BROCKLOCH RIG III

Windy Standard III

November 2015
Non-Technical Summary
Volume 1

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PREFACE

An Environmental Statement (ES) has been prepared in support of an application submitted by Natural Power Consultants Limited (Natural Power) on behalf of the applicant Brockloch Rig III Ltd (herein referred to as BR3). The application seeks consent under Section 36 of the Electricity Act 1989 and the ES has been prepared in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 as amended. The application also seeks a direction under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 as amended that planning permission for the development be deemed to be granted.

This ES contains the information carried out for the Environmental Impact Assessment to develop a wind farm comprising of up to twenty turbines and associated infrastructure (the proposed Development). The proposed Development is located in Carsphairn Forest in Dumfries and Galloway.

The Environmental Statement and application may be viewed at the following addresses:

Environmental Statement Viewing Locations

Dumfries and Galloway Council English Street, Dumfries, DG1 2DD	Carricks Tea Room and Village Shop, Mainstreet, Carsphairn, DG7 3TQ	Dalmellington Area Centre 33 Main Street, Dalmellington, Ayr, KA6 7QL

This is Volume 1, Volume 1 of 4, of the ES. This volume presents a Non-Technical Summary (NTS) of the proposed Development.

Volume 2 of the ES contains the written statement on the findings of the Environmental Impact Assessment.

Volume 3 of the ES contains all figures and visualisations.

Volume 4 of the ES presents the technical appendices of the ES Chapters.

The ES is also supplemented by accompanying documents including a Design Statement, Planning Statement, and Pre-Application Consultation (PAC) Report.

Copies of the full Environmental Statement and Non-Technical Summary can be obtained from Natural Power, The Green House, Forrest Estate, Dalry, Castle Douglas, DG7 3XS. Tel: 01644 430 008.

Non-Technical Summary in printed form	Free
Environmental Statement in printed form (Volumes 1-4)	£822
Environmental Statement in PDF file format on CD (Volumes 1-4)	£10

A copy of the Environmental Statement can also be found on the Fred. Olsen Renewables website: http://www.fredolsen-renewables.no/brockloch-rig-overview.

Windy Standard III Environmental Statement

Non-Technical Summary | Volume 1

Document History		
Author	Marie Scaife	29/07/2015
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Client Details	
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Client Name	Brckloch Rig III Ltd.
Approved	c/o Fred. Olsen Renewables Ltd.

Issue	Date	Revision Details
A	29/07/2015	First Draft
B	15/01/2016	Second Draft

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2.1 INTRODUCTION

Application

2.1.1 This Non-Technical Summary (NTS) summarises the main findings of the environmental studies carried out to build and operate a proposed wind farm development in Carsphairn Forest, Dumfries and Galloway, Windy Standard III (the proposed Development). The environmental studies have been completed as part of the Environmental Impact Assessment (EIA), the full results of which are presented in the Environmental Statement (ES). The ES is referenced throughout this NTS and incorporates more detailed information about the proposed Development, its location, design and potential environmental impacts. The ES has been prepared to accompany an application (the application) submitted by Brockloch Rig III Ltd (herein referred to as BR3). The application seeks consent under Section 36 of the Electricity Act 1989 and the ES has been prepared in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 as amended. The application also seeks a direction under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 as amended that planning permission for the development be deemed to be granted.

2.1.2 This is Volume 1, Volume 1 of 4, of the ES. This volume presents a Non-Technical Summary (NTS) of the proposed Development.

- Volume 2 of the ES contains the written statement on the findings of the EIA
- Volume 3 of the ES contains all figures and visualisations
- Volume 4 of the ES presents the technical appendices of the ES Chapters

2.1.3 The ES is also supplemented by accompanying documents including a Design Statement, Planning Statement, and Pre-Application Consultation (PAC) Report.

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- Environmental Statement in printed form (Volumes 1-4) £822
- Environmental Statement in PDF file format on CD (Volumes 1-4) £10

The Applicant: Brockloch Rig III Ltd.

2.1.5 Brockloch Rig III Ltd (BR3) is a subsidiary company of Fred. Olsen Renewables Ltd (FORL). FORL have been developing and operating wind farms since the mid 1990's and is fully committed to the Scottish and UK renewable energy generation market, with an operational portfolio generating a capacity of over 432.2 MW. In the UK FORL have a total of six operational wind farms and the Windy Standard II Wind Farm which is currently under construction.

The Lead Agent: Natural Power Consultants Limited (Natural Power)

2.1.6 The proposed Development has been designed and assessed by the applicant in association with their lead consultants, Natural Power. Natural Power has been appointed to coordinate and produce this ES and associated EIA documentation.

2.1.7 Natural Power has been providing expertise to the renewable energy industry since the company was formed in 1995 and is one of the UK's leading wind farm consultants. As well as development and EIA services, Natural Power also provide expert advice and due diligence consultancy, site construction management, site operation and maintenance.

2.1.8 Natural Power currently employs over 300 people working full time on providing wind energy services internationally. Natural Power's headquarters, 'The Green House' - an award winning, environmentally-friendly office building located on Forrest Estate near Dalry, is ideally located for providing services on the proposed Development being located just c17 km away. There are currently approximately 100 employees located at The Green House.

2.1.9 Natural Power has also commissioned the following specialist consultants to provide professional advice for specific assessments in relation to the EIA of the proposed Development:

Landscape and Visual Consultancy		
Ramboll-Environ	5th Floor. 7 Castle Street, Edinburgh, EH2 3AH	Tel: 0131 297 2678 Contact: Robert Bainsfair

Cultural Heritage Consultancy		
CgMs	Ocean Point One, 4th Floor, 94 Ocean Drive, Edinburgh, EH2 2AF	Tel: 0131 561 1880 Contact: Richard Conolly

Socio-Economic Consultancy		
MKA Economics	Scion House Stirling University Innovation Park Stirling FK9 4NF	Tel: 07867 976665 Contact: Mark Kummerer

Noise Consultancy		
TNEI Services Ltd	Milburn House, Dean Street, Newcastle Upon Tyne, NE1 1LE	Tel: 0191 2111404 Contact: Matthew Lambert

Forestry Consultancy		
DGA Forestry	Lochanhead Wood, Lochanhead, Dumfries, DG2 8JB.	Tel: 01387 730 634 Contact: Sandy Anderson

The Proposed Development

2.1.10 The application is seeking consent for a proposed wind farm comprising of:

- Up to 20 wind turbines consisting of 8 turbines of a maximum height from base to tip not exceeding 125 m and a capacity of up to 3 MW and 12 turbines of an overall height from base to tip not exceeding 177.5 m each with a capacity of up to 3.6 MW
- Forestry felling
- External transformer housing
- Widening of existing public road junction
- Site tracks
- Crane pads
- Foundations
- Underground electricity cables
- 2no. permanent anemometer masts
- Extension of use of consented operations and control building and temporary construction and storage compounds
- 4 Borrow pits
- On-site concrete batching plant
- Associated works/infrastructure
- Health and Safety sign posting

2.1.11 The proposed Development is located within Carsphairn Forest north of Carsphairn village, in Dumfries and Galloway and is currently used as commercial forestry plantation. The proposed Development consists of two development areas, the Meaul Hill Cluster and the Waterhead Hill Cluster and together form the proposed Development Area. Each cluster is centred on British National Grid Coordinates of NS 579 028 and NS 578 003 respectively (see NTS Figure 1.1: Site Layout, included at the end of the NTS).

2.1.12 The proposed Development is an extension to the operational Windy Standard Wind Farm and the under construction Windy Standard II Wind Farm. The existing Windy Standard Wind Farm is located in the hills above Carsphairn Forest and commenced operation in November 1996, consisting of 36 turbines with a maximum height from base to tip of 53.5 m and a rated output of 21.6 MW. Windy Standard Wind Farm was developed jointly by the then RWE npower renewables, now known as RWE Innogy UK, (RWE) and Fred. Olsen Ltd (FOL) (the parent company of FORL) and is currently owned and operated by RWE.

Windy Standard I

2.1.13 The under construction Windy Standard II is owned by Brockloch Rig Wind Ltd. (a sister company to BR3 and subsidiary company of FORL) and will consist of 30 turbines with a rated output of up to 75 MW.

2.1.14 The proposed Development is shown in the following NTS Figures:

- NTS Figure 1.1: Proposed Site Layout;
- NTS Figure 1.2: Regional Context Map;
- NTS Figure 1.3: Constraints to Site Design;
- NTS Figure 1.4: Final Layout (20 Turbines);
- NTS Figure 1.5: Layout Evolution; and
- NTS Figure 1.6: Blade Tip ZTV.

2.1.15 The proposed Development has an overall generating capacity of up to 67.5 MW and an expected operational life of 25 years.

2.2 POLICY CONTEXT

2.2.1 Chapter 2: Planning and Policy Context, of Volume 2 of the ES describes in detail all of the policy including international agreements, legislation, development plans and other material considerations which are relevant to the proposed Development.

2.2.2 The importance of renewable energy is underlined by policy and this Chapter indicates how this is being encouraged at international, national and local level.

2.2.3 The proposed Development will be considered by the Scottish Government under Section 36 of the Electricity Act 1989 having regard to relevant international and national legislation, policy and advice.

2.2.4 The proposed Development will be considered in line with the Scottish Planning Policy (SPP) which was published on the 23rd June 2014. The SPP is a statement of Scottish Minister's priorities and will be a material consideration for determining the application for the proposed Development.

2.2.5 The SPP sets out "a spatial framework identifying those areas that are likely to be most appropriate for onshore wind farms". An approach to spatial framework is provided within the SPP which should be followed "in order to deliver consistency nationally". The SPP spatial framework is made up of three groups:

- Group 1 are areas where wind farms will not be acceptable, these areas are made up of National Parks and National Scenic Areas
- Group 2 are areas of significant protection where wind farms may be appropriate in some circumstances. Consideration will be required where proposed developments are to be located within these areas to "demonstrate that any significant effects on the qualities of these areas can be substantially overcome by siting, design or other mitigation". Group 2 areas include National and International designations such as National Nature Reserves and Sites of Special Scientific Interest, Other nationally important mapped environment interest areas such as areas of wild land are included in this group and those areas not exceeding 2 km around cities, towns and villages identified on the local development plan with an identified settlement envelope or edge
- Group 3 are areas with potential for wind farm development which includes all areas beyond groups 1 and 2. Within these areas "wind farms are likely to be acceptable, subject to detailed consideration against identified policy criteria"

2.2.6 The proposed Development lies within a Group 3 area.

2.2.7 Relevant local policy includes the Dumfries and Galloway Local Development Plan (LDP) 2014 and Supplementary Guidance. Dumfries & Galloway Council (DGC) published its draft Supplementary Guidance (SG): Wind Energy Development alongside the LDP in 2013. The SG was approved in September 2014 at the Economic, Environment and Infrastructure Committee. The SG to the Dumfries and Galloway LDP provides additional information on the issues that will be considered when specific proposals are assessed. In addition, the SG identifies areas where there is a spatial framework available for the classified turbine typologies within the guidance, based only on 'Areas of Greatest Potential' and 'Areas Requiring Significant Protection'.

[1]Scottish Planning Policy, available at: http://www.scotland.gov.uk/Publications/2014/06/5823 (accessed 14/01/2015)

2.2.8 The draft SG identified the Meaul Hill Cluster of the proposed Development as within an "Area of Greatest Potential for large typologies (over 80m to blade tip)" and the Waterhead Hill Cluster as within an "Area Requiring Significant Protection for Large Typologies (over 80m to blade tip)" However, the Spatial Framework was not based on the 2014 SPP approach and has instead gone further than national policy by conferring additional weight upon the consideration of locally designated areas in wind energy development proposals. Following the guidance on Spatial Frameworks in the SPP, the entire proposed Development Area would lie within an Area of Greatest Potential.

2.2.9 On the 6th March 2015 SG Part 1: Wind Energy Development: Development Management Considerations was adopted by DGC as statutory supplementary guidance to the LDP. Part 1 of the SG provides additional guidance to Part 1 of policy IN2 of the LDP and applies to development management considerations. Part 1 of the SG provides all interested parties with a statement of the main factors that will be taken into account in reaching planning decisions.

2.2.10 Part 2 of the SG provides additional guidance to Part 2 of policy IN2 of the LDP and applies to the Spatial Framework. The elements included within the review of the Spatial Framework included in Part 2 of policy IN2 of the LDP and Part 2 of the SG however do not meet the requirements of the content of Spatial Frameworks that are outlined in the current SPP and as such DGC are unable to produce Supplementary Guidance for Part 2 of policy IN2 that would be compliant with the current SPP. DGC will review the Spatial Framework as part of the Main Issues Report of the next LDP.

2.2.11 Until such time as this policy gap has been addressed, the SG generally and the Spatial Framework mapping in particular should be given limited weight in the determination of this application. In the meantime reference must be given to more up to date National Policy as a material consideration when seeking to interpret LDP policies.

2.2.12 Other material considerations include but are not limited to the Dumfries and Galloway Regional Economic Strategy 2014-2020, Technical Paper: Regional Scenic Areas (2013) and Land Use Consultants 1998, Dumfries and Galloway Landscape Assessment, Scottish Natural Heritage (SNH) Review No. 94.

2.3 SITE SELECTION AND DESIGN

2.3.1 As presented in Chapter 3: Design Evolution and Alternatives in Volume 2 of the ES, the proposed Development has been through an iterative design process which has resulted in the final layout of up to 20 turbines.

2.3.2 Natural Power were approached by the applicant BR3 with a proposal for an extension to the existing Windy Standard Wind Farm and the under construction Windy Standard II (the present Windy Standard Developments). The applicant's connections with this site over 20 years and knowledge gained during this period of the sites social, environmental and commercial suitability all pointed towards this being a viable place to develop further.

2.3.3 Initial layouts for the proposed Development were informed by the studies for the under construction Windy Standard II. Three development areas were initially identified within Carsphairn Forest, including the Meaul Hill Cluster, the Waterhead Hill Cluster and a further development area on Dodd Hill. These development areas were identified as potentially developable and consentable and met a number of key criteria including:

- Good estimated wind speeds
- Good separation distance from dwellings
- Close proximity to viable grid connection
- Willing landowner
- Suitable land area to accommodate generating capacity
- No national designations

[2]Supplementary Guidance, Part 1 Wind Energy Development: Development Management Considerations, available at http://www.dumgal.gov.uk/CHttpHandler.ashx?id=11890&p=0 (accessed 06/08/2015)

2.3.4 Desk top assessments and site surveys evaluated the following topics:

- Wind resource
- Proximity to dwellings
- Ecology and ornithology
- Hydrology, geology and hydrogeology and peat
- Grid connection
- Access
- Military and civil aviation
- Landscape and visual
- Archaeology and cultural heritage
- Land use
- Existing infrastructure

2.3.5 The completion of initial feasibility assessments demonstrated the site's potential for accommodating a viable, commercial wind farm.

2.3.6 In developing the final layout of the proposed Development, the ES shows how the Applicant has taken into consideration the environmental resources in and around the site and has sought to ensure that the impacts and effects of the proposed Development on these are minimised. This has been an iterative process, taking into account scoping responses, data searches, assessments as they progressed, and consultations

with relevant statutory organisations. The design strategy for the key elements of the proposed Development has taken into account the following objectives:

- To provide a turbine layout with simple form, which relates to the landscape character of the site and its surroundings;
- To create a turbine layout which reflects the scale of the landscape in which it is located;
- To avoid an overly complex and visually confusing layout;
- To achieve a balanced composition of the turbines against the landscape and skyline from key view point locations;
- To reflect the pattern of nearby existing and proposed wind farms; and
- To maximise site efficiency in order to compete in a Levelised Cost of Electricity (LCoE) market.

2.3.7 In addition, the following principles have been taken into account in order to ensure that the proposed Development best meets the objectives detailed above whilst maximising the efficiency of the proposed Development:

- Larger turbines have only been used selectively in areas of lower ground levels and contained visibility meaning larger turbines can be accommodated more easily;
- The tip heights of turbines have been considered from an above ordnance datum (AOD) point of view and found that the AOD tip heights of the present Windy Standard Developments are greater than that of the proposed Development thus balancing out the overall tip heights of the surrounding developments;
- There is a fairly mixed baseline with extensive commercial forestry, varied topography, and wind farms already demonstrating significant variations in size with everything from the existing Windy Standard Wind Farm to potentially that of South Kyle and other surrounding sites such as Windy Standard II and Afton and this has been considered within the final design;
- Noting the CfD/LCoE climate which is pushing for greater efficiency in electrical generation within a very competitive market, turbines of 177.5 m to tip height are considered within the design of the proposed Development and are proposed within the final design. Higher tip height turbines are capable of significantly increasing the total output therefore maximising the chances of the development being realised if planning can be secured. In addition, the land take of the proposed Development is reduced as fewer turbines are required to generate a greater total output than turbines with lower tip heights; this also reduces the environmental impacts and the carbon footprint of the proposed Development; and
- Noting that the site is within a search for large typology wind turbines area (as defined in the adopted LPD as turbines greater than 80 m), the principle of turbines within the proposed Development Area is already accepted. Larger turbines therefore allow the potential of this search area to be maximised.

2.3.8 Key objectives adopted for the proposed Development specific to the Landscape and Visual Assessment are discussed in Section 2.6 Summary of EIA below.

2.3.9 NTS Figure 1.3: Constraints to Site Design (included at the end of the NTS) illustrates the identified potential site constraints to be considered in the design of the proposed Development. NTS Figure 1.5: Layout Evolution (included at the end of the NTS) illustrates the design evolution of the proposed Development.

2.3.10 The proposed Development has been through the formal scoping process undertaken with the Scottish Government and relevant bodies, including DGC, SNH and the Scottish Environment Protection Agency (SEPA), have been consulted to determine the true extent of possible constraints and agree upon appropriate methods of assessment for the EIA. The EIA included all the potential impacts of the proposed Development being thoroughly assessed and the results are presented in full in the ES.

2.3.11 Through application of the above process, the project was reduced in size from 31 turbines at the point of choosing the site to a final proposed layout of up to 20 turbines which takes account of all the relevant constraints and potential impacts. Such considerations include following good practice guidelines and positioning turbines and other infrastructure appropriately in order to reduce the landscape and visual impact, increase distances from watercourses and other sensitive receptors.

2.4 PUBLIC CONSULTATION

2.4.1 Since conception of the proposed Development, BR3 and their agents, Natural Power, have worked closely with the local communities in order to understand the attitudes and opinions of the local community towards renewable energy and the proposed Development. The main findings from the public consultation events are contained within the Pre-Application Consultation (PAC) Report. As a Section 36 application there is no statutory requirement for a PAC Report but one has nonetheless been submitted as a measure of good practice.

2.4.2 Natural Power, on behalf of BR3, conducted formal consultation, including a public exhibition, to give the community an opportunity to learn more about the proposal and share their views on specific aspects of the project. Ongoing consultation and communication has been held with the community as the design of the wind farm has evolved to keep them informed and seek their input.

2.4.3 A public exhibition was held on the 13th of August 2014 at Lagwyne Village Hall, Carsphairn, where 19 members of the public attended, the majority of which were supportive of the proposed Development.

2.4.4 Following the public exhibition, it was identified that landscape and visual considerations were deemed a priority consideration for this site, particularly with regards to the Waterhead Hill Cluster of turbines. This was discussed during a detailed design day, as a result, two turbines on Waterhead Hill were removed and one other re-located, in order to reduce the lateral extent of the proposed Development and minimise blade overlap and stacking of turbines behind one another, when seen from the key viewpoints, resulting in a site design of 20 turbines.

2.4.5 The final layout was presented to the community at a Carsphairn Community Council meeting held on 23rd of February 2015.

2.5 DEVELOPMENT DETAILS

2.5.1 This section of the NTS provides additional detail on the infrastructure and the general process involved with construction and decommissioning of the proposed Development. Further details are provided in Chapter 4: Description of Development, of the ES.

Turbine Model

2.5.2 Owing to the time it can take for an application to be determined, the construction phase beginning and the continued advancement in wind energy technology, the procurement of the final turbine model will likely be confirmed following determination of the wind farm application. For purposes of forming a robust EIA, the proposed turbines within the Waterhead Hill cluster will be no greater than 125 m from ground to blade tip height each and 84 m from ground to hub height with a capacity of approximately 3 MW and the proposed turbines within the Meaul Hill cluster will be no greater than 177.5 m from ground to blade tip height each and 121 m from ground to hub height with a capacity of approximately 3.6 MW. The turbines would have 3 blades attached to a nacelle housing that contains the generator, gearbox and other operating equipment. The nacelle (hub) sits on top of the tubular tower and all would be painted off-white/pale grey colour although the final decision on this would be determined by Scottish Ministers.

Anemometer Mast

2.5.3 Wind farm performance would be remotely monitored using two new permanent anemometer masts, one located on each development cluster each up to the hub height of their respective turbines. These are necessary for collecting onsite wind data to inform the operation of the wind farm.

Access

2.5.4 Chapter 14: Traffic and transport, of the ES details the public road network proposed for the transportation of turbine components. Access to the site from the public road network would follow the same route as used for the present Windy Standard Developments. The route leaves the A713 north of Carsphairn and continues on an existing private track into Carsphairn Forest.

Construction

2.5.5 If consent is awarded, construction would begin following agreement with the relevant authorities (e.g. Scottish Ministers and DGC), and the construction contractor on the detailed design issues and conditions attached to the consent. The construction period is anticipated to take approximately 15 months, depending on the contractor. The construction programme would consist of the following phases which, although presented in a typical sequence, may overlap or occur concurrently:

- Public highway improvements.
- Construction of a site storage compound for off-loading materials and components and to accommodate site offices and mess facilities. Depending on where the site storage compound is, normally some tracks would be required.
- Construction of site tracks and excavation of cable trenches.
- Construction of turbine and crane pads.
- Delivery and erection of turbine towers, and installation of nacelles and blades.
- Delivery and erection of on-site anemometer mast.
- Laying of on-site cabling.

- Installation of turbine transformers.
- Works to the on-site substation and control building.
- Testing and commissioning of the turbines and the wind farm electrical system.
- Site reinstatement (on-going during works).

2.5.6 An indication of the time scale for construction from the time of mobilising contractors to the point of operation is provided in Table1 below.

Table 1: Indicative 15 month construction programme

Task Name / Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Mobilisation															
Access and Site Tracks															
Switchgear Building	The existing substation will be utilised														
Foundations															
Cabling															
Hard-Standings															
Turbine Erection															
Commissioning of Wind Farm															
Reliability Testing															
Restoration Works*															
Demobilisation															

Grid Connection

2.5.7 The proposed Development will connect to the grid at the consented 132 kV substation on site. The Dun Hill substation connects to the overhead power line that travels through to the infrastructure at Coylton. It is the transmission line that provides the grid connection for the under construction Windy Standard II and has available capacity secured for the proposed Development.

Operation

2.5.8 The proposed Development is expected to operate for up to 25 years. Regular visits to the wind farm would be made by contractors to carry out routine maintenance of the turbines and any restoration works around infrastructure as required. Infrastructure relating to the under construction Windy Standard II (e.g. existing borrow pits) will be utilised where practical and possible. Where this is the case this application will seek to extend the consented life of that infrastructure for the duration of the life of the proposed Development. Any requirements relating to the reinstatement of such infrastructure will also therefore be deferred until the end of the operation period of the proposed Development.

Decommissioning

2.5.9 At the end of the wind farm's operational period, it is currently envisaged the site would be decommissioned following best practice guidelines at that time. Following current best practice, it is proposed that the turbines, transformers and the on-site substation would be removed. The upper section of the turbine foundations, to a depth of at least 1 m, would be removed and backfilled with appropriate material. Peat or topsoil would be replaced and the area reseeded. Tracks will be left and allowed to grass over, or would be covered with soil and reseeded. At least six months prior to the decommissioning of the site, a Decommissioning Method Statement (DMS) would be prepared, for agreement with the local authorities and relevant consultees.

2.6 SUMMARY OF EIA

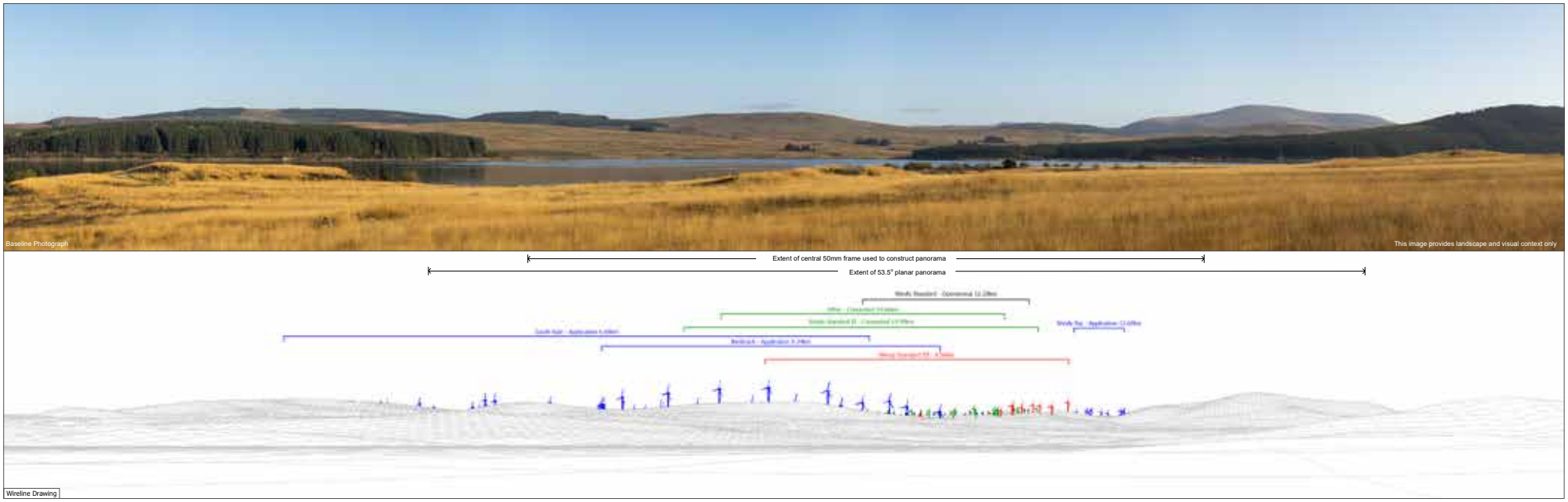
2.6.1 In carrying out and presenting the results of the specialist surveys and assessments for the construction, operation and decommissioning of the proposed Development, care has been taken to adopt a worst case scenario approach to ensure that potential environmental impacts are not underestimated. The full assessments and results can be found in the relevant chapters of the ES. Assessments carried out include:

- Landscape and Visual
- Ecology and Ornithology
- Cultural Heritage and Archaeology
- Hydrology, Geology, Hydrogeology and Peat
- Noise
- Forestry
- Aviation and Existing Infrastructure
- Traffic and Transport
- Socio-economics and Tourism Assessment

Landscape and Visual

2.6.2 A detailed Landscape and Visual Impact Assessment (LVIA) has been carried out by an independent professional landscape architect. The full assessment and results are presented in Chapter 6: Landscape and Visual Assessment, of the ES.

2.6.3 The assessment utilises Zone of Theoretical Visibility (ZTV) diagrams to determine the potential extent of visual influence that would arise from the proposed Development. In addition, wire-frame diagrams and photomontages from viewpoints, chosen in consultation with DGC and SNH have been examined and assessed (wire-frames present each individual turbine in the assessment on a featureless landscape based at around eye level looking toward the horizon). These complement the ZTVs which illustrate the theoretical visible extent of the turbines, looking from above with a 'bird's eye view' (see NTS Figure 1.6: Blade Tip ZTV, included at the end of the NTS).



Wire-frame diagram and photograph from Loch Doon, Figure 6.40a in Volume 3 of the ES

2.6.4 The design aim of the proposed Development is to build a coherent and logical layout by locating turbines in a way that would be contained within the existing landscape and which would minimise as far as possible the number and extent of significant visual impacts. A design strategy was agreed between the landscape and visual consultant, the Applicant and Natural Power for the key elements of the proposed Development. Key objectives adopted for the proposed Development specific to the Landscape and Visual Assessment include:

- Use of the enclosure provided by the topography of the adjoining uplands to contain the extent of the potential viewshed of the proposed Development;
- The selective use of Larger turbines in areas of set back from prominent skylines where visibility from sensitive low lying positions would be restricted;
- Minimisation of effects on key visual receptors including residential receptors, road users and walkers, including those within Glen Afton, Doon Valley and at settlements and road corridors to the north;
- Avoidance of significant effects on areas designated for their landscape value (e.g. Dumfries and Galloway Regional Scenic Area [RSA] and South Ayrshire RSA);
- Focusing of the proposed Development in an area already subject to extensive wind farm development to concentrate development rather than dispersing it throughout the locale, and within a search area where there is an expectation of large typology wind turbines, as defined in the adopted Local Development Plan (LPD);
- Use of a layout that reflects the development pattern of nearby existing and proposed wind farms with that of the present Windy Standard Developments;
- The avoidance, wherever possible of prominent hills/summits and ridges or steep gradients that mark a transition to smaller scale landscapes or along the edge of the uplands;
- The placement of the largest turbines of the proposed Development in locations which ensure that they do not exceed the maximum tip height (in terms of metres above ordnance datum (AOD)) of the present Windy Standard Developments; and
- The use of large turbines to maximise energy outputs whilst minimising landtake and effects on landscape fabric. Wherever possible, ensuring that the proposed Development would be seen in the same part of the view as other wind farm developments, and overlapping with them.

2.6.5 The landscape and visual consultant assisted and fed into the design process for the proposed Development, examining several design layouts before an agreed final layout was eventually put forward for full assessment.

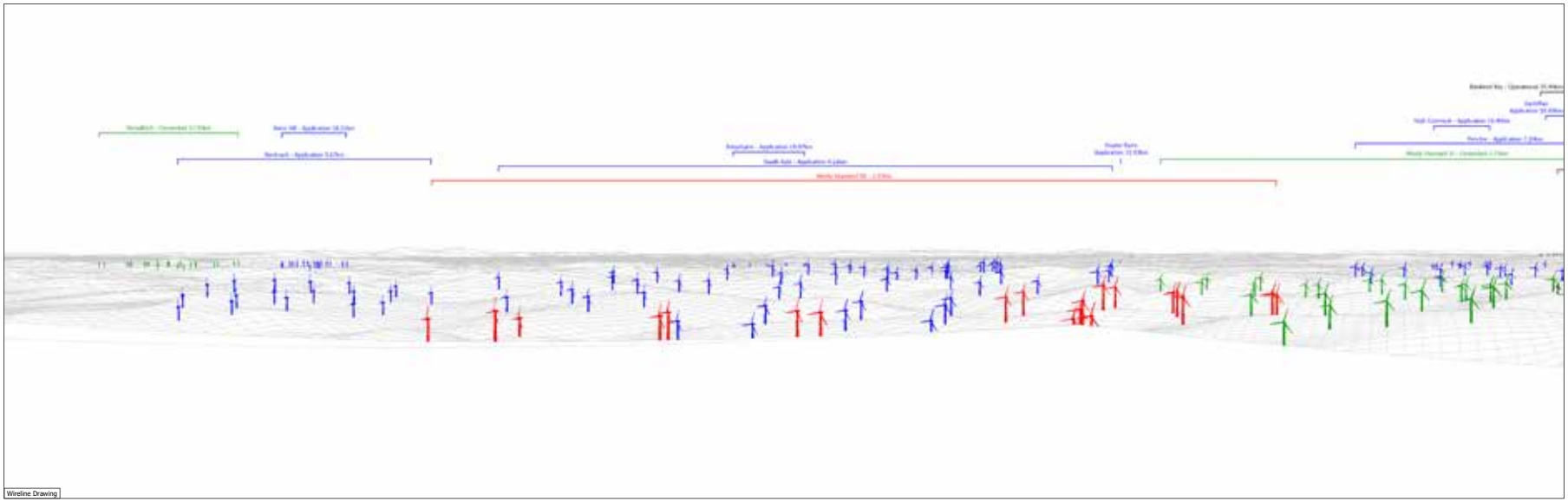
Landscape Effects

2.6.6 It is considered that the landscape at the broad scale is sufficiently robust to be able to accommodate the proposed Development without significant effects arising. No nationally important landscapes would be significantly affected by the proposed Development. Whilst significant effects were predicted within the Galloway Hills RSA the LVIA concludes that such effects would be localised and would not undermine the designations integrity in respect of its key characteristics or reason for designation. Considered in relation to the East Ayrshire Sensitive Landscape Area (EASLA), the proposed Development would have limited visibility from this large scale and diverse designation. Whilst significant visual effects were predicted at Blackcraig Hill (Viewpoint 7), which forms part of the Carsphairn Hills and is a popular recreational area in East Ayrshire, these would be localised and not, in themselves, sufficient to result in a significant erosion of the character and quality of the designation. It is also important to note that this location is already subject to considerable visibility of wind farms and recently consented developments such as Afton and the Hare Hill extension will inevitably add to this. It should be kept in mind that all landscape and visual impacts identified are temporary and reversible

Visual Effects

2.6.7 No significant effects were identified in respect of settlements, key roads and rail routes considered in the LVIA. No nationally or regionally important routes such as the Southern Upland Way and National Cycleway No.7 would be significantly affected by the proposed Development. Although a number of Core Paths would be, these include Cairnsmore of Carsphairn by the Green Well Core Path, Carsphairn Forest Core Path and Knockengorroch Core Path, of the eighteen viewpoints utilised within the LVIA as representative of key receptor locations, only five would be subject to significant effects. These significant effects would be relevant to those enjoying recreational activities for whom the visual enjoyment of the landscape within the outdoors environment is a primary focus. It should be noted however that not all recreational participants would be significantly affected since there are many locations within this range that would not offer open views to a high proportion of the proposed Development. In other words, if significant effects are to be found, they would be located within that range but not all effects within that range would be significant.

Visualisation of view from Brackcraig Hill , Figure 6.37j in Volume 3 of the ES



Wire-frame diagram from Cairnsmore of Carsphairn summit, Figure 6.31b in Volume 3 of the ES

Cumulative Effects

2.6.8 The extent of significant cumulative effects attributable to the proposed Development is also considered to be of modest proportions. The proposed Development, seen in conjunction with existing and consented wind farms, would often represent the less prominent scheme and would often share the 'envelope' of other developments in views. This is even more the case when other proposed wind farms which are located on the edges or adjacent to the Southern uplands are taken into account. Moreover, whilst the numerous proposals for wind farm developments have the potential to result in fundamental change to some landscapes in the area. The LVIA has concluded that in such cases, the proposed Development would not significantly contribute to such a change.

LVIA Summary

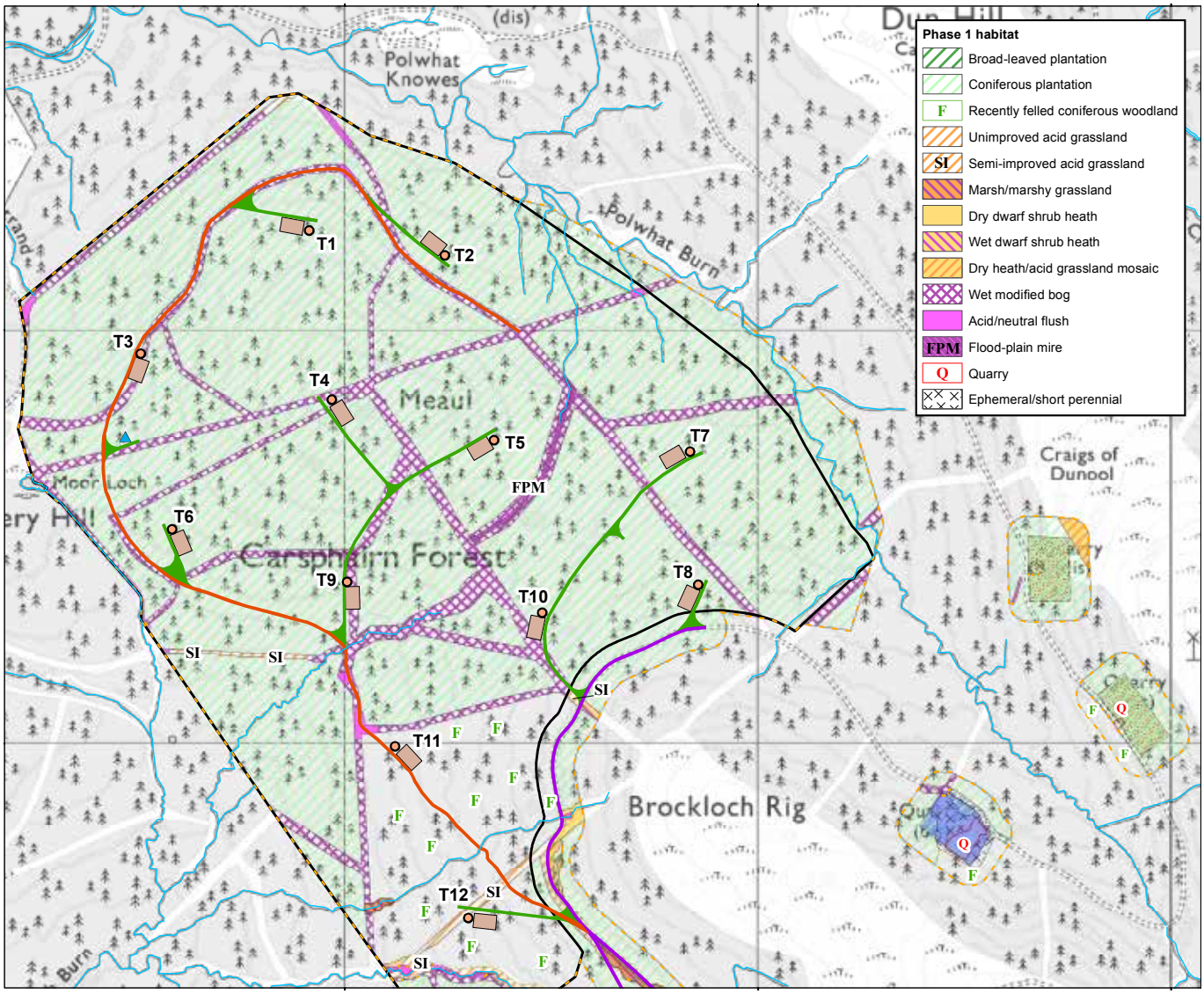
2.6.9 It is recognised that any onshore commercial wind farm in Scotland will result in some significant effect on the landscape resource and visual amenity of an area. The proposed Development is no different to this, however the extent and severity of significant effects has been limited by careful siting and design. The wider landscape would not be transformed. Its broader underlying character would not be compromised and as such, it is considered that the landscape at a broad scale is sufficiently robust enough to accommodate the proposed Development without significant effects arising. Although the landscape is strongly influenced by the proposed Development the larger turbines have been used selectively – only in areas of lower ground levels and contained visibility meaning larger turbines can be accommodated without significant landscape and visual effects. The result of this is a proposed Development that has a relatively limited number of significant effects on what are generally considered to be receptors of local (rather than national or regional) importance.

2.6.10 The extent of significant cumulative effects attributable to the proposed Development is also considered to be of modest proportions. The proposed Development, seen in conjunction with existing and consented wind farms, would often represent the less prominent scheme and would often share the 'envelope' of other developments in views. Moreover, whilst the numerous proposals for wind farm developments have the potential to result in fundamental change to some landscapes in the area. The LVIA has concluded that in such cases, the proposed Development would not significantly contribute to such a change.

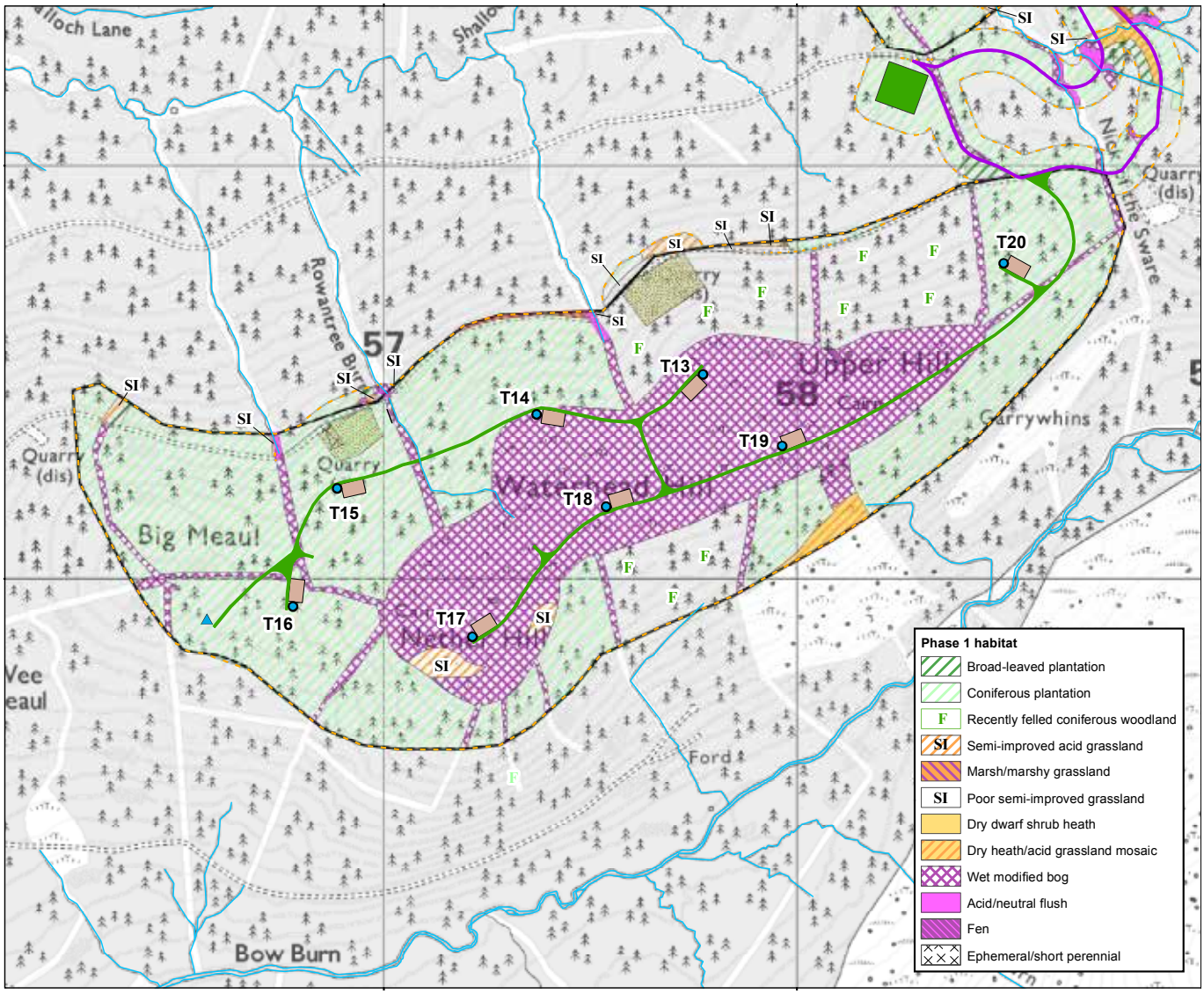
Ecology

2.6.11 A full assessment of the potential impacts upon the wildlife and habitats that the proposed Development may have is presented along with the results in Chapter 7: Ecology, of the ES.

2.6.12 Baseline ecology surveys at the proposed Development were undertaken in 2012, 2014 and 2015, and comprised Phase 1 and National Vegetation Classification (NVC) habitat surveys, bat activity and roost surveys, and surveys for otter, water vole, badger, pine marten and red squirrel.



ES Figure 7.5a: Phase 1 Habitat Survey Results, 2012 and 2015 of Volume 3 of the ES



ES Figure 7.5b: Phase 1 Habitat Survey Results, 2012 and 2015 of Volume 3 of the ES

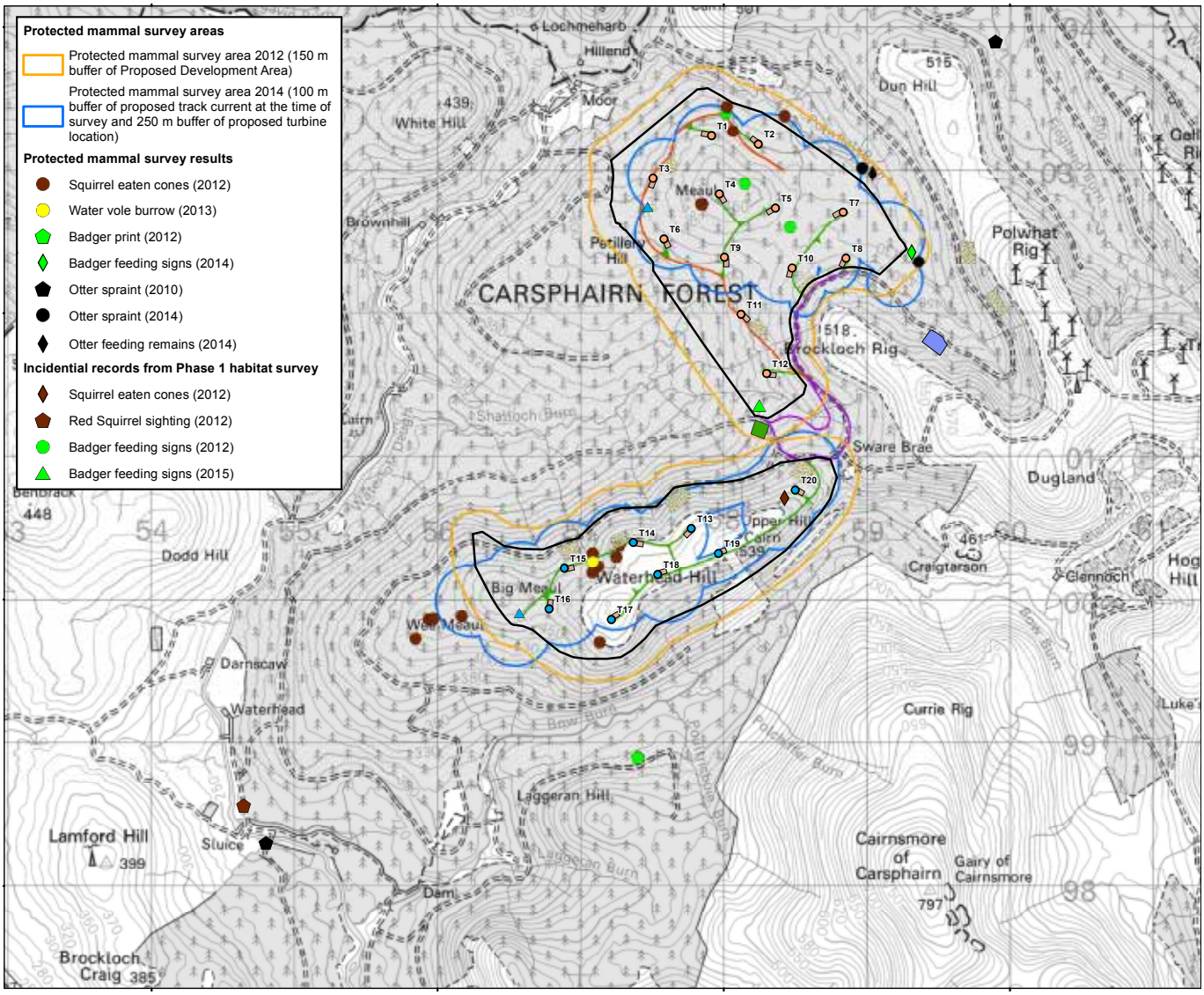
2.6.13 Consultation with statutory authorities (e.g. SNH, Scottish Environment Protection Agency [SEPA], Galloway Fisheries Trust) was also undertaken as required, alongside a desk based review of relevant records and historical data from public domain sources and relevant organisations (e.g., Dumfries & Galloway Environmental Resources Centre [DGERC]), in order to help characterise the baseline at the proposed Development. In addition, a review of relevant survey data from the neighbouring Windy Standard II was undertaken.

2.6.14 The proposed Development is dominated by mature conifer plantation, with smaller open areas such as within rides and the top of Waterhead Hill supporting remnants of mire (classified as the Phase 1 habitat category 'wet modified bog'), grassland and heathland. The proposed Development provides suitable habitat for otter and red squirrel, and field signs of these species were found during surveys. There is also potentially suitable foraging and commuting habitat for badger and bats, and these species were noted to be present during surveys. However, the site is not considered suitable for badger sett construction or for bat roosts, and levels of recorded bat activity were very low. The proposed Development is considered to be sub-optimal for pine marten and water vole, and no conclusive evidence of these species have been observed to date, although suitable habitat for these species exists in the wider area.

2.6.15 No ecological statutory designated sites are present within the planning application boundary or within 2 km of the proposed Development. There are four Sites of Special Scientific Interest (SSSIs) within 10 km designated for ecological or geological features, but due to the geographical separation of these sites and the lack of habitat connectivity, any impact on the conservation objectives of these sites due to the proposed Development is considered to be highly unlikely.

ES Figure 7.4: designated Sites within 10 km of the proposed Development Area of Volume 3 of the ES

2.6.16 Assessment of effects on valued ecological receptors determined that the proposed Development, both alone and in combination with other developments within a 10 km radius, would have no greater than a low or negligible impact on ecological receptors and therefore no significant impacts in terms of the EIA regulations.



ES Figure 7.10: Protected Mammal Survey Results 2012 – 2014 of Volume 3 of the ES

Ornithology

2.6.17 A comprehensive assessment of the potential impacts upon bird life has been undertaken and the full details and results of which are presented in Chapter 8: Ornithology, of the ES.

2.6.18 Bird surveys were completed at the proposed Development Area between 2009 and 2013 which followed the appropriate SNH guidance at the time.

2.6.19 Following the completion of the bird survey work and assessments, there is no evidence of any nesting activity on or adjacent to the proposed Development Area by Annex 1 or Schedule 1 listed raptors. Species listed on these lists are protected at a European and national level and afforded great protection. Flight activity of such raptors was low throughout the year. Goose and swan activity was very low throughout.

2.6.20 Black Grouse activity has been recorded on site, with 6 active leks identified (area where males display themselves for mating purposes), two of which were within 1.5 km of the proposed Development Area.

2.6.21 Specific mitigation measures for black grouse, merlin, barn owl and kestrel are proposed to minimise the potential effects of disturbance and to ensure compliance with the Wildlife and Countryside Act (1981) as amended by the Nature Conservation (Scotland) Act (2004). Best practice guidance regarding breeding birds will be followed and an Environmental Clerk of Works (ECoW) could be employed during the breeding season.

2.6.22 The bird survey work and assessments identified no significant effects of the proposed Development on ornithological interests

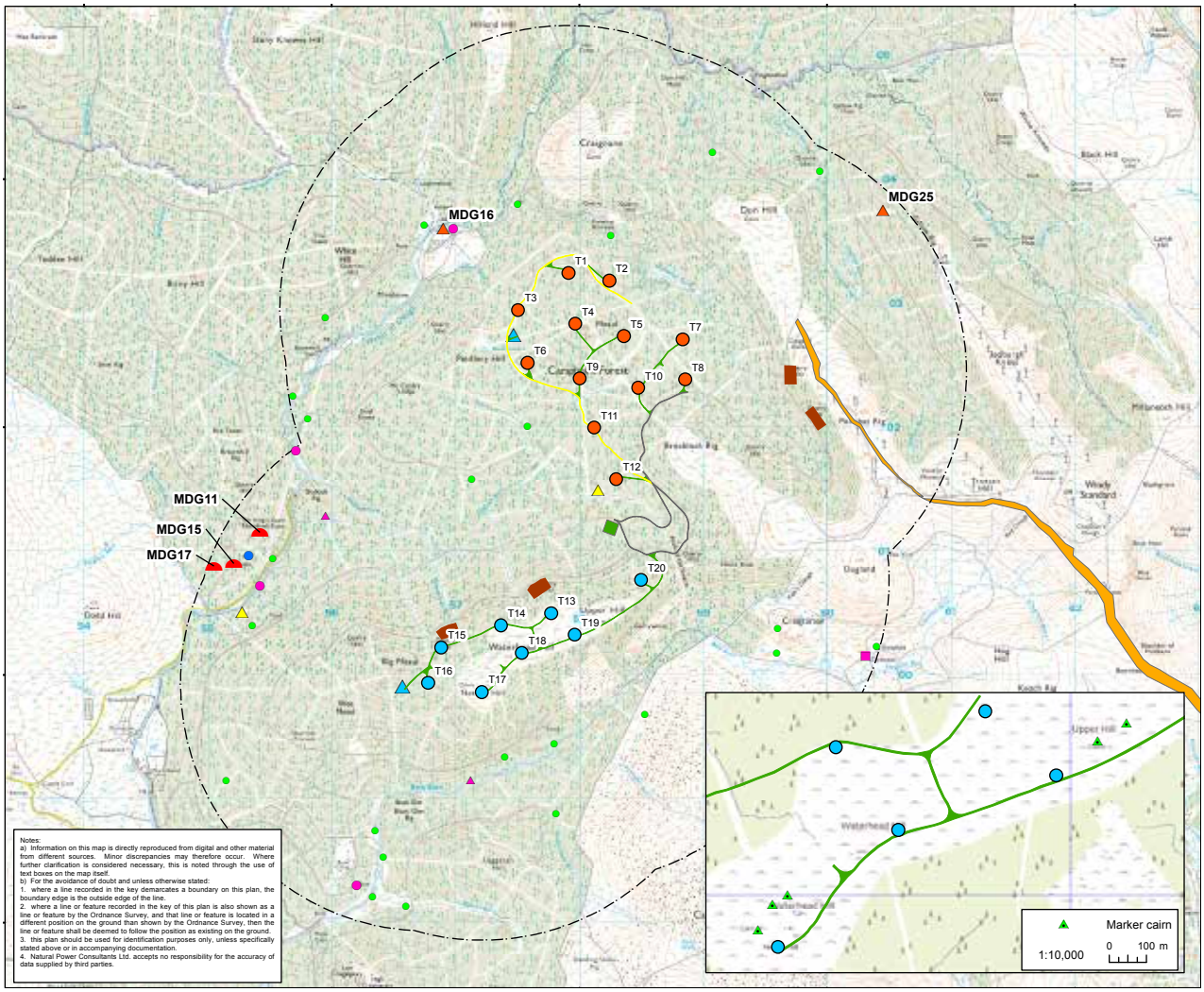
Cultural Heritage

2.6.23 Chapter 9: Cultural Heritage and Archaeology, of the ES provides full details of the assessments and results related to the potential impacts posed by the proposed Development upon the historic environment. Such features considered in the assessment include nationally important:

- Scheduled Ancient Monuments (SAMs)
- Listed Buildings
- Inventory Gardens and Designed Landscapes
- Inventory Battlefields
- Conservation Areas; and
- Other undesignated cultural heritage assets and historic buildings of regional or local importance

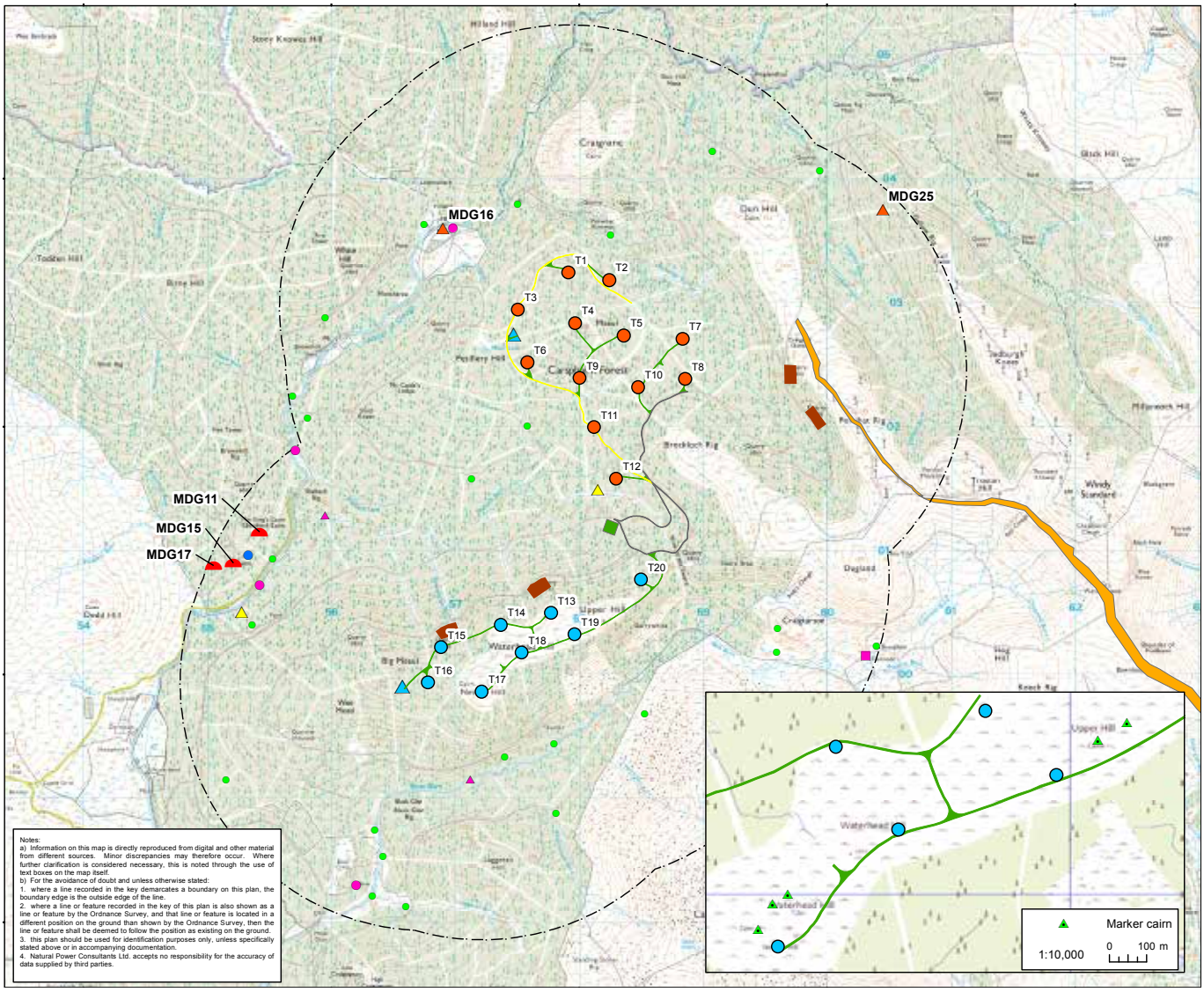
2.6.24 The assessments were made in 2 different study areas as follows:

- 2 km Study Area (see ES Figure 9.1 of volume 3 of the ES shown below). This extends 2 km from the proposed turbines and takes in the construction footprint of the proposed Development. The construction footprint as defined here as those areas subject to ground disturbance as a result of construction operations. Information for this area has been gathered in order to identify potential physical impacts and to inform the assessment of archaeological potential. Potential impacts upon B and C-listed buildings and archaeologically sensitive areas within this study area have been considered.



ES Figure 9.1: HER entries and other features in the 2 km study area of Volume 3 of the ES

- 10 km Study area (see ES Figure 9.2 of Volume 3 of the ES shown below). This extends 10 km from the proposed turbines. Information for this area has been gathered to identify potential setting impacts relating to scheduled monuments, Category A-listed buildings, conservation areas, inventory gardens and designed landscapes and inventory battlefields. The assessment considers policy, consultation with Historic Scotland, Dumfries & Galloway Council and the results from desk based studies and on-site investigations.



ES Figure 9.2: Designated heritage assets considered of Volume 3 of the ES

2.6.25 There are no scheduled monuments within the proposed Development Area. There is one scheduled monument within the 2 km study area: The King's Cairn and cairn to the west of Water of Deugh. The King's Cairn and cairn are located in clearings in commercial forestry; the forestry divorces the cairns from their surroundings. Under current conditions the proposed Development will have no impact upon the cairns' contextual value as it will be screened by forestry. This forestry is set to be felled between 2016-2020. However any open views from the cairns will be temporary in nature as it is proposed that the surrounding area will be restocked. As such, it is concluded that the proposed Development will have an overall impact of low magnitude upon the cairns, as it will not impact on the cairns' contextual value. However, for a relatively short time, during the period between the felling of forestry and restocking, it is considered that there will be a change of medium magnitude. The cairns are scheduled and therefore of high sensitivity. Given the short-lived nature of the impact and the dynamic character of the landscape, it is concluded that this will result in an adverse effect of moderate significance and the cumulative impact is moderate significance.

2.6.26 There are eleven scheduled monuments within the 10 km study area. The proposed Development will have no impact upon ten of these. One of these, Cairn Avel, will have a magnitude of predicted change that is minor/moderate significance.

2.6.27 There are no listed buildings within the proposed Development Area or the 2 km study area. There are no Inventory Gardens and Designed Landscapes within the proposed Development Area or the 2 km study area. There is one Inventory Gardens and Designed Landscapes (GDL) within the 10 km Study Area: Craigengillan. Magnitide of predicted change at Craigengillan GDL is minor/moderate and the cumulative impact is minor/moderate significance.

2.6.28 There are no conservation areas or inventory battlefields within the 10 km Study Area. There is one Archaeologically Sensitive Area (ASA) within the 2 km Study Area, The Water of Deugh, which has a magnitude of change of minor significance.

2.6.29 In summary, the effect on the setting of cultural heritage assets is considered to be of no greater than of moderate significance. Therefore the proposed Development is determined to have no effects that would be determined to be significant in terms of the EIA regulations.

Hydrology, Geology, Hydrogeology and Peat

2.6.30 The potential impacts upon the water and ground environments were fully assessed by Natural Power. The full details and results of which are presented in Chapter 10: Hydrology, Geology and Hydrogeology, of the ES. The study area is larger in extent than the actual site and includes the lower reaches of watercourse catchments that are present within the Planning Application Boundary.

2.6.31 The assessments involved:

- Consultation with relevant statutory and non-statutory bodies as part of the scoping exercise;
- Detailed desk studies and site visits to establish conditions of the area;
- Evaluation of the potential effects of the proposed Development and the effect that these could have on the current site conditions;
- Identification of embedded good practice measures to avoid and mitigate against any identified adverse effects resulting from the proposed Development;
- Evaluation of the significance of these effects by consideration of the potential embedded mitigation measures, taking into account the sensitivity of the baseline features of the site, the potential magnitude of these effects and the probability of these effects occurring; and
- The residual significance of the potential effects following the consideration of additional mitigation measures.

2.6.32 A range of measures used to mitigate any potential adverse effects were also identified. Technical Appendices 10.1 – 10.6 in Volume 4 of the ES also provide further detailed assessments on the potential impacts upon peat, watercourse crossings and carbon emissions.

2.6.33 The proposed Development is located within the catchment of the Water of Deugh, which includes the tributary catchments of Polwhat Burn, Lone Stand, Shalloch Burn, Bow Burn and several small unnamed tributaries. The Water of Deugh lies to the west of the proposed Development and flows south to Kendoon Loch before finally discharging into Carsfad Loch. The potential for flooding from different sources has been assessed and methods to limit such impacts have been provided. The potential impact upon water quality has also been assessed; there are two watercourses that are within or downstream of the Planning Application Boundary that are classified in SEPA's River Basin Management Plan (RBMP) for protecting or improving, the Water of Deugh and Bow Burn. The Water of Deugh has poor ecological potential and Bow Burn moderate ecological potential, the water quality of both will be monitored. The proposed Development is determined to have effects no greater than minor/moderate to negligible/minor significance on water quality.

2.6.34 There are no Scottish Water, water abstraction sources, which are designated as Drinking Water Protected Areas under the Water Framework Directive within the Planning Application Boundary. DGC and East Ayrshire Council (EAC) have also been consulted about the presence of private water supplies within the Planning Application Boundary and within a 3 km buffer. None are recorded within the proposed Development Area and there are 17 registered private water supplies within 3 km. The proposed Development is determined to have effects no greater than negligible/minor significance on private water supplies.

2.6.35 The Galloway Fisheries Trust has been consulted and the potential impacts upon fishing activities in the area assessed. The proposed Development is determined to have effects no greater than minor to negligible/minor significance upon fisheries and recreational fishing.

2.6.36 Borrow Pits are areas of the site identified as potential sources of rock for use in construction and have been considered in some detail in Technical Appendix 10.2: Borrow Pit Search Report in Volume 4 of the ES. Further detailed investigations would be required to confirm these areas but it has been determined that the site should be suitable for sourcing enough rock onsite for construction. After all the rock required has been sourced, the Borrow Pits would be reinstated in an appropriate fashion as agreed with relevant consultees.

2.6.37 A Construction Method Statement (CMS) could be created before construction begins which will be a document detailing all the appropriate actions to undertake to ensure potential identified impacts are minimised. The proposed Development is assessed as having hydrological, hydrogeological and geological effects which are not significant under the governing EIA regulations.

2.6.38 The mean depth of peat recorded across the proposed Development Area is 0.75 m and for proposed wind turbine locations 0.70 m. Peat data recorded on site was used to influence the locations of the infrastructure with deeper regions of peat avoided where possible. Construction practices shall be guided through the CMS and methods implemented to reduce risks of peat slide.

Carbon Balance Assessment

2.6.39 The Carbon Balance Assessment in Technical Appendix 10.5: Carbon Balance Assessment and 10.6: Carbon Balance Calculation Sheets in Volume 4 of the ES provides extra information regarding potential impact upon peat and assesses the impact in terms of carbon dioxide (CO2) emissions against the total potential carbon savings attributed to the proposed Development. Every unit of electricity produced by a wind energy development potentially displaces a unit of electricity which might otherwise have been produced by a conventional (coal or gas) power station. It is the output from coal-fired and gas-fired plant which is adjusted to meet the electricity demand on the system; therefore, wind power would normally replace the output of these power stations as these are the most flexible plant on the system (wind-generated electricity does not generally replace electricity from nuclear power stations because they operate at 'base load'). However, there is a carbon debt associated with the preparation and construction of any energy development, and the calculation of the carbon balance of the proposed Development provides a mechanism by which the carbon costs of the proposed Development can be weighed against the carbon savings attributable to the wind farm during its lifespan. This calculation is summarised as the length of time (in years or months) that it will take for the carbon savings to equal the carbon costs; and is referred to as the 'payback period'. The carbon balance information can then inform decision makers of the effectiveness of a wind energy development in terms of overall carbon savings.

2.6.40 In consultation with SEPA and SNH, the Scottish Government's Carbon Calculator has been used and concluded that the proposed Development will pay back its expected carbon debt from manufacture, construction, impact on habitat and decommissioning within 1.7 years if it replaces the grid-mix of electricity generation, 0.8 years if it replaces coal and 1.1 if it replaces the fossil-fuel mix (see Technical Appendix 10.5: Carbon Balance Assessment and 10.6: Carbon Balance Calculation Sheets in Volume 4 of the ES).

Noise

2.6.41 The potential effects of noise from the proposed Development have been assessed in full and the details and results of which are presented in Chapter 11: Noise, of the ES. As stated previously in this NTS, the final turbine has yet to be selected but for the purposes of a robust assessment, the Siemens SWT-3.2-113 and SWT-2.3-82 has been used because it is a candidate under consideration for use in the proposed Development.

2.6.42 The noise assessment considers relevant policy and guidance documents, background noise monitoring in the area agreed with DGC and a full assessment of the potential noise impact created during construction and by the candidate turbine during operation, including cumulative noise impact.

2.6.43 The guidance contained within the standard guidance document, ETSU-R-97, has been used to assess the potential noise impact of the proposed Development. Background noise measurements were made at five locations neighbouring the proposed Development based upon preliminary predictions.

2.6.44 Analysis of the measured data has been performed in accordance with ETSU-R-97 to determine the pre-existing background noise environment at these locations. Predictions of wind turbine noise have been made, based upon a sound power level for a Siemens SWT-3.2-113 and SWT-2.3-82 machine and a calculation procedure which is considered to give realistic estimates of noise imission levels.

2.6.45 When considering only the proposed Development, predicted levels and measured background noise levels indicate that, at all locations that are not financially involved with the proposed Development, wind turbine noise levels will meet the Lower Daytime Hours Noise Criterion proposed by ETSU-R-97, nor will they exceed the Night-time Hours Noise Criterion proposed by ETSU-R-97. Predicted noise levels at all financially involved residences indicate that noise levels from the proposed Development will meet the ETSU-R-97 noise criteria for such dwellings.

2.6.46 Predictions have been undertaken to assess the potential cumulative effect of all proposed wind farms nearby the proposed Development. Predictions have been undertaken to assess the potential cumulative effect of all proposed wind farms nearby the proposed Development. There are a number of operational, consented and proposed wind turbines located in the vicinity of the proposed Development and therefore a cumulative assessment was undertaken. Predicted cumulative operational noise levels indicate that for dwellings neighbouring the proposed Development, cumulative wind turbine noise would meet the Noise Criteria proposed within ETSU-R-97; therefore, the operational noise effects are deemed Not Significant.

2.6.47 An assessment of the potential noise impact due to construction and decommissioning activity of the proposed Development has been carried out, with reference to published guidelines in BS5228-1:2009+A1:2014 – 'Code of Practice for Noise and Vibration Control on Construction and Open Sites - Noise'. Predicted construction and decommissioning noise levels were compared with daytime noise criteria and indicate that for all receptors the construction and decommissioning noise levels would result in No Significant Effects. The predicted noise levels for all activities, at all receptors are below the guidelines considered acceptable within BS5228.

Forestry

2.6.48 Chapter 12: Forestry, of the ES considers the forestry aspects of the proposed Development and describes the proposed Development plans for felling, restocking and forest management practices. The Forestry Study Area which extends to 3,478.83 ha is located within Carsphairn Forest in Dumfries and Galloway and is primarily used as commercial forestry plantation. The majority of the woodlands were planted in the early 1970's with subsequent replanting as areas have been felled and then restocked. The planting consists primarily of Sitka spruce and other commercial conifers, with small areas of broadleaf woodland and unplanted land.

2.6.49 The windfarm felling programme was largely driven by technical constraints. Areas of forestry would require to be felled to accommodate the construction and operation of the proposed Development. Typically a minimum area of about 1.54 ha (equivalent to a 70 metre radius circle) would be required to be felled for each turbine; a 10 m buffer around each item of infrastructure, in addition to the area required for the infrastructure; and a 50 m corridor for access roads.

2.6.50 In the case of the proposed Development further felling is proposed for forest management and wind yield purposes in addition to the felling required for the infrastructure. In older woodlands such as Carsphairn Forest there is a risk of windblow in the remaining crop when parts of the stands are removed for new tracks or turbine keyholes. In these areas the crops would be felled to a windfirm boundary at the time of construction. Where the crops are younger, only the area necessary to accommodate the turbine, track or other infrastructure and provide the relevant buffer zone would be felled at the time of construction.

2.6.51 Felling required for a development can be divided into two categories. Firstly, that required during the construction phase of the development, which for the purposes of this assessment, has been anticipated as 2018. Secondly, felling required during the operational period of the proposed Development. In this case all the felling would take place during the construction period.

2.6.52 The majority of the areas to be felled for the proposed Development would be restocked as per the existing Forestry Plan apart from the areas detailed below:

- Land required for the proposed Development infrastructure subject to the buffer zones/keyholes described above. However, the opportunity would be taken through the implementation of the plan to reduce the buffer zones where possible during restocking;
- Land to be left unplanted for wind resource protection and turbine performance purposes; and
- Land left unplanted for forest management or forest design purposes.

2.6.53 In modifying the restocking plan, a number of points were taken into account as detailed below:

- Fragmentation of coupes was minimised as much as possible in the restocking design;
- Coupe shapes were modified to ensure that access for future forestry operations, principally harvesting, would be maintained; and
- Coupe shapes and edges were modified to follow good practice.

2.6.54 Species composition was also considered, taking into account existing restocking plans, the proposed Development operational objectives, landowner objectives and forestry policies.

2.6.55 It is planned to utilise the open ground associated with the proposed Development infrastructure, such as tracks, for forest design purposes as management boundaries. This would reduce the amount of other designed open ground required within the restocking plan, reducing the loss of woodland area.

Effects on Forestry

2.6.56 The species composition of the forests would change only slightly as a result of the proposed Development forestry plans. In particular the area of primary conifer species would decrease from 59.52 % of the Forestry Study Area to 58.69 % as a result of the proposed Development proposals.

2.6.57 The proportion of secondary conifer species would remain the same.

2.6.58 The proportion of broadleaf woodland would increase under the proposed Development plans by 0.01%.

2.6.59 The total proportion of open ground would increase from 31.22 % to 32.05 % due to the incorporation of the proposed Development infrastructure into the forest.

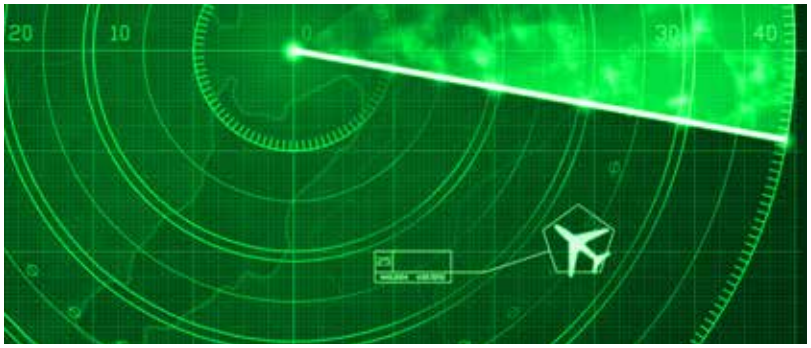
2.6.60 There would be a small net loss of woodland area. The overall area of stocked woodland would decrease by 28.87 ha (0.83 %) of the Forestry Study Area as a result of the proposed Development forestry plans.

2.6.61 There would be a change in the pattern of timber harvesting with felling programmes being advanced compared with the baseline. As a result the total volume of timber to be harvested over the period would decrease by 11,809 m3 (0.8 %).

2.6.62 It is recognised that, there would be a small net loss of commercial woodland area as a result of the proposed Development equivalent to 28.87 hectares (0.83 % of the Forestry Study Area).

Aviation

2.6.63 Chapter 13: Aviation, EMI, Existing Infrastructure and Shadow Flicker, of the ES considers the potential effects in more detail upon aviation interests and existing infrastructure such as communication links and Public Rights of Way. Relevant bodies including the Ministry of Defence (MoD), Civil Aviation Authority (CAA), National Air Traffic Service En Route Plc. (NERL), and Glasgow Prestwick Airport have been consulted with regard to the proposed Development.



2.6.64 The MoD have been consulted with regard to the proposed Development. No objections have been raised by the MoD.

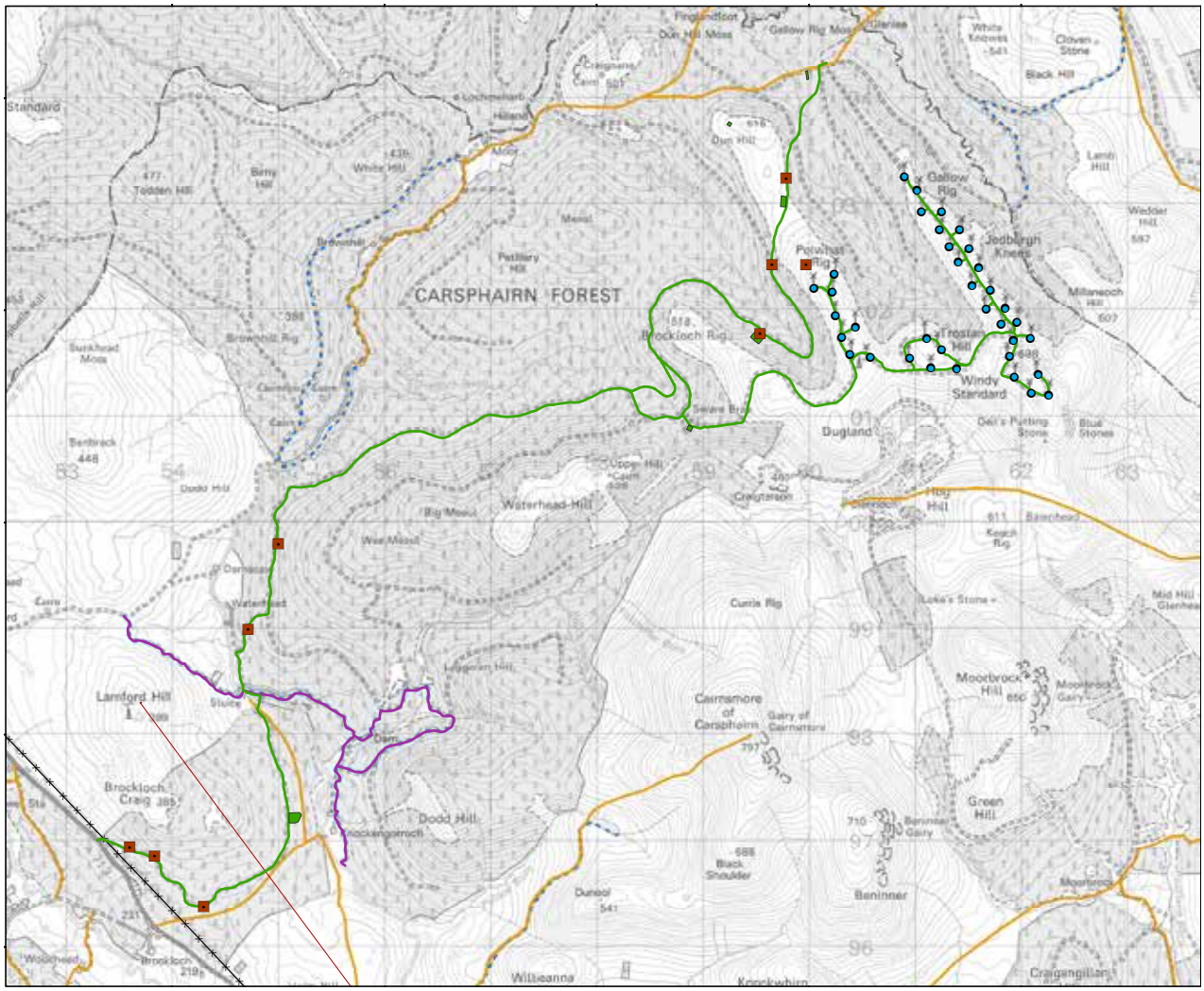
2.6.65 The Civil Aviation's Directorate of Airspace (CAA) have been consulted. CAA provided a response which suggests consultation with other bodies and states the need for turbines to be charted on aviation maps following consent. The applicant complied with such requirements. Discussions are also underway with the CAA with regards to the aviation lighting requirements. BR3 will work with the CAA and other relevant consultees to agree a suitable lighting pattern where required. In addition to this it must be noted that RenewableUK (RUK) has been requested by the CAA to provide a Briefing Note on Onshore Aviation Lighting which takes into consideration the likelihood that onshore wind turbines with a tip height in excess of 150 m will be greater in the future as a result of the need to reduce costs through turbine optimisation and site selection, via larger rotors on taller hub heights. As a part of the Briefing Note, RUK has reviewed the current plethora of aviation lighting references for onshore and offshore projects in the UK and UK Continental Shelf (UKCS), including CAA, Ministry of Defence (MOD), Maritime and Coastguard Agency (MCA) and RUK documents. The Briefing Note provides recommendations with regards to aviation lighting for turbines with a tip height in excess of 150 m and provides suggested next steps. Natural Power on behalf of BR3 has responded to the draft Briefing Note and will continue to work with RUK on this matter in the future.

2.6.66 NATS were commissioned to carry out a Pre-Planning Assessment of the proposed Development. The NATS Pre-Planning Report confirmed they expected there to be no impact on NATS's radar, no impact on NATS's navigation aids, no impact on NATS's radio communications infrastructure and no impact on any airport to which NATS provides a safeguarding service.

2.6.67 Glasgow Prestwick Airport (GPA) has been consulted with regard to the proposed Development. A meeting was held between Natural Power and GPA to discuss the potential impact of the proposed Development on the operations of GPA and potential mitigation measures. It was concluded that while the proposed Development is just on the extremities of the 30 km critical impact zone and could have a significant impact on the GPA radar, there is a proposed mitigation solution which is very nearly finalised and which would be a suitable remedy for the impacts of the proposed Development. GPA are therefore confident that a mitigation solution will be available for the proposed Development (see Technical Appendix 13.3: GPA Cooperation letter in Volume 4 of the ES).

Existing Infrastructure

2.6.68 Fixed microwave links which provide direct lines of communication for things like TV and mobile telephone networks have been considered in the design of the proposed Development, however ES Figure 13.1 in Volume 3 of the ES shows that there are no fixed microwave links within the proposed Development Area. Consultation response from Atkins Limited (ATKINS) raised no objection.



ES Figure 13.1: Existing Infrastructure of Volume 3 of the ES

2.6.69 The Joint Radio Company (JRC) has also confirmed that there are no issues with respect to radio link infrastructure operated by Scottish Power and Scotia Gas Networks. JRC does not foresee any potential problems based on known interference scenarios and data provided. BT has stated that the proposed Development should not cause interference to BT's current and planned radio networks and ATKINS has confirmed that the proposed Development should cause no interference to UHF Radio Scanning Telemetry communications used by its client.

2.6.70 The design of the proposed Development has also taken in to account potential Public Rights of Way and other paths in and around the proposed Development Area, thus limiting direct, significant impacts. Scotways has confirmed there are no known Public Rights of Way across the proposed Development Area. The Dumfries and Galloway Core Paths Maps have also been consulted and again these maps show there to be no Core Paths within the proposed Development Area. There is however, a path that follows the forestry tracks to the south of the Waterhead Hill Cluster, this path is crossed by the existing main access track into Carsphairn Forest which is also used for the operations traffic for the existing Windy Standard Wind Farm and the construction and future operations traffic for Windy Standard II. This main access track is also proposed to be used for access to the proposed Development Area during both construction and operation of the proposed Development.

2.6.71 For Health and Safety reasons, access across the proposed Development Area, including the main access route, would be managed during the construction phase. Any temporary restrictions on passage through the proposed Development Area would be appropriately sign posted and if necessary, temporary diversions put in place. The details of which would be agreed pre-construction with the local planning authority and presented in a CMS.

2.6.72 During the operational period, sign posts will be erected next to the access tracks to direct personnel to the relevant infrastructure onsite. This is for health and safety purposes to allow navigation across the site in the case of an emergency.

2.6.73 Scottish Water has confirmed that their assets should not be affected.

Shadow Flicker

2.6.74 Shadow flicker is a type of strobing effect that can occur at certain times when the sun is very low in the sky and the turbine with its blades rotating is set between the sun and observer. When it occurs, the effect is generally only observed in the period after dawn and before sunset when the sun is rising and setting and at a distance of up to 10 rotor diameters from the observer. Given that all properties are further than 10 rotor diameters from proposed turbine locations, it is deemed unlikely that any significant shadow flicker effect will be caused by the proposed Development.

Traffic and Transport

2.6.75 Chapter 14: Traffic and Transport, of the ES provides a full assessment of the potential impacts upon traffic and transport resulting from the construction, operation and decommissioning of the proposed Development. Traffic generated by the proposed Development would be almost entirely limited to vehicle movements related to the construction and decommissioning phases. During operation, traffic would be minimal since much of the operation of the wind farm would be monitored remotely and would consist mostly of inspection and maintenance visits. Turbine components, electrical equipment, concrete or the raw materials for concrete (cement, sand and aggregate), steel for turbine foundations and electrical cabling would all need to be transported to the site using the public road system.

2.6.76 Current (baseline) conditions have been established using traffic survey data obtained from the Department for Transport. Various bodies including the Scottish Government and Transport Scotland were consulted and assessments carried out in line with current policy and guidance.

2.6.77 Vehicles and equipment would be delivered to site at the commencement of the relevant construction phase and would remain on site until work relating to that stage was completed. Such equipment would include cranes for erecting the turbines and excavators for cable installation and foundation excavation.

2.6.78 Most vehicles used during the construction activities would be below the width requirement for wide loads, with the exception of the turbine deliveries (nacelle, tower sections and blades) and possibly the main and tailing cranes that would be used for the erection of the turbines. The local roads authority may consider a police escort necessary for some abnormal loads, depending on conditions on the proposed access route and the size of the loads. The cranes are likely to require only a single journey along the public highway to and from the proposed Development. Road axle weights would not exceed regulated levels unless agreed with the relevant authorities.

2.6.79 Following good practice guidance the following actions are proposed in order to minimise any potential disturbance as far as possible:

- HGV deliveries including concrete and turbine components would be instructed to avoid school drop off and pick up times.
- During turbine delivery phase, leaflets would be posted in local shops and distributed to houses along the delivery route.
- Identify stopping points along the transport route where slower turbine delivery vehicles can pull over to allow queued traffic to pass.

- Arrange for adequate wheel washing facilities, to allow construction vehicles to clean their wheels before entering onto the public road. Arrange road cleaning vehicle to keep the public road free of mud.
- To reduce air pollution make sure that all construction vehicles are adequately maintained to comply with exhaust emission requirements and are switched off when not in use. Encourage the use of minibuses and car-sharing for personnel transport.
- To reduce noise and vibration disturbance, arrange the transport of heavy loads at times of least sensitivity e.g. not in the evening, or night time deliveries through residential areas.
- To reduce risk to pedestrians and road users, abnormal loads should be adequately escorted and appropriate traffic management and signage used.
- It is important that the local council road department is consulted on all transport issues and to make sure that deliveries do not conflict with other scheduled road works.
- As the number of vehicles required during normal operation and maintenance is not significant, no mitigation measures are proposed. If during the operation period major repair works are required then the good practice measures proposed for the construction period should be reviewed.
- When the method of decommissioning is agreed with the relevant parties for the proposed Development, road traffic impacts should be re-assessed and mitigation measures agreed, if required.

2.6.80 Following the assessments, it has been determined that even in the absence of the mitigation measures highlighted above, the overall impact of the proposed transport associated with the proposed Development will not be significant.

Socio Economics and Tourism Assessment

2.6.81 Chapter 15: Socio-economic and Tourism Assessment, of the ES calculates the construction and operational employment associated with the proposed Development and assesses the economic impact upon the local and national economies and the potential impacts upon tourism.

2.6.82 The proposed Development has been assessed against national and regional policy. The proposed Development is supported by Scotland's Economic Strategy which sets out an overarching framework that is structured around four broad priority areas where Scottish Government actions will be targeted; these are (1) investment (2) innovation (3) inclusive growth and (4) internationalisation. The Scottish Government is also committed to foster a culture of 'innovation' through supporting the development of highly innovative businesses across the Scottish economy. To support 'inclusive growth' the Scottish Government understand the importance of realising opportunities across Scotland's cities, towns and rural areas through capitalising on local knowledge and resources to deliver more equal growth across the country. The strategy also prioritises the importance of 'inward investment and internationalisation', and the Scottish Government seeks to create the conditions which will continue to make Scotland a major destination for investment. The proposed Development directly supports both pillars of the strategy and each of the broad priority areas set out in the new economic strategy.

2.6.83 The national tourism strategy confirms the importance of tourism to Scotland's economy and emphasises the resilience of the sector in recent times. A Tourism Development Plan for Scotland has been developed to set out the framework to assist and promote growth in Scotland's visitor economy to 2020.

2.6.84 The development phase of the proposed Development has not been assessed as this phase has already commenced, however these effects have been summarised as part of the 'wider impacts' of the proposed Development and are discussed in Chapter 15: Socio-economic and Tourism Assessment, of the ES. It is noted that the employment of Natural Power Consultants (Natural Power) located near St John's Town of Dalry as the lead agent brings demonstrable economic benefits to the Stewartry and wider Dumfries and Galloway region. The Applicant has made extensive use of Natural Power and other local contractors throughout the development phase and as such has already had a notable level of local benefit.

2.6.85 In terms of construction impact, the wind farm construction value (£83m), of this, there is potential for £5.40 million to benefit the local economy and £24.16 million to benefit the Scottish economy. Applying industry assumptions provides an estimate on the level of construction employment at the Scottish level for the wind farm development as 163, contributing £9.45 million in GVA. At the Dumfries and Galloway level the construction phase of the proposed Development could sustain up to 36 jobs and contribute £2.11 million in GVA.

2.6.86 The operation and maintenance phase is also expected to generate economic impacts. Applying the data from the RenewableUK research to the proposed level of development (67.5 MW) provides an estimate of the turnover (based on the estimated level of employment) in the UK associated with the proposed Development during the operations and maintenance stage of £3.21 million. Of this, £1.02 million could benefit the Dumfries and Galloway economy and £2.31 million could be injected into the Scottish economy. Applying the industry assumptions gives the level of operational employment at the Scottish level for the proposed Development as 12, contributing £1.17 million in GVA. At the local level the operation and maintenance phase of the proposed Development is expected to sustain up to five jobs, contributing £520k in GVA. Again, the actual impacts at the local level are expected to be above those predicted by the RenewableUK model as Natural Power are already carrying out non-warranty related work on the existing Windy Standard Wind Farm

2.6.87 There are not expected to be any detrimental effects on the local recreational and tourism assets as Carsphairn Forest is a large commercial forest and is not actively promoted for access or recreational purposes and is not in itself a major tourism destination. No long distance walks or cycle paths cross or are adjacent to the proposed Development. The proposed Development does not adversely affect the visibility of the present Windy Standard Developments and as the review of secondary sources conducted as part of Chapter 15: Socio-economic and Tourism Assessment, of the ES has indicated there is little evidence to suggest tourists are discouraged from visiting an area where there is a wind farm.

2.6.88 Other wider economic impacts of the proposed Development that have not been addressed in the construction and operational economic impact assessment that have positive effects on the regional and national economies include the support of policy objectives; the proposed Development can play an important role in supporting regional and national policy objective and can support the ambitions set out in the Regional Economic Strategy, notably in ensuring there is balanced opportunity across the region and not focused on the more accessible east, whilst supporting the area's green credentials, supporting local business through supply chain opportunities and thereby creating jobs and offering skills development. In terms of the Regional Planning Policy, the proposed Development will provide much needed investment in this remote and depopulated area, will help to support existing forestry operations on the site and will have various economic spin-offs for the economy and community in the local area. The proposed Development can also directly support the Dumfries and Galloway Renewable Energy Partnerships (DG-REP) vision and action plan in regard to growing the economic opportunities afforded by the scale and scope of existing and proposed onshore wind farms in the local area.

2.6.89 Local supply chain opportunities and economic multiplier effects have not been included in the economic assessment due to the difficulty in accurately ascertaining their nature at the local and regional levels. However, it is worth noting DECC/Renewable UK (RenewableUK, 2012) research which estimated that the expenditure of workers who visit the local area benefit the accommodation and food service sector to the value of around £7,500 per MW constructed. The wider 'knock-on' effects can in turn support the supply chain of other activities such as the spending habits of retail operations and accommodation providers.

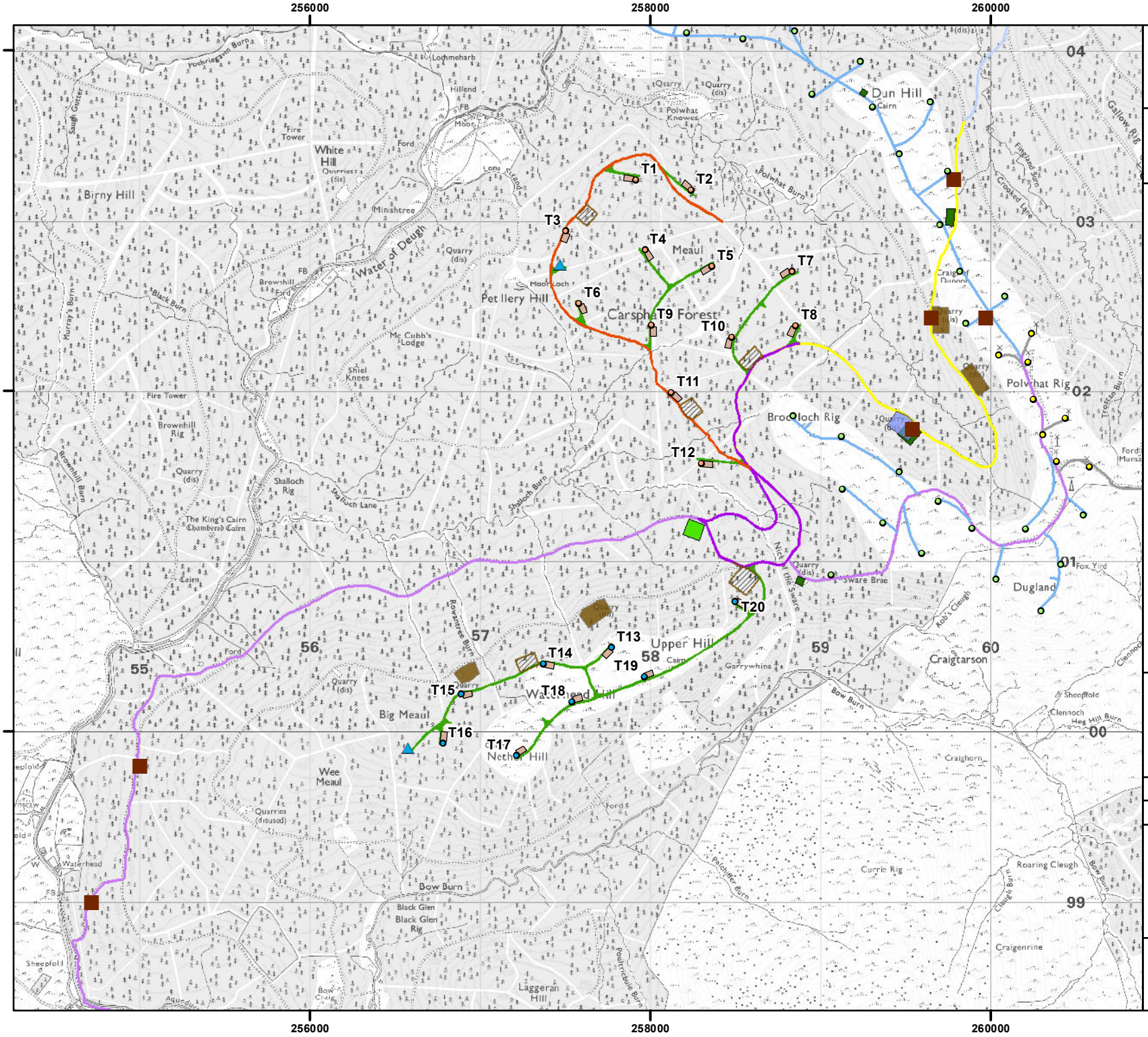
2.6.90 Community benefit funds have also not been included in the economic assessment, however BR3 are committed to contributing £5k per MW to the local community. Community benefit funds from surrounding developments have previously been used to assist in the purchase of the Carsphairn Village Shop and Tea Room and assist in the maintenance of the building and have been used to assist in improvements to Lagwyne Village Hall in Carsphairn.

2.7 FINAL SUMMARY

2.7.1 The proposed Development would provide a further valuable contribution to the total generation of renewable sourced electricity required to meet the Scottish Government's interim target of 50 % equivalent of total demand for electricity from renewable sources by 2015 and 100 % by 2020.

2.7.2 A full EIA has been undertaken in accordance with the relevant regulations; the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 and Amendment Regulations 2008. It assesses potential effects from the proposed Development across multiple factors including landscape and visual, ecology, ornithology, hydrology, geology, hydrogeology, peat, carbon emissions, noise and traffic that are associated with the construction, operation and decommissioning phases.

2.7.3 The ES has highlighted that the only residual significant effects that have been identified during the EIA process are as a result of visual and landscape impacts. A relatively limited number of significant effects were identified within Chapter 6: Landscape and Visual Assessment, of the ES on what are generally considered to be receptors of local (rather than national or regional) importance. Whilst a localised significant effect has been identified, it is the professional view of the landscape architect that the wider landscape would not be transformed as a result of the proposed Development and as such, it is considered that the landscape at a broad scale is sufficiently robust enough to accommodate the proposed Development without significant effects arising. The extent of significant cumulative effects attributable to the proposed Development is also considered to be of modest proportions. The proposed Development, seen in conjunction with existing and consented wind farms, would often represent the less prominent scheme and would often share the 'envelope' of other developments in views. Moreover, whilst the numerous proposals for wind farm developments have the potential to result in fundamental change to some landscapes in the area. The LVIA has concluded that in such cases, the proposed Development would not significantly contribute to such a change. As such, Chapter 6: Landscape and Visual Assessment, of the ES concludes that the proposed Development is not significant in EIA terms.



Project:

Windy Standard III, Dumfries & Galloway

Title:

NTS Figure 1.1: Proposed Site Layout

Key

Windy Standard III proposed infrastructure

- Proposed Windy Standard III turbine location (125 m tip height)
- Proposed Windy Standard III turbine location (177.5 m tip height)
- Proposed permanent anemometry mast
- Proposed new track
- Existing track to be upgraded
- Consented forest track to be upgraded
- Proposed crane pad location
- Proposed construction compound location
- Indicative proposed borrow pit search area
- Additional borrow pit potential search area
- Proposed batching plant location

Windy Standard I & II existing and consented infrastructure

- Windy Standard I turbine location
- Windy Standard II turbine location
- Existing construction compound
- Existing borrow pit location

Windy Standard I & II tracks

- Existing WSI track
- Existing track to be upgraded
- Consented WSII track
- Consented forest track
- Transformer route

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Coordinate System: British National Grid

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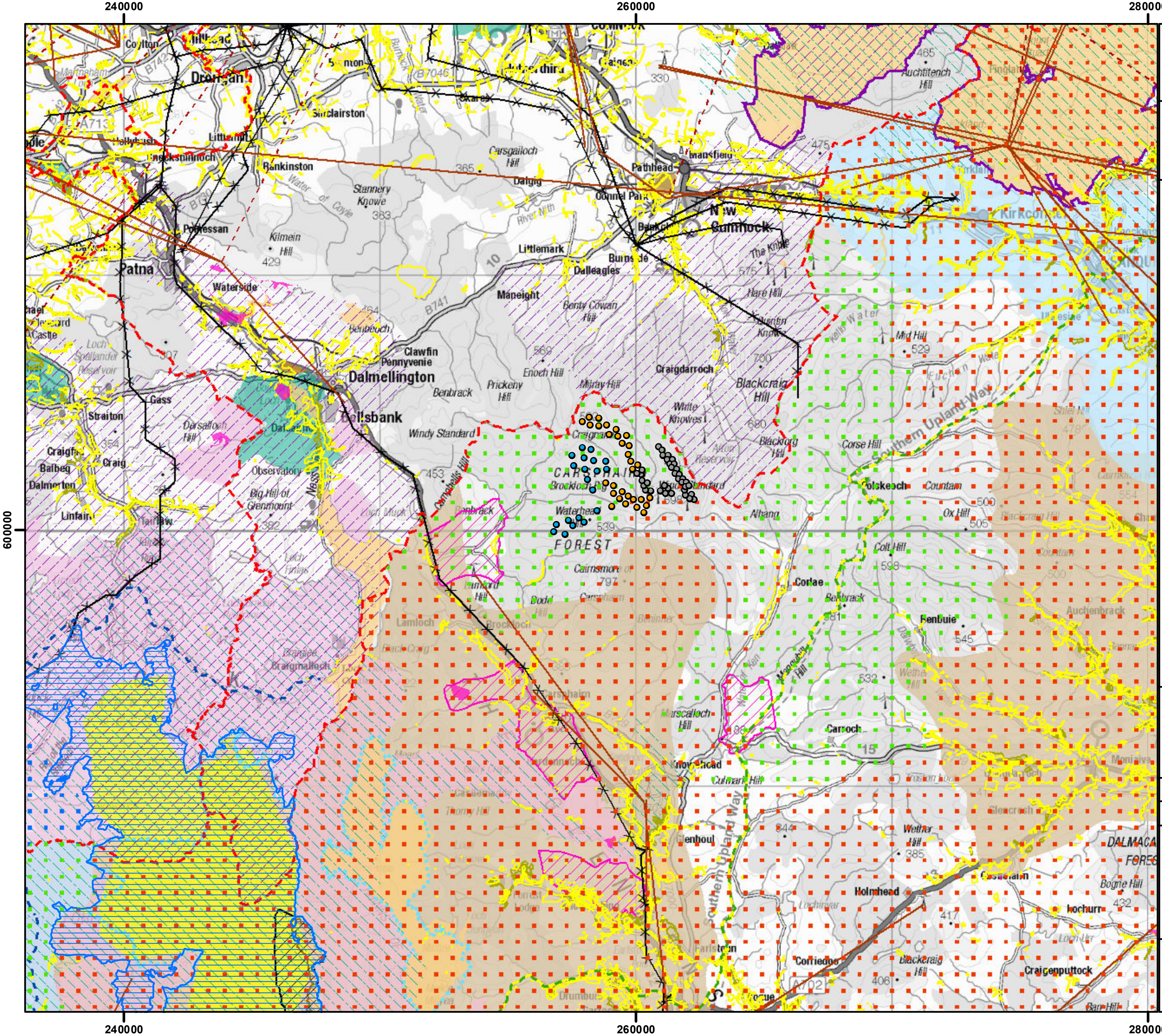

Project:

Windy Standard III, Dumfries & Galloway

Title:

NTS Figure 1.2: Regional Context

Key

- Proposed Windy Standard III turbine location
- Windy Standard II turbine location
- Existing Windy Standard I turbine location
- Area Requiring Significant Protection (large type >80 m) (2)
- Area of Greatest Potential (large type >80 m) (2)
- Cumulative Sensitivity Zone (2)
- Preferred area for wind farm development (3)
- Regional boundary
- Overhead electricity power line (10)
- Indicative micropath (9)
- Indicative TV transmitter link (9)
- National Cycle Network (5)
- Long distance footpath (1)
- RSPB Important Bird Area (6)
- Plantation on Ancient Woodland Site (1)
- Semi-natural Ancient Woodland (1)
- National Nature Reserve (1)
- SWT wildlife reserve (7)
- Special Area of Conservation (1)
- Special Protection Area (1)
- Core Area of Wild Land (1)
- RAMSAR (1)
- Site of Special Scientific Interest (1)
- Scheduled Ancient Monument (4)
- Archaeologically Sensitive Area (2)
- Regional Scenic Area (2)
- Historic Garden & Designed Landscape (4)
- Galloway Forest Park (8)
- Galloway Dark Sky Park (2)
- Sensitive Landscape Area (3)

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(3) Ayrshire Joint Structure Plan Committee
(4) Historic Scotland
(5) Sustrans
(6) RSPB
(7) Scottish Wildlife Trust
(8) Forestry Commission
(9) Ofcom/BBC
(10) National Grid plc

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0 1.25 2.5 5 km

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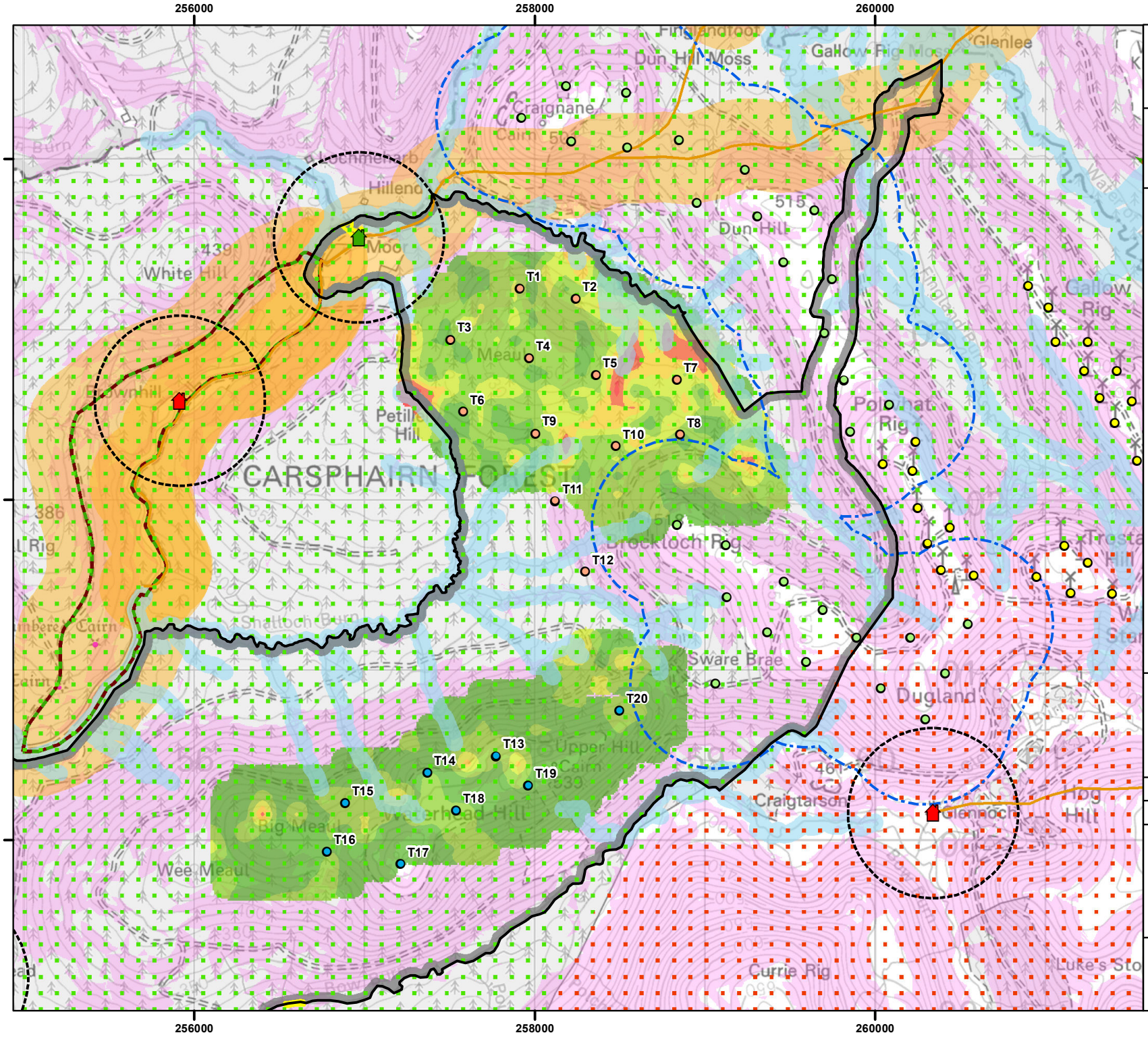

Project:

Windy Standard III, Dumfries & Galloway

Title:

NTS Figure 1.3: Constraints to Site Design

Key

- Planning application boundary (with 50 m internal buffer)
- Proposed Windy Standard III turbine location (max.125 m tip height)
- Proposed Windy Standard III turbine location (max. 177.5 m tip height)
- Windy Standard II turbine location
- Windy Standard I turbine location
- Financially interested noise sensitive property
- Potential noise sensitive property
- Area Requiring Significant Protection (large type >80m) (2)
- Area of Greatest Potential (large type >80m) (2)
- 500 m buffer from potential noise sensitive property
- 500 m buffer from existing/consented turbine location
- Water of Deugh core path (1)
- Potential Right of Way (1)
- 266.25 m buffer from potential Right of Way
- Scheduled Ancient Monuments (2)
- Semi-natural Ancient Woodlands (1)
- 50 m buffer from water course or body
- > 8° Slope

Interpolated Peat Depth (m)

- < 0.5
- 0.5 - 1
- 1 - 1.5
- 1.5 - 2
- 2 - 2.5
- > 2.5

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(2) Historic Scotland
(3) Dumfries & Galloway Council

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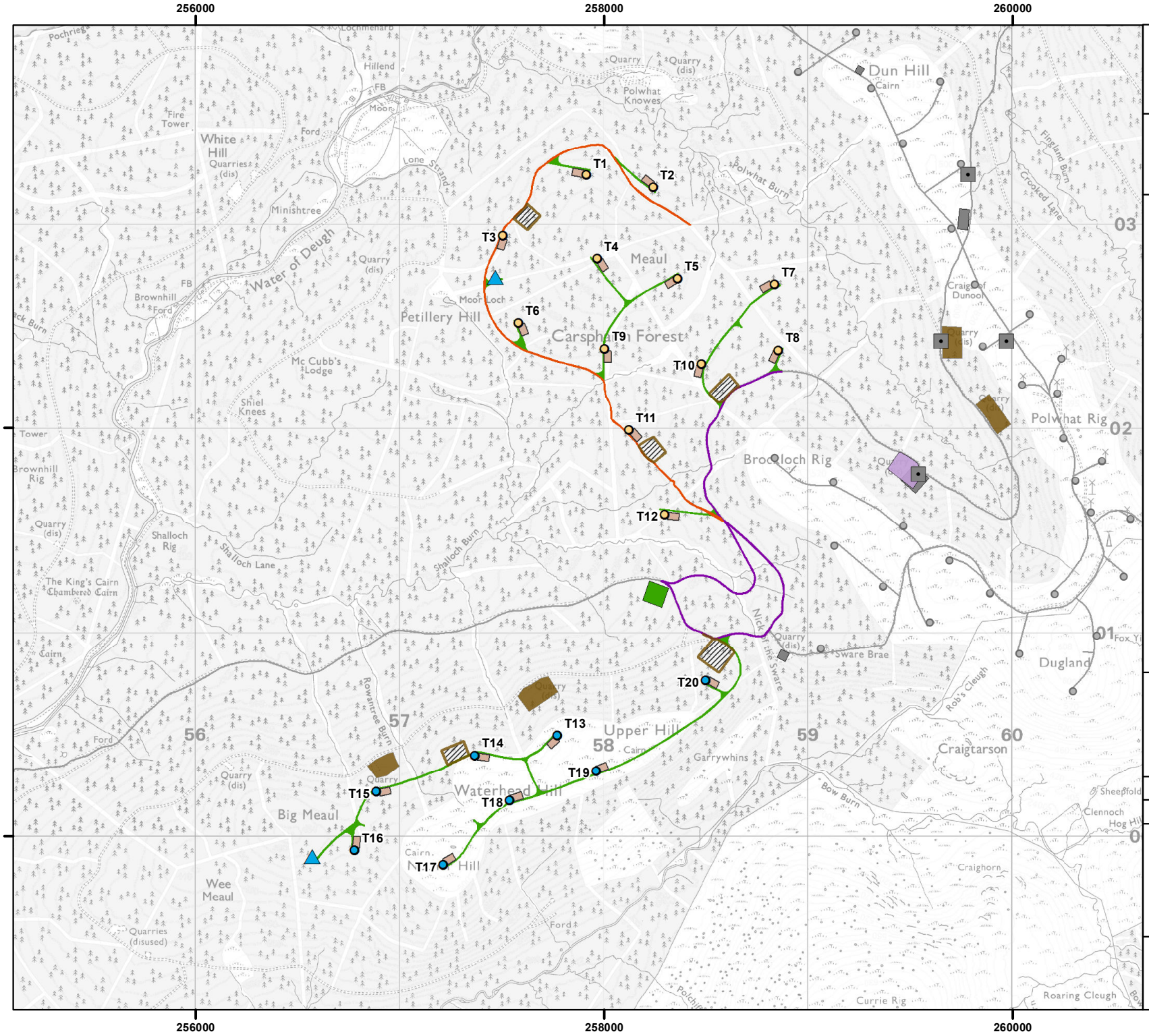

Project:

Windy Standard III, Dumfries & Galloway

Title:

NTS Figure 1.4: Final Layout (20 Turbines)

Key

- Proposed Windy Standard III turbine location (125 m tip height)
- Proposed Windy Standard III turbine location (177.5 m tip height)
- Proposed permanent anemometry mast
- Proposed crane pad location
- Proposed new track
- Existing track to be upgraded
- Consented forest track to be upgraded
- Proposed construction compound location
- Proposed batching plant location
- Indicative proposed borrow pit search area
- Additional borrow pit potential search area

WSI & WSII existing and consented infrastructure

- Windy Standard I & II turbine location
- Windy Standard I & II tracks
- Existing construction compound
- Existing borrow pit location

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Coordinate System: British National Grid

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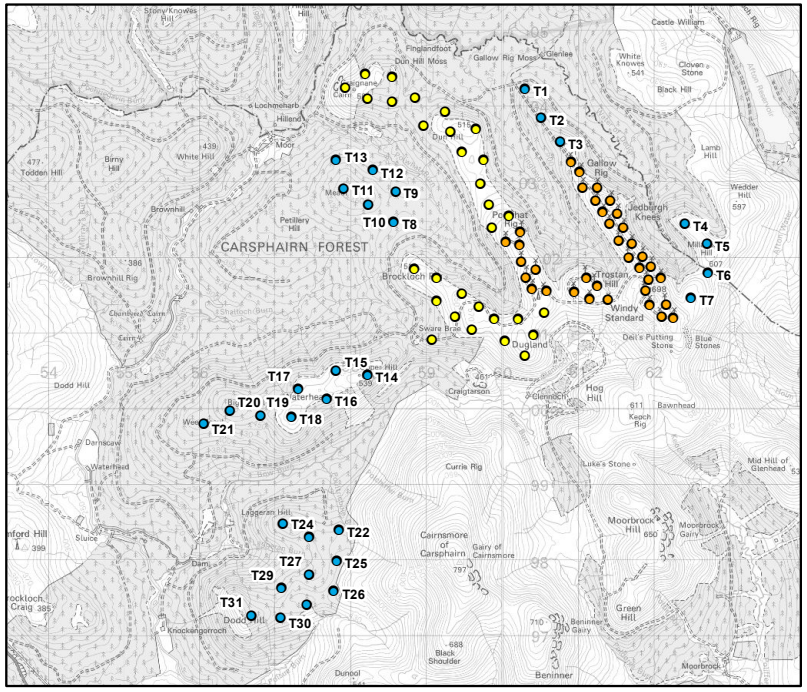
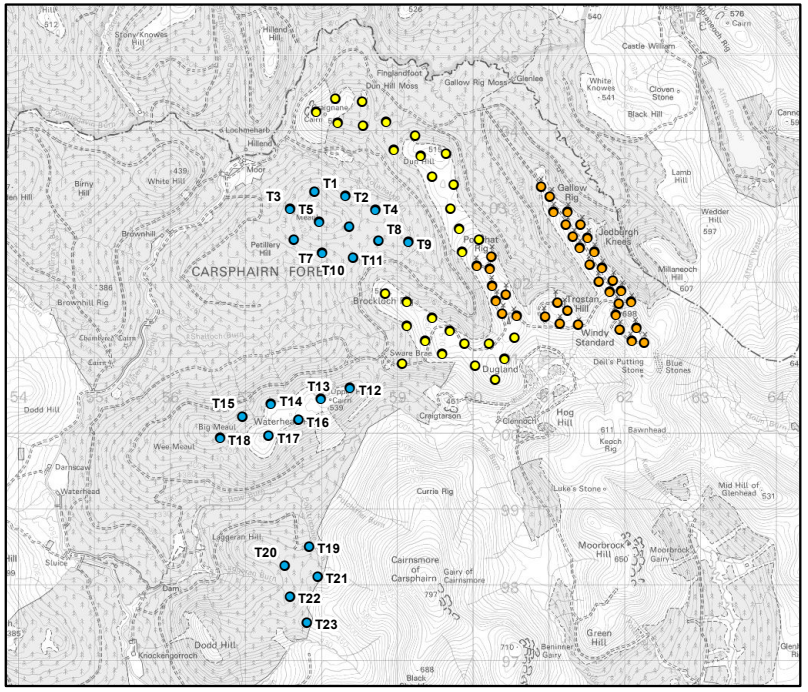
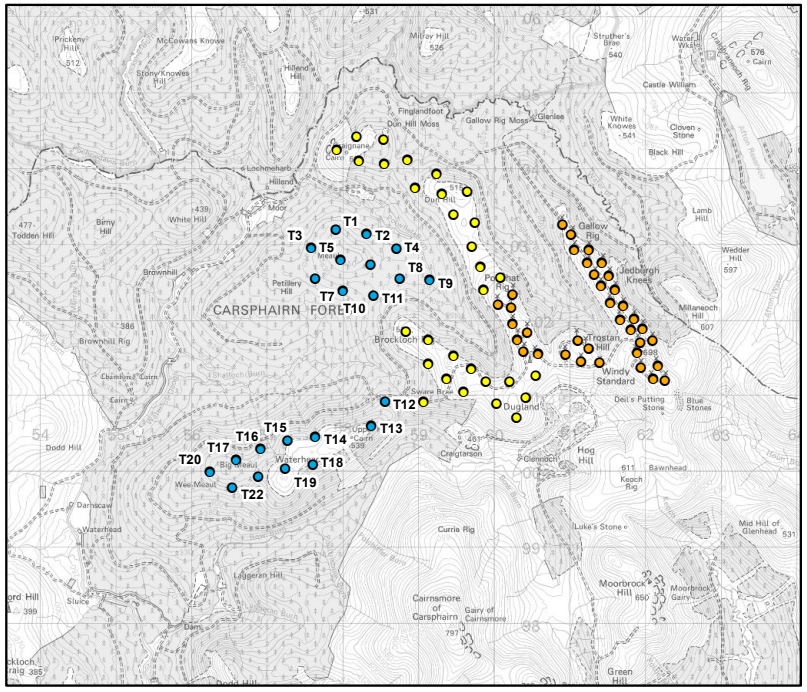


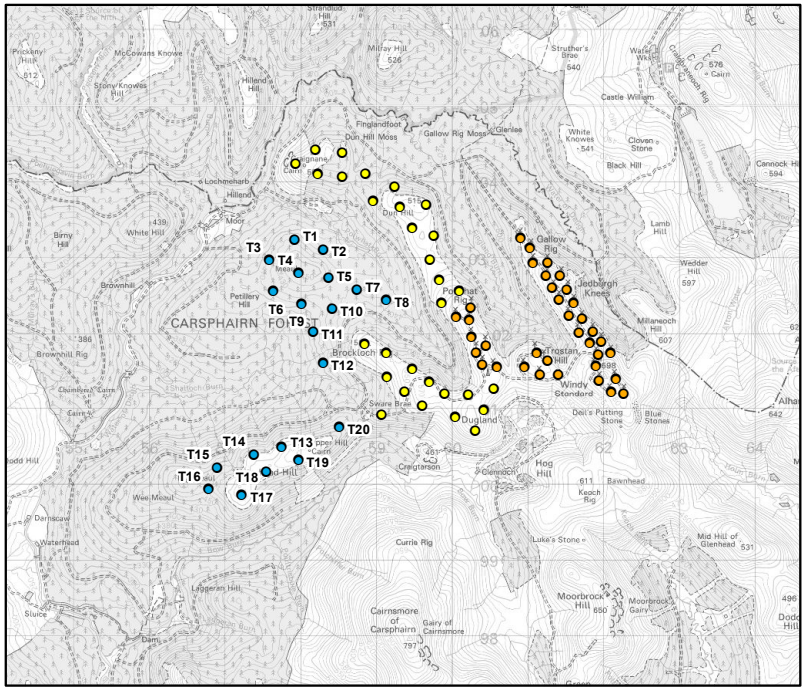
a) Pre-Feasibility Layout (31 Turbines)



b) Initial Feasibility Layout (23 Turbines)



c) Scoping Layout (22 Turbines)



d) Design Day Layout (20 Turbines)

Project:

Windy Standard III, Dumfries & Galloway

Title:

NTS Figure 1.5: Layout Evolution

Key

- Proposed Windy Standard III turbine location
- Windy Standard II turbine location
- Windy Standard I turbine location

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0 1 2 4 km

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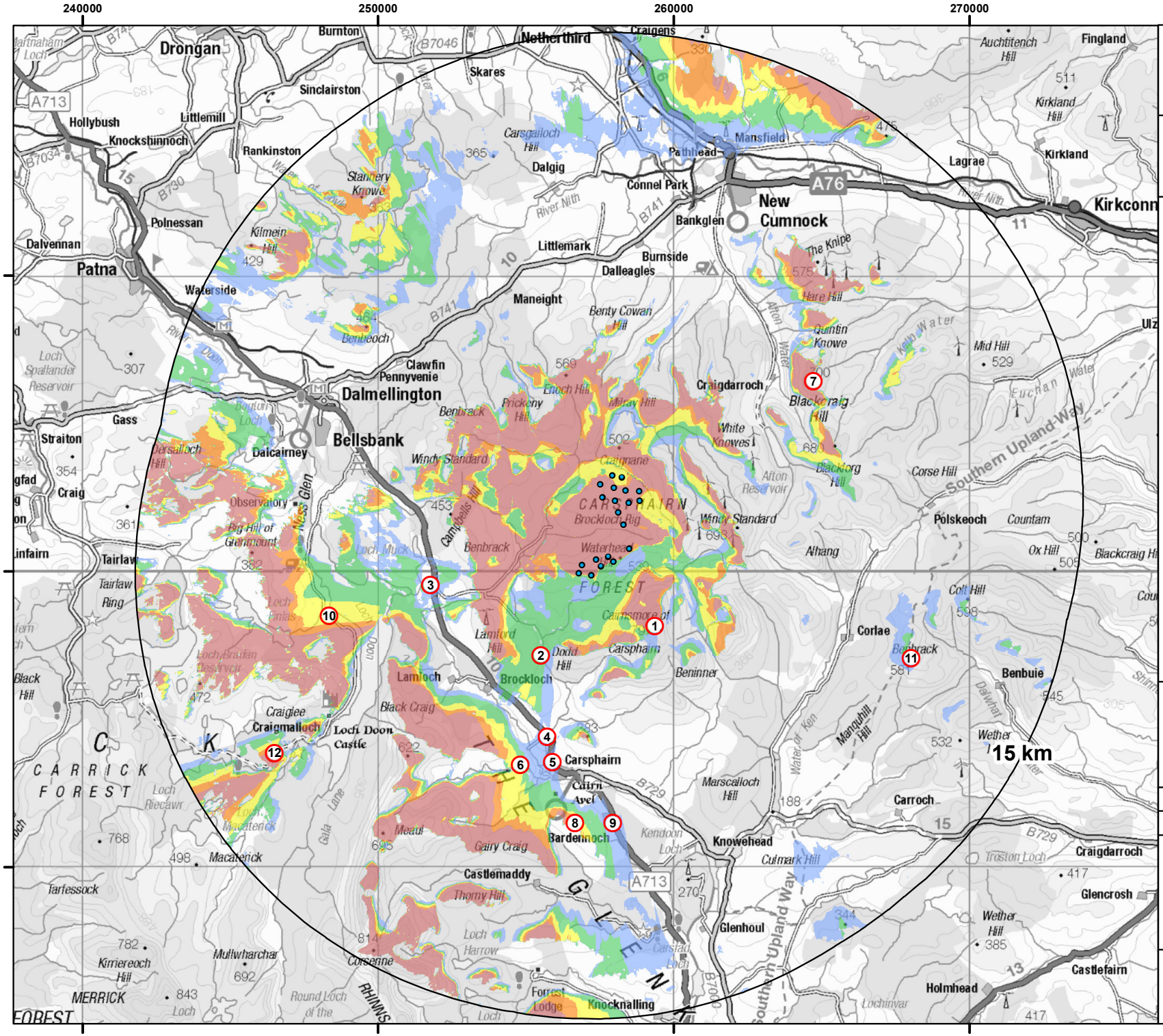

Project:

Windy Standard III, Dumfries & Galloway

Title:

NTS Figure 1.6: Blade Tip ZTV (177.5 m and 125 m)

Key

- Proposed Windy Standard III turbine location
- Viewpoint location
- 15 km from outer Windy Standard III turbine

Number of turbines visible

- 1 - 4
- 5 - 8
- 9 - 12
- 13 - 16
- 17 - 20

ZTV Notes:
* Visibility takes earth curvature and atmospheric refraction into account, but not buildings, trees or other surface obstacles.
* Visibility removed outside 15 km radius from turbines.
* ZTV produced for 20 turbines of 177.5 m and 125 m to tip.
* Viewpoint height set to 1.7 m AGL.

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