being **Negligible (Not Significant)**.

8.10 The effects of construction of the Likely Grid Connection Route on bird species assessed is determined to be **Negligible (Not Significant)** as it will be buried underground and will be located in areas of low ornithological value.

8.11 For all bird species assessed and at all stages of the Proposed Development and Likely Grid Connection Route, the cumulative effects with other projects are likely to be **Negligible (Not Significant)**.

Proposed Additional Mitigation/Enhancement

8.12 No additional mitigation is proposed, and the assessment therefore relies on good practice and procedural safeguards that will be implemented through the BPP. A programme of post construction monitoring in the first five years will be undertaken to track how key bird species use the Site and to assess the outcomes of habitat enhancement measures. This will include annual surveys for breeding birds. The need for any continued monitoring beyond year five will be reviewed with EAC and NatureScot based on the results of this initial period and the extent to which enhancement objectives are being achieved.

8.13 Riparian planting proposals within the BEMP (**Technical Appendix 7.6 in Volume 4** of the EIA Report) will improve Site conditions for a range of bird species, such as providing shelter and more foraging habitats.

Summary of Likely Significant Residual Effects

8.14 No likely significant residual effects have been identified in relation to ornithology.

Chapter 9

Hydrology, Hydrogeology, Geology and Peat

Introduction

9.1 The hydrology, hydrogeology, geology and peat assessment considers the potential effects of the Proposed Development and Likely Grid Connection Route (including in-combination with the Proposed Development) during construction, operation and decommissioning (including cumulatively with other developments) on groundwater and surface water quality, flood risk and drainage, private water supplies (PWS) and peat disturbance.

9.2 The full assessment can be found in **Chapter 9: Hydrology, Hydrogeology, Geology and Peat** of **Volume 2** of the EIA Report which is accompanied by technical appendices and figures.

Overview of Methodology

9.3 Desk-based studies and field surveys were carried out to establish baseline conditions. These surveys included peat probing to determine peat depth distribution across the Site to inform the design, and hydrological walkover to identify unmapped watercourses and potential groundwater dependent terrestrial ecosystems (GWDTEs). A survey questionnaire was also issued to properties within 1 km of the Site to determine if they had a PWS that could be affected by the construction works. EAC, ERC and the Scottish Environment Protection Agency (SEPA) were also consulted for PWS data and licenced water abstraction information.

9.4 The study area for the hydrology assessment has been based on the Site itself and watercourses/waterbodies downstream within the Swinzie Burn catchment. The study area for detailed assessment of groundwater abstractions, including PWS, was 250 m buffer from the proposed infrastructure's micro-siting limits (50 m), as per guidance from SEPA. The assessment of effects on peat disturbance considered the peat resource within the Site.

9.5 The assessment was undertaken in accordance with best practice guidance and professional judgement.

Overview of Baseline Conditions

9.6 The Site lies entirely within the Swinzie Burn catchment. The burn flows in a western direction along the southern edge of the Site and joins the Annick Water approximately 4 km to the west. The Annick Water catchment encroaches into the northern part of the although no infrastructure is within it. The Earn Water is a small watercourse to the north-east of the Site that flows north-east. A small portion of the Site along the eastern Site boundary lies within the Earn Water catchment, but there is no proposed infrastructure within it. There are numerous smaller unnamed and unmapped watercourses and drainage channels within the Site which were identified and mapped through field survey for design and assessment purposes.

9.7 The SEPA flood maps identify small areas of the Site as being at risk of surface water flooding and flooding from small watercourses. These areas are generally located in low-lying areas close to watercourses. Where practicable, areas at risk of flooding have been avoided during earlier stages of the design. There are no properties or other areas of interest immediately downstream of the Site that are currently at risk of flooding from the named and unnamed watercourses within the Site.

9.8 Based on EAC data, SEPA abstraction data, questionnaire responses, direct consultation with residents and data obtained from the Glenouther Renewable Energy Park project, nine PWS source locations were identified, supplying 11 properties. A further five potential PWS properties were identified as potentially being supplied by a PWS source, but these sources are currently unknown. No PWS is considered to be connected to the Site infrastructure due to distance and lack of surface flow connectivity. Hydrological features, including catchments and PWS, are shown in **Image 13**.

9.9 No GWDTEs were identified based on habitat survey findings and hydrology analysis.

9.10 The peat surveys found that 90% of peat depth recordings were above 0.5 m. The deepest peat depth recorded was 820 cm. However, most of the peat within the Site is in a degraded state due to being planted with forestry, and so there are good opportunities for restoration through the Proposed Development. The peat survey findings played a key role in the infrastructure design and have informed the Outline Peat Management Plan (OPMP) – see **Technical Appendix 9.3 in Volume 4** of the EIA Report.

Assessment of Effects

9.11 The assessment of effects considers the embedded design mitigation proposed as well as a suite of good practice mitigation measures which reflect best practice guidance and recognised industry standards which will be implemented through a Construction Environmental Management Plan (CEMP) – see outline CEMP at **Technical Appendix 4.2 of Volume 4** of the EIA Report.

9.12 All effects will be **Negligible to Minor (Not Significant)** with the exception of the construction of the temporary floating hardstanding of Turbine 1 which could cause sediment run-off/ pollution temporarily entering the unmapped headwater of a mapped onsite watercourse, resulting in a **Moderate (Significant)** effect on surface water quality, prior to additional mitigation. All peat excavated within the Site for construction will be carefully managed through a Peat Management Plan (PMP). Peat excavations have been reduced through proposing good practice construction techniques such as piling foundations and hardstandings for Turbines 1-3 and floating most of the new Site access track, both of which will result in no peat excavation for this infrastructure. Temporary infrastructure excavations will be reinstated with peat at source. The surplus generated from permanent infrastructure excavations will be fully used through restoring the construction compound and in areas of forest-to-bog restoration proposals. It is considered that a **Minor (Beneficial)** effect on the peat resource will be achieved through the proposed forest-to-bog restoration measures, see **Image 8** and **Technical Appendix 7.6 of Volume 4** of the EIA Report.

9.13 There will be no change to the geological, hydrological and hydrogeological environment as a result of construction of the Likely Grid Connection Route, and so no significant effects as a result of the Likely Grid Connection Route works (including in-combination with the Proposed Development) are predicted.

9.14 The predicted operational effects on peat, hydrogeology, surface water quality and flood risk are considered to be **Negligible (Not Significant)**.

9.15 Potential effects during decommissioning on the water environment are expected to be no greater than during construction. Embedded and good practice mitigation will be followed as per the construction phase. Decommissioning effects are likely to be **Minor to Negligible (Not Significant)**.

9.16 No cumulative effects are predicted during construction on the basis that other wind farms within the catchments shared with the Proposed Development will be constructed in accordance with best practice standards.

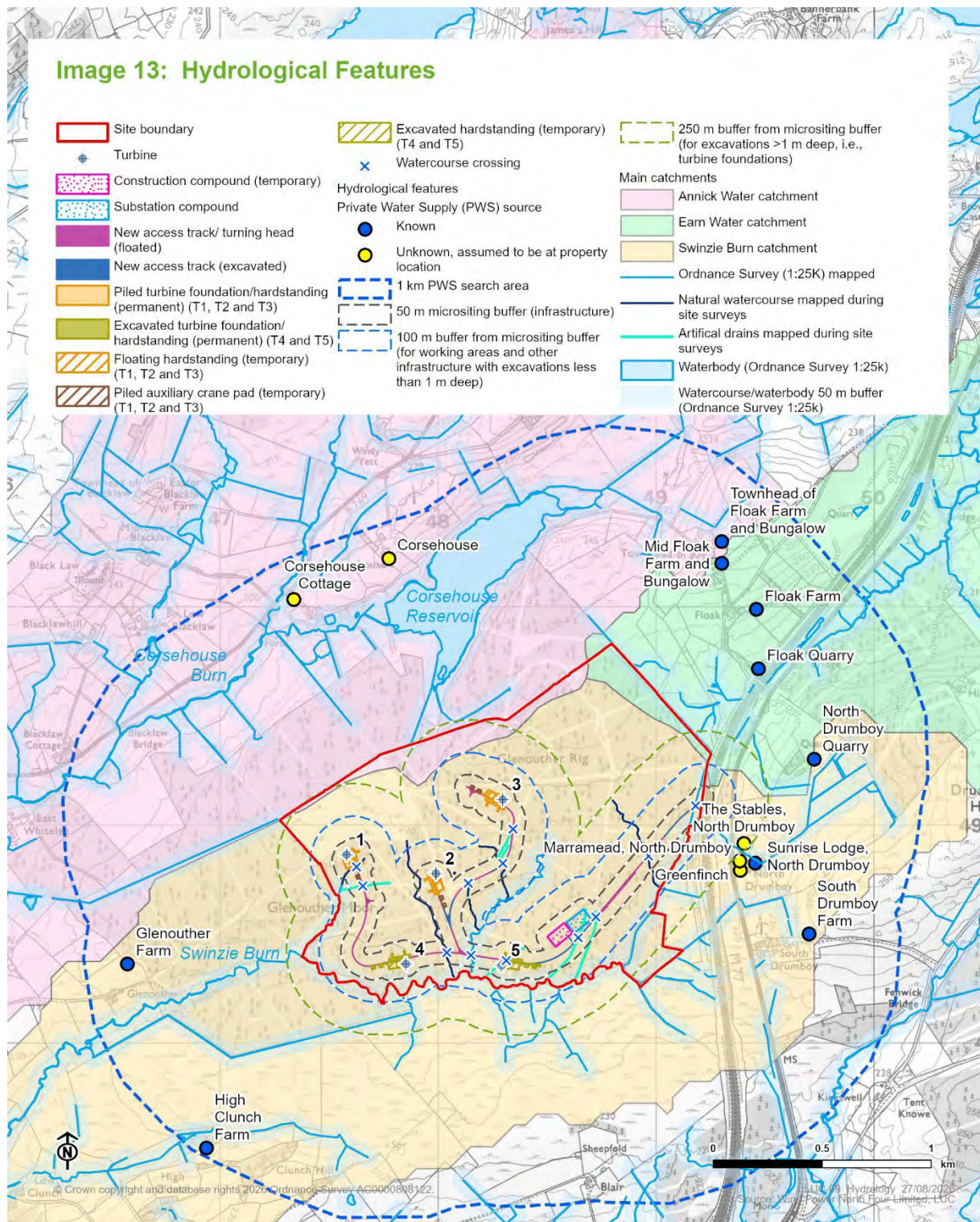
Proposed Additional Mitigation/Enhancement

9.17 Additional mitigation measures during construction will include micro-siting the temporary hardstanding at Turbine 1 to maintain a minimum distance of 10 m to the headwater. If this cannot be achieved, the channel will be temporarily culverted under the floating hardstanding. Additional mitigation in the form of silt fences and Sustainable Drainage Systems (SuDS) will be installed around the floating hardstanding to reduce the risk of sediment/silt run-off to the water environment during construction. In addition, the temporary crane pad at Turbine 1 will be micro-sited to achieve a 10 m buffer from an unmapped drain. If a 10 m buffer cannot be achieved, the drain will be diverted during construction. Silt fences/additional SuDS will be installed to manage sediment loads.

Summary of Likely Significant Residual Effects

9.18 With the implementation of the proposed additional mitigation, the residual construction effects on the surface water quality of the headwater will be reduced to **Minor (Not Significant)**.

Image 13: Hydrological Features



Chapter 10

Noise and Vibration

Introduction

10.1 The noise and vibration chapter considers the likely significant effects of the Proposed Development during construction, operation and decommissioning (including cumulatively with other wind farms) on nearby properties (noise sensitive receptors (NSRs)). The assessment also considers the effects of the Likely Grid Connection Route (including in-combination with the Proposed Development).

10.2 The full assessment can be found in **Chapter 10: Noise and Vibration** of **Volume 2** of the EIA Report which is accompanied by technical appendices and figures.

Overview of Methodology

10.3 Construction noise effects were assessed by comparing predicted construction noise levels at the nearest NSRs with relevant noise limits described in best practice guidelines⁶. This standard describes noise limits that apply to construction activities with a duration of longer than one month, whilst acknowledging that shorter-term higher impacts may be acceptable.

10.4 Operational noise effects have been assessed by comparing predicted operational noise levels from the Proposed Development wind turbines (including noise levels of other wind farms nearby) at NSRs with noise limits that have been derived in line with best practice guidelines⁷. As the noise limits against which the Proposed Development was assessed considered noise from other adjacent wind farms, meeting these limits also meant that the Proposed Development could operate within the cumulative limits. Properties that were predicted to experience noise levels of 30 decibels (dB) or more from the Proposed Development alone were included in the assessment. This meant that 46 properties were assessed. Noise limits for all NSRs considered were derived from the results of baseline noise monitoring undertaken at six properties as agreed with EAC; Corsehouse Cottage, Corsehouse, Glenouther Farm, Greelaw Farm, Blair Farm and North Drumboyley – see **Image 14**. Baseline noise levels at these properties were considered to be representative of baseline noise levels at all other NSRs assessed.

10.5 Vibration effects at NSRs were scoped out of the assessment because no significant vibration effects will arise. During the construction phase of the Proposed Development, it is possible that vibration will be perceptible at times at NSRs adjacent to the Likely Grid Connection Route; however, no onsite construction activities are likely to give rise to perceptible vibration at NSRs. During the operational phase of the Proposed Development, there will be no perceptible vibration at NSRs, and therefore no likely significant effects.

Overview of Baseline Conditions

10.6 As noted above, baseline noise measurements were carried out at six NSRs in the vicinity of the Proposed Development to determine existing baseline noise levels for the purpose of deriving appropriate noise limits. These properties are shown in **Image 14**. Baseline noise level results can be found in **Technical Appendix 10.1: Baseline Noise Measurements** of **Volume 4** of the EIA Report.

⁶ British Standard (BS) 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise
⁷ ETSU-R-97 The Assessment and Rating of Noise from Wind Farms which has been replaced by the Assessment and Rating of Wind Turbine Noise (ARWTN) guidelines.



through the CEMP that will be finalised prior to the construction of the Proposed Development, and will include best practice sound suppression and management measures, including adherence to strict working times and switching off machinery when not in use. The effect associated with traffic noise during the worst-case month of construction is **Not Significant** at all traffic survey locations except on the A77 south of Floak Bridge. Whilst an increase of 4.1 dB is predicted, which is above the 3 dB threshold for traffic noise, this increase will be temporary and does not take into account existing road traffic noise from the M77. As such, the effect will be **Not Significant**.

10.8 There is the potential for temporary noise impacts at NSRs along the Likely Grid Connection Route, but as these will be short-term effects at levels similar to other works carried out along the road network from time to time, the overall noise effects are considered to be **Not Significant**. However, where there are NSRs within 125 m of the works, residents will be notified in advance of the works.

10.9 Cumulative construction effects of the Proposed Development with other potential construction works in the vicinity have not been assessed on the basis that noise from construction activities will be controlled via the CEMP which will specify the relevant noise limits and the way in which noise is minimised. If there is the potential for concurrent construction activities with other neighbouring development, these will be assessed and controlled at the time of construction.

10.10 The results of the operational noise assessment show that the derived noise limits have been met at all 46 properties assessed; therefore, **No Significant** operational noise effects are predicted. It is noted that although the relevant noise limits are met, there may be times that operational wind turbine noise may be audible at NSRs depending on prevailing weather conditions and background sound levels.

10.11 It has been assumed that levels of noise at NSRs during the decommissioning phase of the Proposed Development will be similar or lower than those arising during the construction phase. Therefore, as no significant construction noise effects are predicted, then decommissioning effects will be **Not Significant**.

Overview of Proposed Additional Mitigation/Enhancement

10.12 No specific mitigation is proposed for onsite construction as the relevant noise limits will be met.

10.13 No specific mitigation is required during the operational phase of the Proposed Development as the relevant noise limits are predicted to be met. Nevertheless, operational noise limits will be applied via a planning condition for the Site should planning permission be granted. This will ensure that operational noise levels remain within permitted levels for its operational lifetime.

Summary of Likely Significant Residual Effects

10.14 No significant residual effects have been identified during the construction, operation, and decommissioning of the Proposed Development and Likely Grid Connection Route (including in-combination with the Proposed Development).

Chapter 11

Access, Traffic, and Transport

Introduction

11.1 The access, traffic and transport assessment considers the potential effects of the Proposed Development and Likely Grid Connection Route (including in-combination with the Proposed Development) on road users and local residents during the construction phase. It considers the impacts of general construction traffic (heavy goods vehicles (HGVs) and staff vehicles) and abnormal indivisible loads (AILs) associated with the transportation of wind turbine components to the Site.

11.2 The operational phase of the Proposed Development and Likely Grid Connection Route will be restricted to maintenance operations which will generate significantly lower volumes of traffic; therefore, this phase has not been considered further. Likewise, the decommissioning phase of the Proposed Development and Likely Grid Connection Route will generate significantly less traffic movements as much of the infrastructure will be left in place. As such, it is reasonable to assume that decommissioning effects will be less than construction and have not been assessed.

11.3 The full assessment can be found in **Chapter 11: Access, Traffic and Traffic** of **Volume 2** of the EIA Report which is accompanied by a technical appendix and figures.

Overview of Methodology

11.4 The assessment study area has focussed on public roads that are expected to experience increased traffic flows during construction. This was determined through an assessment of the potential origin locations of construction staff and construction material supply locations. As such, the study area includes Floak Road, (between Floak Quarry access and the A77), the A77 (between Newton Mearns and Fenwick) and the M77 (between Junctions 5 and 8). As vehicles travel away from the Site, they would disperse across the wider road network, thus lessening any potential effects. It is therefore expected that the effects relating to construction traffic are unlikely to be significant beyond the study area identified above.

11.5 Seven traffic count locations were chosen across the study area to determine how frequently these roads are used. Baseline traffic data was sourced from the Department for Transport (DfT) and Transport Scotland (TS) for the A77 and M77. A traffic count survey was undertaken for Floak Road over a seven-day period. A site visit was also undertaken to review the proposed access route and potential constraints for both HGVs and AILs.

11.6 The assessment focussed on the worst-case construction traffic generation that is expected over the 20-month construction period. Effects assessed include severance, driver delay, pedestrian delay, non-motorised user amenity, fear and intimidation, road safety and large loads.

11.7 In accordance with guidance, the assessment considered the increase in construction traffic during the worst-case month as a percentage of existing traffic flows for each road in the study area to determine if this would result in a 30 % increase in HGV levels or a 30 % increase in total traffic levels. These thresholds were used as a screening tool to determine which roads would need to be assessed in detail. This initial step identified that the assessment needed to focus on Floak Road Users and Residents and A77 Users and Residents (survey locations 1,3,4 and 5) as they were expected to experience traffic increases in excess of the thresholds, and could therefore experience significant effects as a result.

Overview of Baseline Conditions

11.8 HGVs and staff vehicles will travel from the north and south (Glasgow and Ayrshire) and will enter the Site via the existing junction off the A77 to the west of North Drumboy Quarry. These vehicles will then use the minor road (Floak

Road) and existing bridge (Floak Bridge) crossing the M77. From there, vehicles will use the existing M77 service road to travel south-west into the Site.

11.9 The likely Port of Entry (PoE) used for delivering the turbine components will be Glasgow King George V (KGV) Docks. AIL vehicles will travel from the PoE via Kings Inch Road, M8, M74 and M77, exiting at Junction 6 of the M77 and travelling back north via the A77. AIL vehicles will leave the A77 and travel into Site via Floak Road, crossing Floak Bridge and along the existing M77 service road.

11.10 There are limited pedestrian facilities in the immediate vicinity of the Proposed Development, reflecting the rural nature of the area.

11.11 There was found to be three historical road related fatalities on the A77 within the study area.

11.12 A sensitivity review was undertaken to determine possible road capacity issues with other relevant cumulative developments in the area, whose construction traffic would impact the study area, should they be constructed concurrently. The review found that there would be more than sufficient spare road capacity to accommodate all cumulative developments being constructed at the same time. It is proposed that any effects of all the sites being constructed at the same time would be mitigated through the use of an overarching Traffic Management and Monitoring Plan, which can be co-ordinated with EAC.

Assessment of Effects

11.13 Based on the estimated traffic increases associated with the peak construction works, it is predicted that there will be significant effects on Floak Road Users/Residents in relation to severance, driver delay, non-motorised user amenity, fear and intimidation, road safety and large loads. For A77 Road Users/Residents, significant effects are predicted in relation to road safety and large loads. It should be noted that the impacts relate solely to the peak of construction activities, and that the construction period is short lived, so the effects are temporary in nature. Following this, the number of HGV vehicle movements will decrease significantly over the remainder of the construction programme.

11.14 Any cumulative effects of multiple sites being constructed at the same time will be mitigated through the use of an overarching Traffic Management and Monitoring Plan and by introducing a phased delivery plan which would be agreed with the EAC roads department, TS and Police Scotland. As such, no significant cumulative effects are likely.

11.15 The construction of the Likely Grid Connection Route will require temporary access to each construction location in the road or roadside verge along the route. This will involve the use of a tracked excavator and delivery vehicles at each point of construction. Delivery of construction materials to cable locations will be achieved by access from public roads to the roadside verge at the point of construction.

11.16 Due to the nature, design and rate of construction of the Likely Grid Connection Route, it is anticipated that vehicle movements at any one location would be limited to approximately three or four visits per day over the course of the construction period which will not lead to any noticeable increase in traffic volumes on the surrounding road network, albeit there will be a slight change in traffic composition as more HGVs will be required to deliver materials for the underground cable. Assuming that they are constructed concurrently, traffic movements associated with the Likely Grid Connection Route works will interact with the traffic generated by the construction of the Proposed Development on the A77. However, the numbers of traffic movement associated with the Likely Grid Connection Route works will only add a negligible amount of additional traffic movements. Therefore, the effects of the Likely Grid Connection (including in-combination with the Proposed Development) will be **Not Significant**.

Overview of Proposed Additional Mitigation/Enhancement

11.17 The following measures will be implemented to mitigate the effects of construction traffic on Floak Road Users/Residents and A77 Road Users/Residents:

- A Construction Traffic Management Plan (CTMP);
- An Abnormal Load Transport Management Plan; and
- A Staff Travel Plan.

11.18 These plans will set out measures to keep traffic related disturbance to a minimum, and will include key measures such as regular communication of construction works with local communities, ensuring local roads are well maintained and regularly cleaned, advanced communication of certain construction works (especially AIL movements) so road users can plan ahead and use alternative routes and the promotion of car sharing to minimise staff vehicle use.

11.19 The movement of AIL traffic will require small scale and temporary remedial works, which are presented in **Annex A of Technical Appendix 11.1: Transport Assessment of Volume 4** of the EIA Report.

Summary of Likely Significant Residual Effects

11.20 With the implementation of these mitigation measures, no significant residual effects are anticipated in respect of traffic and transport. All effects are assessed to be **Minor (Not Significant)** and temporary.

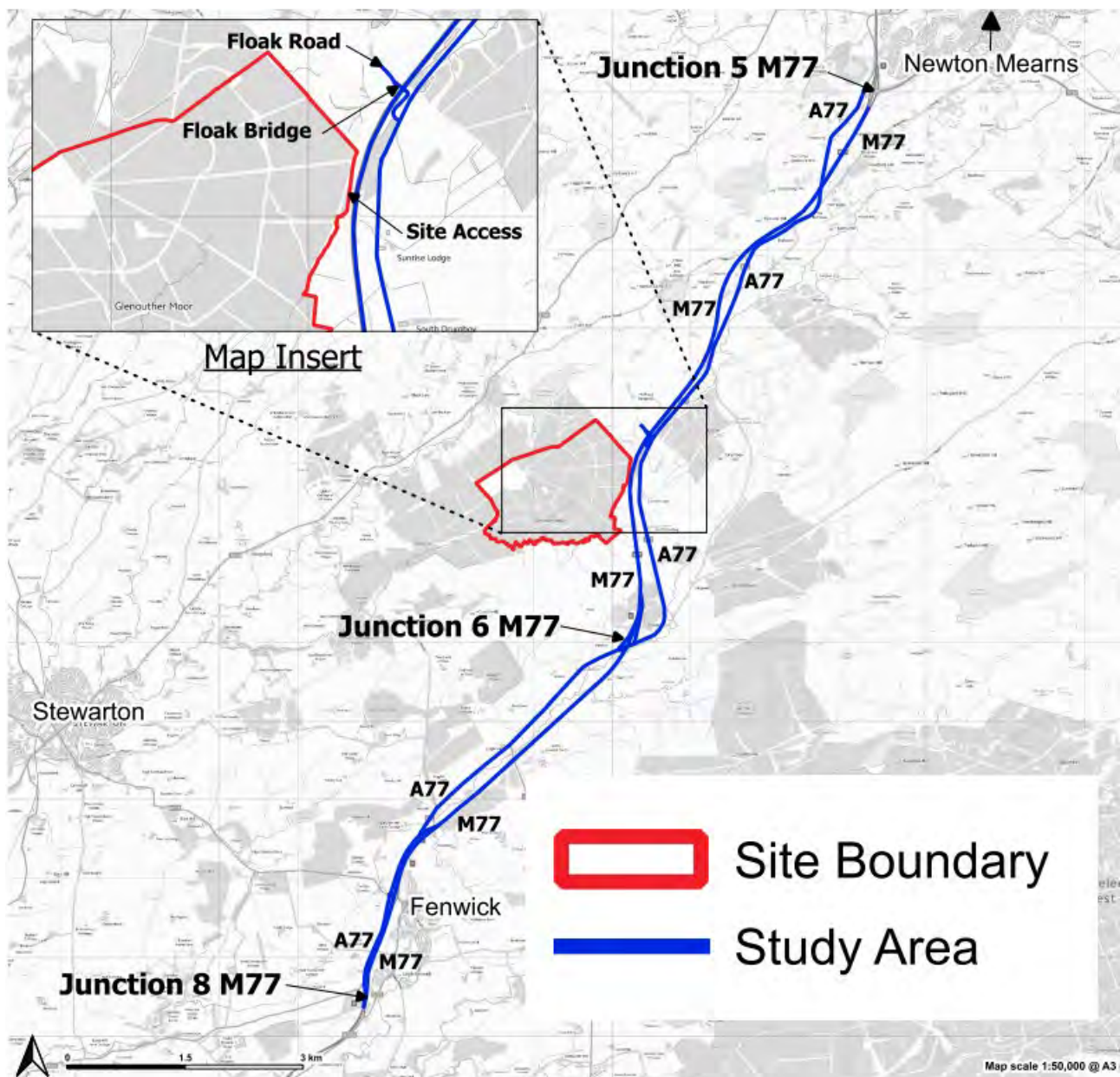


Image 15: Traffic and Transport Study Area

Chapter 12 Climate Change

Introduction

12.1 Climate change is one of the world's greatest environmental, economic and social challenges facing mankind. As a result, climate change is viewed as an essential concern in project assessment and decision-making and is a key thread which runs through National Planning Framework 4 (NPF4). The Proposed Development will generate electricity from a renewable source, reducing the need for electricity generated by burning fossil fuels. This will help reduce carbon dioxide (CO₂) emissions and provide an associated environmental benefit. However, no source of electricity generation is completely carbon free. For onshore wind, there will be emissions resulting from the manufacture of components and intermittent back up generation that is required in times of low wind resource, as well as emissions from both construction and decommissioning activities and transport. The potential loss of carbon stored in soils during construction also needs to be considered.

12.2 The climate change assessment considers the potential effects of the Proposed Development on climate change in terms of carbon losses and savings (including the 'carbon balance') and adaptation i.e. the ability of receptors, such as species and habitats, to adapt to a changing climate when the Proposed Development is operational.

12.3 The full assessment can be found in **Chapter 12: Climate Change** of **Volume 2** of the EIA Report which is accompanied by a carbon balance report (**Technical Appendix 12.1** of **Volume 4** of the EIA Report).

Overview of Methodology

12.4 The assessment has been informed by desk-based research, drawing largely from published guidance and data such as the UK Climate Change Projections (UKCP18) to determine the future climate baseline. The assessment of effects of the Proposed Development on climate change adaptation has drawn upon the other EIA Report topic chapters which set out how baseline conditions could be affected by a changing climate. The carbon balance assessment was undertaken using the Scottish Government's methodology for calculating potential carbon losses and savings from wind farms on Scottish peatlands. The methodology involved the use of the Scottish Government's Carbon Calculator tool for wind farms on peat to assess the benefit of displacing electricity from fossil fuels with renewable generated electricity compared to the emissions of carbon required for the construction and operation of the Proposed Development over its 35-year lifetime. The outcome was the calculation of a payback period i.e. the time it will take for the Proposed Development to offset the estimated emissions it generates during construction, operation and decommissioning, and become a 'net avoider' of emissions.

12.5 The assessment has been undertaken using the latest best practice Institute of Sustainability and Environmental Professionals (ISEP) guidance on assessing climate change effects.

Overview of Baseline Conditions

12.6 The assessment considers the projected changes in temperature, precipitation and wind speed and storms for the year 2060-2079, when the Proposed Development will reach the end of its lifetime. The projections highlight that summer and winter temperature are likely to be greater than the current baseline (greater summer), with winter temperature increasing and summer rainfall decreasing.

Assessment of Effects

12.7 Overall, the Proposed Development will be a net generator of greenhouse gas (GHG) emissions during construction as a result of manufacture and construction related emissions. A **Minor (Not Significant)** effect is predicted in relation to carbon emissions including CO₂ and NO_x emissions from HGV vehicles and construction equipment.

12.8 Assuming a 35-year operational life, the Proposed Development is estimated to offset approximately 1,716,000 tonnes of CO₂ equivalent (tCO₂e) by displacing fossil fuel generation. It is calculated that the CO₂ emissions that will be emitted as part of the construction, operation and decommissioning of the Proposed Development will be paid back within approximately 1.2 years (approximately 14.5 months).

12.9 The Proposed Development's carbon saving potential will contribute positively to meeting Scotland's net zero greenhouse gas emissions targets resulting in a **Moderate (Beneficial) (Significant)** effect.

12.10 In terms of adaptation, further consideration was given to whether or not the introduction of the Proposed Development is likely to affect judgements of effects and/or the ability of the receptors within or close to the Site to adapt to climate change. Predicting future outcomes is naturally difficult, however in combination climate effects (effects of Proposed Development combined with climate change) are not predicted to vary markedly over the Proposed Development's lifespan from the effects set out already in the EIA Report.

12.11 All wind farms will produce direct and embodied greenhouse gas emissions during construction. It is assumed, however, that any other applications that are consented and built will include reasonable measures to avoid, reduce and/or avoid the generation of greenhouse gas emissions, particularly from construction traffic. Overall, a **Minor (Adverse)** cumulative construction effect is therefore predicted which will be **Not Significant**.

12.12 In terms of carbon losses and offsetting, the Proposed Development, in combination with other onshore wind developments, will have a positive effect on offsetting emissions released from the burning of fossil fuels and will play an integral part in helping Scotland meet its climate change and energy targets. A **Major (Beneficial)** and **Significant** effect is therefore identified, given the importance of this collective role of onshore wind generation to addressing the global climate emergency.

Proposed Additional Mitigation/Enhancement

12.13 No specific mitigation measures are proposed in relation to climate change, although the Construction Traffic Management Plan (CTMP) and Staff Travel Plan will be implemented as good practice, with the intention that measures will be implemented to ensure traffic movements are undertaken efficiently during construction, thereby reducing emissions from construction.

Summary of Likely Significant Residual Effects

12.14 There will be a **Moderate (Beneficial)** effect in relation to carbon savings during operation of the Proposed Development, and a **Major (Beneficial)** cumulative effect when considering the same effect from all other onshore wind developments.

Chapter 13

Other Issues

Shadow Flicker

Introduction

13.1 Under certain combinations of geographical position, time of day and year, the sun may pass behind the rotor and cast a shadow over neighbouring buildings' windows. When the blades rotate and the shadow passes a window, the shadow appears to flick on and off; this effect is known as shadow flicker.

13.2 The full shadow flicker assessment can be found in **Technical Appendix 4.4: Shadow Flicker Assessment of Volume 4** of the EIA Report.

Overview of Methodology

13.3 Shadow flicker only occurs within 130 degrees either side of north relative to a wind turbine. Buildings located beyond 130 degrees either side of north are generally unaffected by shadow flicker as there is usually no direct path between the sun, the wind turbines and any buildings located within this area.

13.4 At UK latitudes, shadow flicker is only likely to occur in a building located within x10 of the rotor diameter of a turbine⁸⁹. The rotor diameter of the Proposed Development's turbines has been assumed to be 162 m; therefore, the potential area in which shadow flicker could occur is considered to be 1,620 m and 130 degrees either side of north from the turbines.

13.5 There is no formal guidance available (at the time of writing) at either national or local level regarding the limit on the amount of shadow flicker that is considered to be acceptable or not acceptable within Scotland. In absence of this, and reflecting the need to determine the significance of shadow flicker effects in EIA terms, the Department of Environment Northern Ireland (2009) Best Practice Guidance for Planning Policy Statement 18 (PPS18): Renewable Energy provides an indication of what may be an acceptable duration of shadow flicker, stating that: *"It is recommended that shadow flicker at neighbouring offices and dwellings within 500 should not exceed 30 hours per year or 30 minutes per day."* (page 29).

13.6 This limit has also been utilised in the Republic of Ireland, Germany and Belgium¹⁰, and has been used across Scotland for shadow flicker assessments.

13.7 As this limit is widely accepted as a suitable metric in shadow flicker analysis for wind farms, it is considered to be an appropriate threshold (and is somewhat conservative given that the assessment considers properties up to 1,620 m) against which to make a professional judgement on the significance of the Proposed Development's effects with respect to shadow flicker. In this way, predicted effects are judged as being Significant and require mitigation whereby shadow flicker occurrence is estimated to exceed the above thresholds. Any values below these thresholds represent effects that are Not Significant.

13.8 Specialist software packages were used to model the level of shadow flicker occurrence.

⁸ Scottish Government (2014) Onshore Wind Turbines: Planning Advice. Although this guidance was withdrawn in December 2025, it has not been replaced by any new empirical study which has determined that the use of x10 the rotor diameter is not appropriate as a general rule to determine the study area for shadow flicker assessment. Until such time as new guidance emerges, this x10 rotor diameter consideration has been used in this assessment as supported by NPS EN-3.

⁹ Department of Energy and Climate (2025). National Policy Statement for Renewable Energy Infrastructure (EN-3).

¹⁰ Department of Energy and Climate Change (DECC) (2011) Update of UK Shadow Flicker Evidence Base. Available [online] at: <https://www.gov.uk/government/publications/update-of-uk-shadow-flicker-evidence-base> [Accessed: 20th April 2026]

13.9 The assessment took a two staged approach:

1. Quantification of the theoretical maximum-case shadow flicker occurrence using worst-case assumptions such as the sun always shines, all property windows face the turbines etc; and
2. Quantification of the more 'realistic' shadow flicker occurrence taking account of the average percentage of time the sun shines during the day-time using weather data.

13.10 The more realistic scenario was used to determine the significance of effects.

Overview of Baseline Conditions

13.11 There are 24 properties within 1,620 m of the turbines, of which four are beyond 130 degrees either side of north relative to the proposed turbines. These four properties will therefore not experience shadow flicker and are not considered further. The remaining 20 properties could theoretically experience shadow flicker at some point during the operation of the Proposed Development turbines.

Quantification of Shadow Flicker Occurrence

13.12 The modelling suggests that shadow flicker which exceeds the significance threshold (30 hours per year or 30 minutes per day) under the theoretical maximum scenario could affect 11 properties.

13.13 However, following the modelling and calculation of the more realistic scenario, when the sun would be bright enough to cause the effects of shadow flicker using weather data, the shadow flicker predictions for these 11 properties fall below the significance threshold level for both hours per year and minutes per day; therefore, effects will be **Not Significant**.

13.14 It should be noted that the more realistic scenario is still overly conservative given that trees, vegetation and local topography in the vicinity of the residential receptors may have a screening effect which could either reduce the effects of shadow flicker, or eliminate shadow flicker being experienced completely. Other mitigating factors include the fact that in reality, the turbines will not be operational 100% of the time if wind speeds are too low.

13.15 Consideration was given to the potential cumulative shadow flicker effects on the same properties. A review of other nearby wind turbine developments found that their study areas (adopting the same criteria as above) would not overlap with the study area for the Proposed Development. As such, there would be no cumulative effects.

Proposed Additional Mitigation/Enhancement

13.16 No routine mitigation is proposed at this stage. If shadow flicker issues arise during operation, mitigation measures can be incorporated into the operation of the wind turbines to reduce the amount of shadow flicker experienced. The Applicant is committed to promptly investigating any complaints of shadow flicker and taking appropriate action as required.

Aviation

Introduction

13.17 An aviation risk assessment has been undertaken to determine the impact that the operation of the Proposed Development could have on aviation interests.

13.18 The full assessment can be found in **Technical Appendix 4.3: Aviation Assessment** of **Volume 4** of the EIA Report.

Overview of Methodology

13.19 There is no guidance on what impacts on aviation are considered to be acceptable or significant in EIA terms. As such, the purpose of an aviation assessment is to determine the level of risk associated with a proposal, and understand how best to manage these risks i.e. through mitigation etc.

13.20 The assessment has been informed by desk-based study and consultation and has involved the identification of relevant aviation infrastructure within statutory safeguarding distances that could be affected by the operation of the turbines, such as aerodromes (licenced, unlicensed and military), radar (weather and aviation related) and radio navigation aids. Military low flying and lighting requirements for turbines with blade tip heights of 150 m or more were also considered. Where radar was located within the relevant safeguarding distances, modelling was undertaken to assess whether the turbines could be detected by the radar and potentially affect its operation.

13.21 The assessment has taken into account the relevant legislation and guidance developed by the Civil Aviation Authority (CAA) and the National Air Traffic Services (NATS).

Quantification of Aviation Risk

13.22 The key risk identified through the assessment is in relation to the Prestwick Airport primary surveillance radar (PSR), NERL Lowther Hill, the Cumbernauld and Glasgow Terma PSRs, and Glasgow Airport Terma PSR.

Proposed Additional Mitigation/Enhancement

13.23 The Applicant will engage with the relevant authorities and will provide for the required configuration to changes to the radar to mitigate any adverse effects, including cumulative effects, through commercial agreement and a planning condition requiring a radar mitigation scheme.

13.24 The Applicant also commissioned an Instrument Flight Procedures (IFP) assessment from Glasgow Airport's Approved Procedure Design Organisation (APDO). Pending completion of that assessment, preliminary analysis suggests that impacts on Glasgow Airport's IFPs are unlikely to occur.

13.25 An aviation lighting scheme consisting of lights on the hubs of four of the five turbines has been approved by the CAA.

Chapter 14

Summary of Likely Significant Effects

14.1 The EIA for the Proposed Development has been carried out in accordance with the regulatory requirements and guidance on good practice. The findings of the surveys undertaken, in addition to consultation, have informed the design process and assessment.

14.2 No significant effects are predicted in relation to the following topics:

- Cultural Heritage;
- Ornithology; and
- Noise and Vibration.

14.3 Prior to committed mitigation, **Significant effects** are predicted in relation to the following topics:

- Landscape and Visual Impact Assessment;
- Ecology (Beneficial);
- Hydrology, Hydrogeology, Geology, and Peat;
- Access, Traffic and Transport; and
- Climate Change (Beneficial).

14.4 Following additional mitigation, **Significant adverse residual effects** remain for the following topics:

- Landscape and Visual Impact Assessment.

14.5 The Significant adverse residual effects from the Proposed Development on landscape and visual receptors cannot be mitigated further given the nature of wind farm development, but they have been reduced to the lowest practical level through the evolution of the iterative design process. For most commercial wind farms, having some residual significant landscape and visual effects is unavoidable. The level and distribution of assessed significant landscape and visual effects for the Proposed Development are considered to be as would be expected for a larger commercial wind farm in this type of landscape, and all effects are considered to be localised in accordance with the geographical extent to which they will be experienced.