Artfield Forest Wind Farm

Other Documents

Design and Access Statement

March 2021

CONTENTS

1. INTRODUCTION

Artfield Forest Wind Farm Ltd ('the Applicant') is proposing to construct and operate a wind farm comprising up to 12 wind turbines, with a generating capacity of greater than 50 MW, along with associated infrastructure and ancillary development at a site located approximately 8 km northwest of Kirkcowan and 15 km west of Newton Stewart, in Dumfries and Galloway, Scotland.

An application for consent is being made under Section 36 of the Electricity Act 1989[1] to the Scottish Ministers.

1.1 Legislative Framework

The Town and Country Planning (Development Management Procedure (Scotland) Regulations 2008/2013 require applications for 'major' development to be supported by a Design and Access Statement. There is no statutory requirement for applications for consent under the Electricity Act 1989 to be supported by a Design and Access Statement, however the Applicant has opted to provide one as a good practice measure.

The purpose of the Design and Access Statement is to explain the design principles and concepts that have been applied. In line with the Scottish Government guidance[2], the statement does not extend to the consideration of internal aspects of individual buildings.

[1] Electricity generation projects below 50 MW are authorised under the Town and Country Planning (Scotland) Act, 1997. Those over 50 MW are authorised under Section 36 of the Electricity Act, 1989.

[2] Scottish Planning Series Circular 3 2013: Development Management Procedures. Available at: https://www.gov.scot/publications/planning-series-circular-3-2013-development-management-procedures/ [Last accessed: 14/01/2021]

2. POLICY CONSIDERATIONS

2.1 National Planning Framework

National Planning Framework 3[3] (2014) (NPF3) is a long-term strategy for Scotland. It is the spatial expression of the Scottish Government's Economic Strategy, and of plans for development and investment in infrastructure.

Part of the vision is of Scotland as a low carbon place, where the opportunities arising from the ambition to be a world leader in low carbon energy generation have been seized. NPF3 is informed by, and aims to help achieve, the Scottish Government's climate change and renewable energy targets.

NPF3 acknowledges that the energy sector accounts for a significant share of the country's greenhouse gas emissions, and that addressing this requires capitalising on Scotland's outstanding natural advantages, including its significant wind resource. NPF3 makes it clear that onshore wind will continue to play a significant role in de-carbonising the energy sector and diversifying energy supply.

National Planning Policy Framework 4 (NPF4) is under preparation and will include all aspects of national planning policy as per the provisions of the Planning (Scotland) Act 2019. The NPF4 'Position Statement' was published for consultation on the 26 November 2020 and a consultation draft NPF4 will be issued in September 2021. The Position Statement anticipates that NPF4 will include a focus on providing a plan for achieving net-zero emissions. The Scottish Government expects that NPF4 will state that the Global Climate Emergency should be a material consideration in considering applications for appropriately located renewable energy developments. The Position Statement does not represent new policy at this time but represents a 'direction of travel'. Priority policy changes under consideration include strengthening support for re-powering and expanding existing wind farms and updating the current spatial framework for onshore wind to continue to protect National Parks and National Scenic Areas, whilst allowing development outwith these areas where they are demonstrated to be acceptable on the basis of site specific assessments. Overall the Position Statement indicates that existing strong policy support for onshore wind farm development is likely to grow even stronger in response to the declared Climate Emergency and the drive to attain net zero emissions.

2.2 Scottish Planning Policy

Scottish Planning Policy[4] (2014) (SPP) is Scottish Government policy on how nationally important land use planning matters should be addressed.

SPP contains a number of principal policies, one of which expresses "a presumption in favour of sustainable development". Paragraph 28 states that:

> "the planning system should support economically, environmentally and socially sustainable places by enabling development that balances the costs and benefits of a

[3] Scottish Government, National Planning Framework 3 (2014) Available at: https://www.gov.scot/publications/national-planning-framework-3/ [Last accessed: 14/11/20]

[4] Scottish Government, Scottish Planning Policy (2014) Available at: https://www.gov.scot/publications/scottish-planning-policy/ [Last accessed: 14/11/20]

proposal over the longer term. The aim is to achieve the right development in the right place; it is not to allow development at any cost".

Paragraph 29 highlights a series of criteria which should guide decision-making in this regard and the following provisions are considered relevant to the Proposed Development:

- Net economic benefit;
- Economic issues, challenges and opportunities;
- Good design and qualities of successful places;
- Delivery of infrastructure;
- Climate change mitigation and adaptation;
- Principles of sustainable land use as set out in the land use strategy;
- Protecting, enhancing and promoting cultural heritage;
- Protecting, enhancing and promoting natural heritage and landscape;
- Reducing waste; and
- Over-development, amenity and effects on water, soil and air.

To support in achieving the outcome of making Scotland a low carbon place, the planning system should support the change to a low carbon economy, including deriving the equivalent of 100% of electricity demand from renewable sources by 2020. It should support the development of electricity generation from a diverse range of renewable sources. It should guide development to appropriate locations and advise on the issues that should be taken into account when specific proposals are being assessed.

Onshore wind is referred to specifically in paragraphs 161 to 166 (development planning considerations) and paragraphs 169 to 174 (development management considerations) of SPP within the 'Low Carbon Place' outcome. Development planning guidance for onshore wind includes reference to the need for planning authorities to set out in their development plans a Spatial Framework identifying those areas that are likely to be most appropriate for onshore wind farms. Table 1 in SPP provides guidance on how spatial frameworks should be set out. They should identify three types of areas including:

- Group 1: Areas where wind farms will not be acceptable (National Parks and National Scenic Areas);
- Group 2: Areas of significant protection (i.e. national and international designations, nationally important environmental interests, community separation for considering visual impact); and
- Group 3: Areas with potential for wind farm development (where wind farms are likely to be acceptable subject to consideration of details).

Chapter 3: Design Evolution and Alternatives provides further description of how the Site is consistent with the Dumfries and Galloway Council spatial framework for onshore wind farms (as set out in the adopted Local Development Plan).

More generally, SPP advises that the siting and design of development should take account of local landscape character. Decisions should take account of potential effects on landscapes and the natural and water environment, including cumulative effects. Applicants should seek to minimise adverse impacts through careful planning and design. Planning permission should be refused where the nature or scale of a development would have an unacceptable impact on the natural environment.

Beyond the Spatial Framework for wind farms the following considerations, outlined in paragraph 169, should be taken into account (where applicable) when determining development proposals:

- Net economic impact;
- Scale of contribution to renewable energy generation targets;
- Effect on greenhouse gas emissions;
- Cumulative impacts;
- Impact on communities and dwellings (including visual impact, residential amenity, noise and shadow flicker);
- Landscape and visual impacts (including wild land);
- Effect on natural heritage (including birds);
- Impacts on carbon rich soils (using carbon calculator);
- Impact on public access (including long distance walking and cycling routes and scenic routes);
- Impacts on the historic environment (including scheduled monuments, listed buildings and their setting);
- Impacts on tourism and recreation;
- Impacts on aviation and defence interests and seismological recording;
- Impacts on telecommunications and broadcasting installations;
- Impacts on transportation (road traffic and adjacent trunk roads);
- Effects on hydrology (water environment and flood risk);
- Opportunities for energy storage; and
- Conditions relating to decommissioning of development, including ancillary infrastructure and site restoration.

SPP is under review and a draft new NPF4 is expected to be published in September 2021. NPF4 will become the single national planning policy document, replacing both NPF3 and SPP and it is intended to have Development Plan status.

3. SITE CONTEXT

The Proposed Development Site ('the Site') covers an area of approximately 800 hectares (ha) and is located approximately 8 km northwest of Kirkcowan and 15 km west of Newton Stewart, Dumfries and Galloway, Scotland (Figure 1).

The Site is predominately comprised of productive coniferous plantation forestry with a complex mosaic of grassland, wet heath and blanket bog habitats within open areas and along the Tarf Water riparian corridor. The River Bladnoch SAC is located within the Site while Kirkcowan Flow SSSI/ SAC is located approximately 1.2 km to the east of the Site. No other statutory or non-statutory sites are located within 2 km of the Site.

The topography of the Site is such that the Proposed Development is entirely within the catchment of the Tarf Water. The Tarf Water is included as part of the River Bladnoch Special Area of Conservation (SAC) which is designated under the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) due to the presence of Atlantic salmon *Salmo salar*.

The Tarf Water flows in an easterly direction along the northern margin of the Site and then in a southerly direction, initially at the north east boundary of the Site and then southwards through the Site.

A small area in the west of the Site (on which no site infrastructure is proposed), drains initially to the Drumpall Burn, which crosses the westernmost margin of the Site flowing from the Site in a south westerly direction before eventually discharging to the Tarf Water, approximately 1.5 km downstream of the southern boundary of the Site.

The Purgatory Burn (which forms the north west boundary of the Site), discharges to the Tarf adjacent to the north boundary of the Site. As the Tarf Water flows around the northern margin of the Site, and southwards through the Site, a number of small, unnamed burns and drains discharge surface waters to the Tarf Water from the Site area.

The Site lies between the operational Artfield Fell and Balmurrie Fell Wind Farms to the west and the Airies Wind Farm to the east. Operational turbines of Kilgallioch Wind Farm lie to the northwest, and Glenchamber and Carscreugh Wind Farms are located to the southwest. In addition, there are current proposals in planning for an extension to Kilgallioch Wind Farm, which would bring turbines closer to the northern boundary of the Site, and a scoping stage development proposal for an extension to Airies Wind Farm, which would add turbines to the immediate east and north of the Site. As such, wind farms are a key characteristic of the existing landscape character.

4. DESIGN APPROACH

4.1 Key Issues and Constraints

In addition to the policy considerations identified, key issues and constraints for consideration in the design process were established through a combination of desk based research, extensive field survey and consultation (through the EIA scoping process). The design process considered the following issues:

- landscape character and visual amenity within a 45 km study area;
- cultural heritage, including mapping all known assets within the Site, and nationally important designated assets within a 10 km study area to assess the potential for visibility and setting effects;
- sensitive fauna, with the mapping of the presence of European protected species;
- sensitive habitats, particularly peat forming habitats (supported by habitat and peat probing surveys) and habitats dependent on groundwater;
- ornithology, including surveys for bird flight activity and breeding bird activity on the Site;
- hydrology and hydrogeology, including identifying all sensitive surface water features;
- traffic and transport, including all trunk roads and local roads that are likely to experience increased traffic flows;
- cumulative operational noise levels and exposure at nearby properties;
- aviation and telecommunications assessments; and
- a forestry study area of 686 ha.

4.2 Alternatives

4.2.1 Do-Nothing Alternative

The "do nothing" scenario is considered in the EIAR as a basis for comparing the development proposal under consideration. This scenario is considered to represent the current baseline situation as described in the individual chapters of this EIAR.

In the absence of the Proposed Development, it is anticipated that the Site would continue to be managed primarily as a productive coniferous plantation forestry.

It is recognised that the baseline would not remain static for the lifetime of the Proposed Development. In particular, and apart from any changes arising from economic and agricultural policies and economic market considerations, it is predicted that biodiversity and landscape would undergo some level of change as a result of climate change. Two publications from the Landscape Institute[5] and Scottish Natural Heritage[6] (now NatureScot) consider the potential climate change effects on the landscape character. Due to the complexities and uncertainties inherent in attempting to predict the nature and extent of such changes to landscape and biodiversity during the lifetime of the Proposed Development, it has been assumed that the current baseline would

[5] Landscape Institute (2008) Landscape architecture and the challenge of climate change, Position Statement, London, October 2008 – URL: https://www.landscapeinstitute.org/wp-content/uploads/2016/03/LIClimateChangePositionStatement.pdf

[6] Land Use Consultants (2012) An assessment of the impacts of climate change on Scottish landscapes and their contribution to quality of life: Phase 1 – Final Report. Scottish Natural Heritage Commissioned Report 488 – URL: http://www.snh.org.uk/pdfs/publications/commissioned_reports/488_1.pdf

subsist. It is considered that this represents an appropriate approach for EIAR preparation purposes.

4.2.2 Design Evolution, Alternative

Figure 2 summarises the wind farm design evolution from pre-scoping stage to the design freeze layout. The following paragraphs explain the changes made through the four key iterations.

Layout 1: Pre-Scoping Layout (20 Turbines)

The pre-scoping layout (Figure 2i) was developed by the Applicant based on desk based assessment only to provide a theoretical maximum generation capacity and as a starting point for the design process. The pre-scoping layout was developed based on the following parameters:

- The layout maintains a 750 m buffer from residential properties and was consistent with the Gass Wind Farm layout in terms of maintaining approximately 1 km separation from the public road to the south of the Site; and
- The layout was originally developed based on the identified 'preferred development area' set out in the Dumfries and Galloway Local Development Plan (2014) (noting that this has now been superseded by the adopted 2019 Local Development Plan 2).

Layout 2: Design Workshop 1 Layout (12 Turbines)

The first design iteration was made in preparation for the first design workshop which followed the collection of baseline data from on-site surveys and detailed desktop analysis. The Applicant prepared a 'wind yield optimised layout' which maximised separation distances, of the 12 turbines (as shown in Figure 2ii). This layout was developed by the Applicant based on a 'heat map' incorporating key constraints and maintaining a 750 m buffer from residential properties.

The heat map, as illustrated in Figure 3 and Figure 4: Turbine Layout Evolution with Heat Map incorporates:

- a Site boundary 'blade oversail' buffer – to prevent turbines being positioned too close to the Site boundary, resulting in blades oversail outside of the Site boundary (in some wind directions);
- buffers on watercourses based on the requirements of NatureScot guidance[7] for the protection of bats (and in turn this also provides the buffers required to protect watercourses themselves);
- known cultural heritage assets within the Site; and
- sensitive habitats.

As a result of the constraints mapping, the number of turbines reduced from 20 to a total of 12.

The layout was used as the basis for further interrogation and discussion by the team of environmental specialists during design workshop 1.

Energy yield modelling by the Applicant considered alternative candidate turbines, with a range of tip heights between 150 m and 180 m. The conclusions of the modelling were that a 180 m tip would provide a significant increase in energy yield and therefore the renewable energy generation of the Proposed Development. As such, based on the energy and planning policy set out in Chapter

[7] NatureScot (2019) Bats And Onshore Wind Turbines: Survey, Assessment And Mitigation, URL: https://www.nature.scot/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation (accessed 27/3/2020)

4 of the EIA Report (as further explained in the supporting Planning Statement), the Applicant has selected the 180 m to tip turbine in order to deliver the greatest potential contribution to meeting the Scottish Government targets for renewable electricity generation and to assist the attainment of the legally binding net zero emission reduction targets.

Layout 3: Design Chill Layout (12 Turbines)

The second major design iteration (see Figure 2iii) was made following the first design workshop with a particular focus on landscape and visual, noise and cultural heritage design drivers.

Detailed landscape and visual analysis was undertaken, which confirmed a preferred development area for 180 m tip height turbines, which has the effect of restricting the turbine layout to a smaller area of the Site. The analysis confirmed that, subject to locating turbines within the preferred development area, 180 m tip height turbines could be accommodated within the Site and that this could be considered to be consistent with the emerging pattern of development (linking to Kilgallioch Extension wind farm to the north and Airies II to the east). As noted in Table 3.1, the preferred development area for both noise and landscape/ visual constraints is broadly consistent.

Layout 3 achieves the following in terms of 'mitigation by design':

- The turbine array consolidates the emergent pattern of development by locating turbines to the north and west within the Site, 'infilling' between Kilgallioch (and Kilgallioch Extension), Airies (and Airies II), increasing the separation from the edge of the upland plateau to the south, further from settled farmland, residential properties and transport corridors.
- The turbine array achieves separation of at least 1 km from residential properties (with only two properties within 2 km of the turbine array), therefore protecting residential amenity in terms of both visual amenity and noise amenity.
- The design ensures that the 'Total ETSU-R-97 Noise Limits' are not exceeded by the cumulative operation of all turbines in the area.
- The layout avoids, or where this is not possible, minimises impacts on all known cultural heritage assets within the Site, such that no significant effects are predicted.
- Through pre-application consultation with Historic Environment Scotland (HES), a series of viewpoints were agreed for the purpose of assessing likely significant effects on the setting of nationally important heritage assets around the Site. Following a review of the HES consultation responses to the Kilgallioch Extension Wind Farm application, and further communications with HES (including the provision of preliminary wireline visualisations), Layout 3 moves turbines to the west such that turbines would not appear in the backdrop of views to Wood Cairn (SM1953) when viewed from the broadly contemporary (non-designated) assets located to the north. Further, the layout was designed to avoid fundamentally altering the perceived 'dominance' of Wood Cairn over the surroundings (as referred to in HES consultation). Turbines would be clearly positioned on lower ground to the west and with visual separation.
- The Site layout incorporates suitable buffers to watercourses sufficient to protect the SAC and relevant protected species including bats, water vole and otter.
- The layout avoids all priority peatland habitats.
- Forestry "stand-off" was optimised based on NatureScot guidance for the protection of bats, noting that the stand-off buffers were agreed with NatureScot through pre-application consultation.
- The turbine array is located with sufficient separation from noise sensitive receptors to allow the noise emissions from the Proposed Development to be more than 10 dB below the Total Noise Limits (under ETSU-R-97), allowing a conclusion that the Proposed Development will not

result in significant effects on residential amenity as a result of noise, either on its own or cumulatively.

- The turbine array avoids placing any turbines within the 74.7 m Vodafone microwave link protection zone and avoids placing turbines closer than 500 m to the transmitter at either end of the link.

5. CONSULTATION ACTIVITIES

5.1 Scoping

The Applicant submitted a request for a Scoping Opinion to Scottish Ministers on 15 May 2020. This request was accompanied by a Scoping Report, prepared by the Applicant, which set out a summary of the proposals; identified the likely significant environmental effects, and summarised the proposed scope of the EIA.

A Scoping Opinion was received from ECU on 20 August 2020. The contents of this and other consultation responses received are summarised in Technical Appendix 1.1: Consultation Register, along with a list of all bodies consulted during the scoping exercise.

Further detail on the key issues identified through the scoping and consultation process are described in Chapter 3: Design Evolution and Alternatives.

Following scoping and baseline characterisation the EIAR provides an impact assessment chapter for each of the following disciplines/ factors/ issues:

- Landscape and Visual Impacts;
- Ecology;
- Ornithology;
- Hydrology, Hydrogeology and Geology;
- Cultural Heritage;
- Traffic, Transport and Access;
- Noise and Vibration;
- Aviation and Telecommunications;
- Socioeconomics;
- Forestry;
- Shadow Flicker; and
- Climate.

During the scoping process several effects were identified as not being likely to cause significant effects on the environment as a result of the Proposed Development, including:

- Air Quality;
- Ice Throw;
- Land Use and Agriculture; and
- Major Accidents and Disasters.

5.2 Public Exhibitions

In addition to seeking a Scoping Opinion, the Applicant conducted a virtual public exhibition between 24 August 2020 and 18 September 2020, to seek the views of the local community. Live chat sessions were held, as follows:

- 3 September 2020: between 11 am to 1 pm;
- 3 September 2020: between 5 pm to 7 pm; and
- 18 September 2020: between 11 am to 1 pm.

A summary of the representations received during the public exhibitions is provided in the Pre-Application Consultation Report (PACR) which accompanies the submission.

The events were advertised in advance in the Dumfries & Galloway Standard Newspaper, on Friday 21 August and again on Tuesday 25 August 2020. The events were also advertised on the Stranraer & Wigtonshire Free Press social media page from Monday 24 August 2020 for one week.

5.3 Consultation with Local Community Councils

The Applicant engaged with local community councils (Kirkcowan; New Luce and Old Luce) via written correspondence and meetings. Following contact from Cree Valley Community Council (neighbouring community council), the Applicant sent the presentation and an introduction letter to Cree Valley Community Council and outlined how to provide a Scoping response to the Scottish Government.

Local Ward Councillors for Mid-Galloway and Wigtown West were written to at the time of the Scoping Report (May 2020) to inform them of the plans. The Applicant also provided a short presentation with the introduction letter with maps of the Site including the redline boundary and offered a virtual meeting to introduce the plans. The Applicant wrote to the Mid-Galloway and Wigtown West ward members and the local MSP at the start of the virtual consultation to highlight the exhibition and to invite them to take part. A summary of the representations received during the public consultation events is provided in the Pre-Application Consultation Report.

Further detail on the key issues identified through the scoping and consultation process are described in Volume 2: Chapter 3: Design Evolution and Alternatives of the EIAR.

6. DESIGN SOLUTION

6.1 Design Freeze Layout

The fourth and final major design iteration (see Figure 2iv) was produced following receipt of a scoping opinion in August 2020 from Scottish Ministers, post-scoping consultation, public exhibition held in September 2020, further 'stage 2' peat probing surveys and following the design workshop 2 in August 2020. The design workshop provided the forum for examining changes that were proposed through the consultation process and through further review of environmental constraints.

An access track layout was included in the design at this stage. The access track layout was refined through a number of iterations to achieve the following mitigation by design:

- The access tracks follow existing Site access track routes as far as possible, reducing the 'new' infrastructure footprint as far as possible, whilst incorporating a track geometry required to allow turbine blades and other components to be delivered.
- By following existing tracks as far as possible, the areas of woodland removal have been minimised.
- The proposed access track route deviates from the existing track network to reach Turbine 11, thus avoiding the need to traverse through an area of sensitive 'wet woodland' habitat identified in pre-application consultation by Scottish Forestry.
- The number of watercourse crossings has been optimised as far as possible, with the number of crossings of the Tarf Water limited to one. An initial design looked at an access strategy with tracks following the previously consented Gass Wind Farm track layout to get to Doon Hill but this was disregarded as it would have either involved two crossings of the Tarf Water or significantly more track construction and would have missed the opportunity to make best use of existing tracks. Even with an alternative access (involving additional third party land agreements) there would still be a need to run electricity cables back from the turbines to the proposed substation, which would involve either a cable bridge or crossing under the Tarf Water). As such it is not possible to fully avoid a crossing of the Tarf Water.
- The location of the Tarf Water crossing was selected following the consideration of a number of options. The selected location allows for an acceptable vertical grade on Doon Hill and takes account of the bank conditions on either side of the river.
- The proposed crossing would be of a single span structure type (subject to detailed design), which means that there would be no 'in-channel' work required and therefore no direct impact on the SAC.
- The access tracks avoid areas of deeper peat where possible (and avoid all priority peatland habitat), with adjustments made to the tracks (and turbine positions) to avoid deep peat on the east side of Doon Hill.

Turbine positions and their associated crane hardstanding areas were subject to further micrositing in Layout 4 as follows:

- Turbine T10 was moved to the south west to allow the track and crane hardstanding to avoid the area of deep peat on the east side of Doon Hill (see EIAR Volume 3a, Figure 3.5: Layout 4 (Design Freeze) with Peat Depth) and to reduce the cut and fill required to develop a track over the top of the hill;
- Turbine T7 was moved to the west out of an area of deeper peat (thus also achieving a reduction in track length);

- Turbine T5 was moved to the south west into an area with no peat. Although the track would need to cross an area of deeper peat to reach this area, the track could be floated, and as such the move would avoid the need for excavation of peat;
- Turbine T6, T8 and T11 arrangements were optimised and microsited with respect to watercourse buffers and peat as far as possible; and
- By moving turbine T10 and T7 to the west, this further reinforces the design rationale from a cultural heritage perspective (by creating greater separation between the Proposed Development and Wood Cairn). While turbine T5 moves closer to Cairn na Gath (SM1922), this was reviewed using wireline visualisations to consider potential setting effects and it was concluded that the difference between layout 3 and 4 was negligible.

A number of borrow pit search areas were also defined at this stage. These search areas were considered in relation to the environmental constraints information, particularly, ecological habitat, hydrology and landscape and visual amenity constraints. It is proposed that up to four borrow pits (within the four search areas) will be located on the Site.

The proposed met mast was added at this stage in an area of no identified environmental constraints (aside from forestry), to meet parameters that would allow the mast to be used for power performance testing.

7. ACCESS

7.1 Access from Public Roads

Access to Site would be taken from an existing entrance on C3w for use during construction and operation, designed to accommodate abnormal indivisible loads required for turbine component delivery. For more information on the delivery route to the Site see EIA Volume 2, Chapter 10: Traffic and Transport.

7.2 Internal Site Access

Approximately 6.25 km of new on-site access tracks; approximately 3.05 km of upgraded track and approximately 2.15 km of existing forestry track (where upgrade is not required) would be required to provide access to the wind turbines, substation compound, borrow pit search areas and construction compounds (Figure 5: Site Layout). Typical access track designs are shown in Figure 2.4: Typical Access Track Detail (EIAR Volume 3a). This figure shows the use of typical cut and fill access tracks.

The majority of tracks would have a 5 m running width with appropriate shoulders and widening on bends, at junctions and passing places. Tracks where it will only be accessed by light vehicles will be 4 m wide (including shoulders) (EIAR Volume 3a: Figure 2.1: Site Layout). The access track will be provided with intervisible passing places, where required.

In areas where the peat and topsoil are consistently less than 1 m deep, the vegetation and soil would typically be stripped to a suitable subsoil layer and the track (approximately 300 mm to 500 mm thick) would be constructed on the subsoil. The upper topsoil layer, together with turf, would be used in landscaping and revegetating the track shoulders and track side drainage, where possible.

Once the soil has been removed, as described above, to a suitable founding layer, the road and running surface would be constructed by laying a geotextile followed by tipping and compacting aggregate to the required depth. Cross-sections of a typical track build up following reinstatement are presented in Figure 2.4: Typical Access Track Detail (EIAR Volume 3a).

Where peat depths of 1 m or greater are identified and suitable engineering criteria are met, for example shallow topography (below 5%), the Proposed Development would use floating road construction. It is anticipated that there would be a maximum of 1.55 km of floating track. The use of 'floating roads' in areas of deep peat eliminates the need for excavation.

The on-site track layout has been designed to minimise environmental disturbance and land take by wherever possible using existing tracks, avoiding areas of deeper peat and steep slopes in excess of 12 degrees as well as, wherever possible, avoiding or minimising areas of identified environmental constraints.

The track layout has been carefully designed to minimise the number of watercourse crossings where possible, which are discussed in the section below.

8. SUMMARY

This document provides an overview of the design process undertaken by the Applicant while preparing the planning application for the proposed Artfield Forest Wind Farm. This document summarises the relevant local development plan policy considerations, the Site context, the design approach, consultation activities and the final design solution.

The careful placement of the proposed turbines within the Site boundary has facilitated effective mitigation of the majority of potentially significant effects through the design process. Further information on the residual environmental effects is presented in the Environmental Impact Assessment Report (EIAR). This document has described the principles that have shaped and influenced the design of the Proposed Development and how issues of access have been dealt with.

APPENDIX A
FIGURES

Legend

Site Boundary

0 2.5 5 Kilometers

Figure Title

Figure1: Site Location

Project Name

Artfield Forest Wind Farm
Design and Access Statement

Project Number	Figure No.
1620008937	1
Date	**Prepared By**
November 2020	AC
Scale	**Issue**
1:70,000 @A3	1

Client

Artfield Forest Wind Farm Ltd

RAMBOLL

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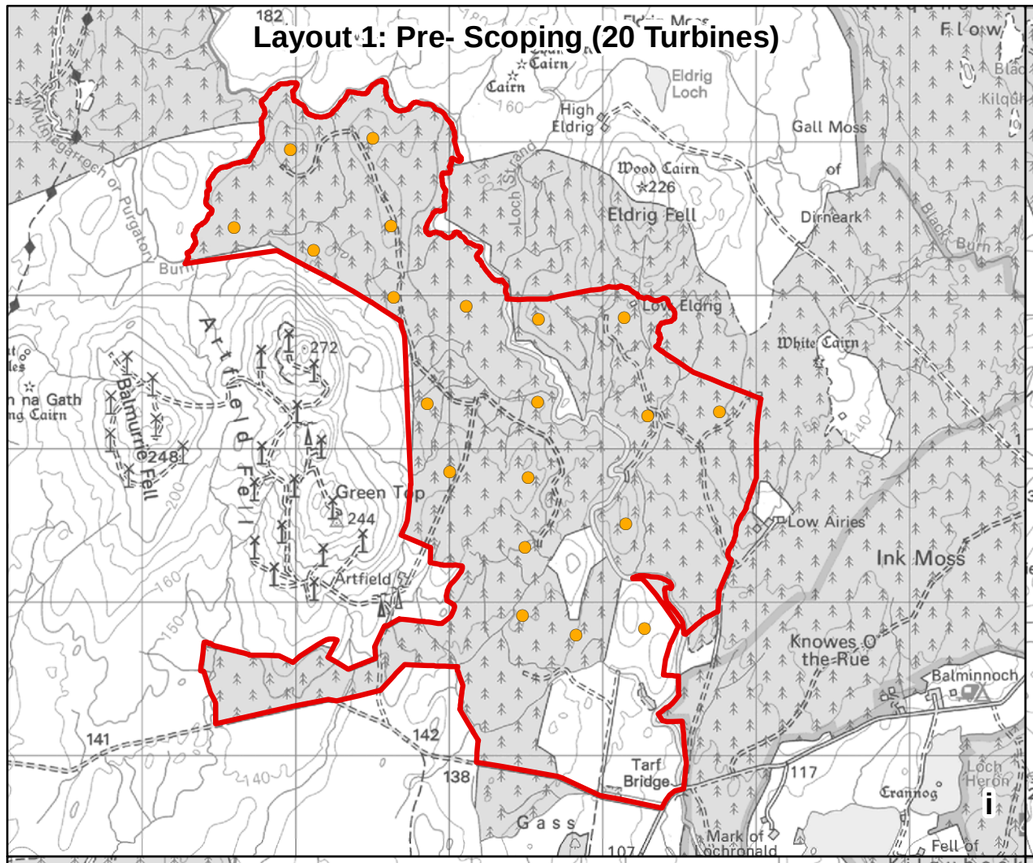
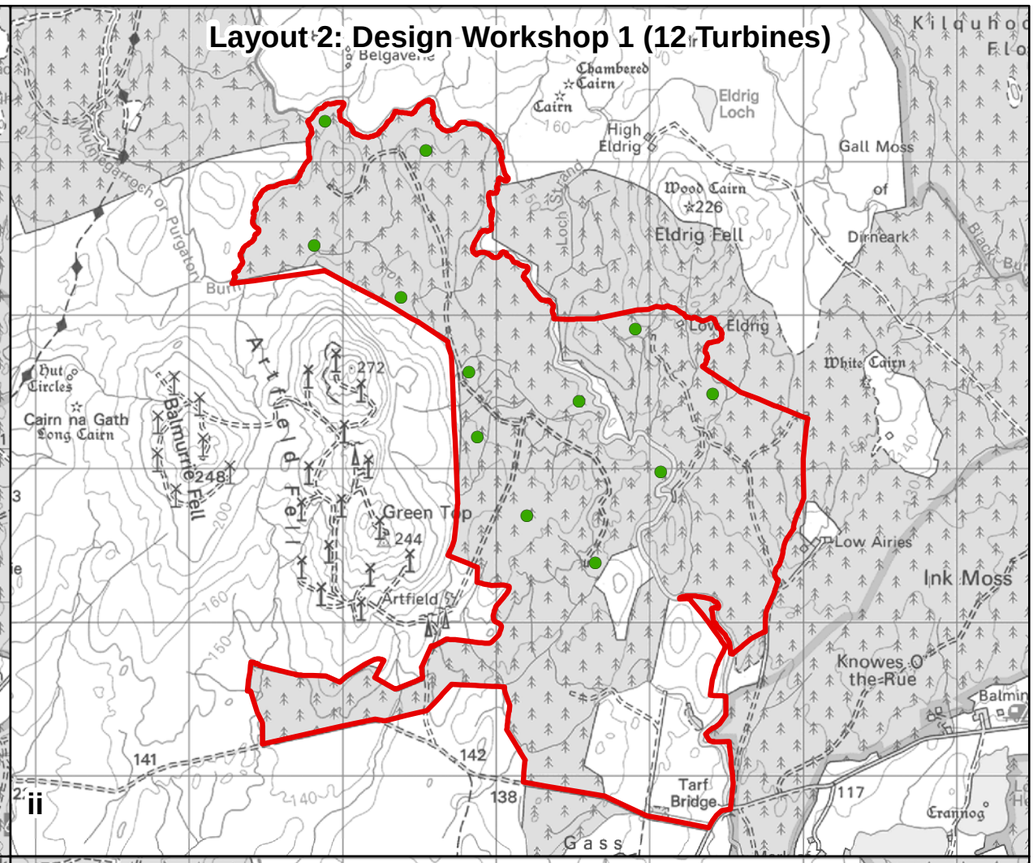
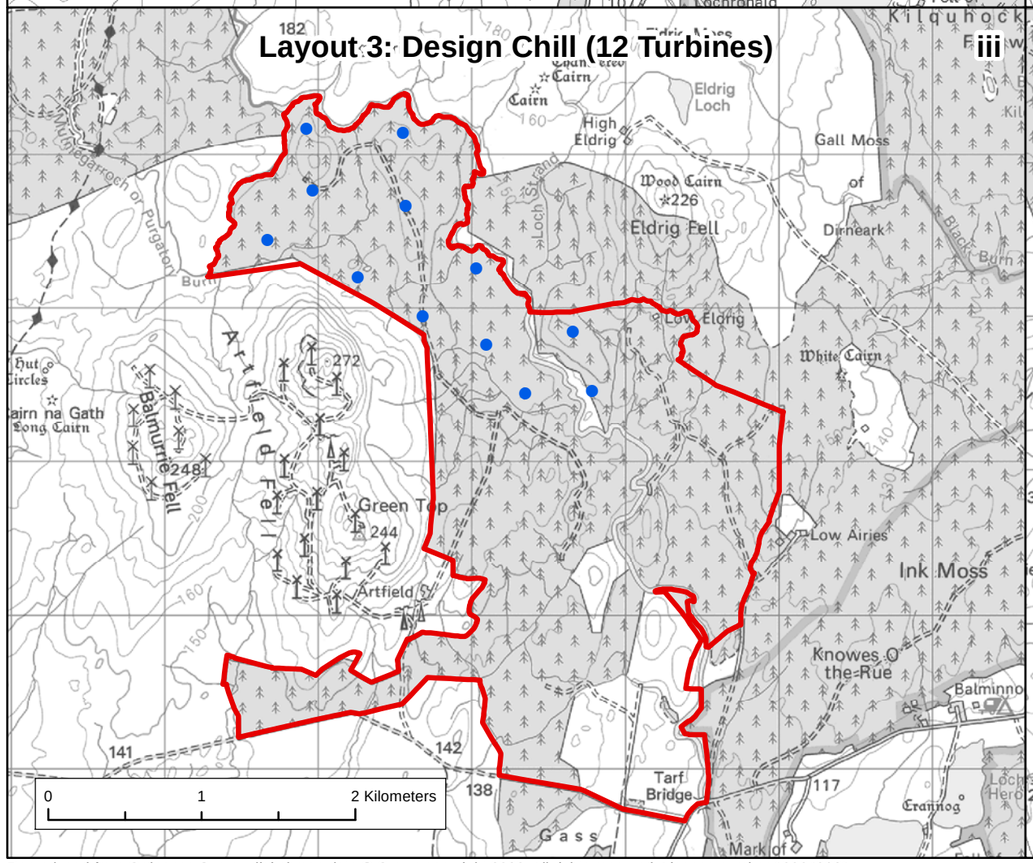
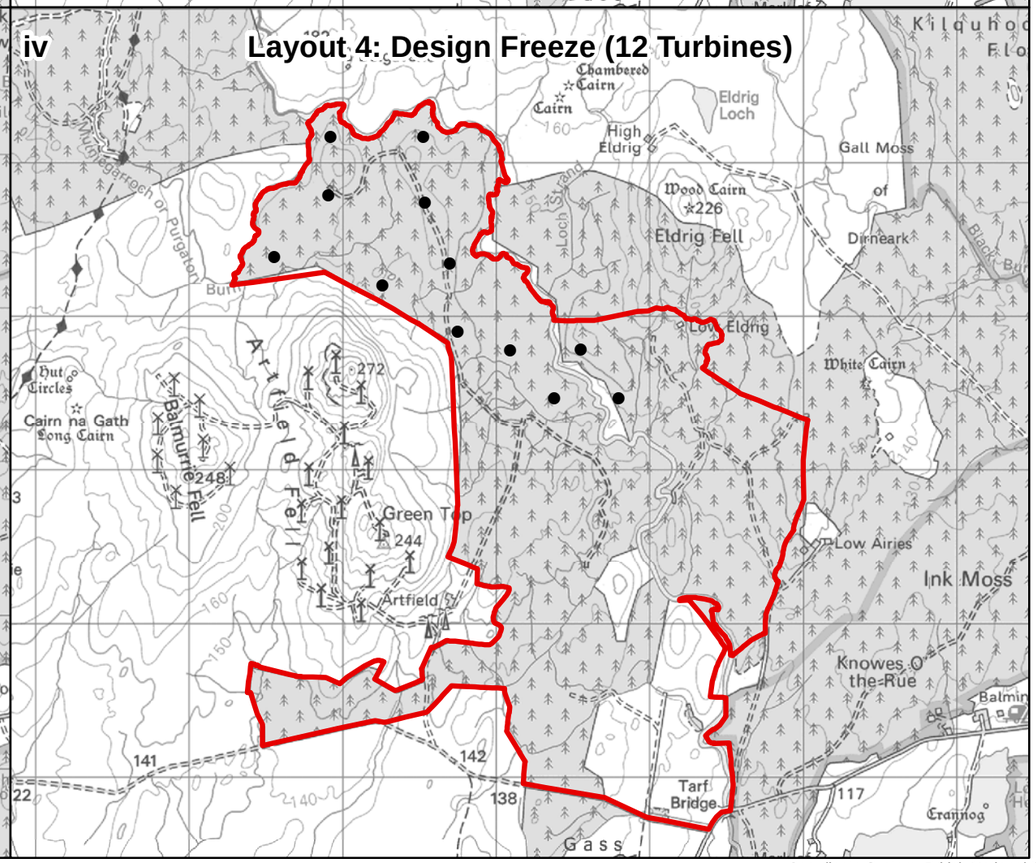
Coordinate System: British National Grid. Projection: Transverse Mercator. Datum: OSGB 1936.









Legend

- Site Boundary
- Proposed Turbine (Pre-Scoping)
- Proposed Turbine (Design Workshop 1)
- Proposed Turbines (Design Chill)
- Proposed Turbines (Design Freeze)

Figure Title
Figure 2: Turbine Layout Evolution

Project Name
Artfield Forest Wind Farm
Design and Access Statement

Project Number	Figure No.
1620008937	2
Date	Prepared By
November 2020	AC
Scale	Issue
1:40,000 @A3	1

Client
Artfield Forest Wind Farm Ltd

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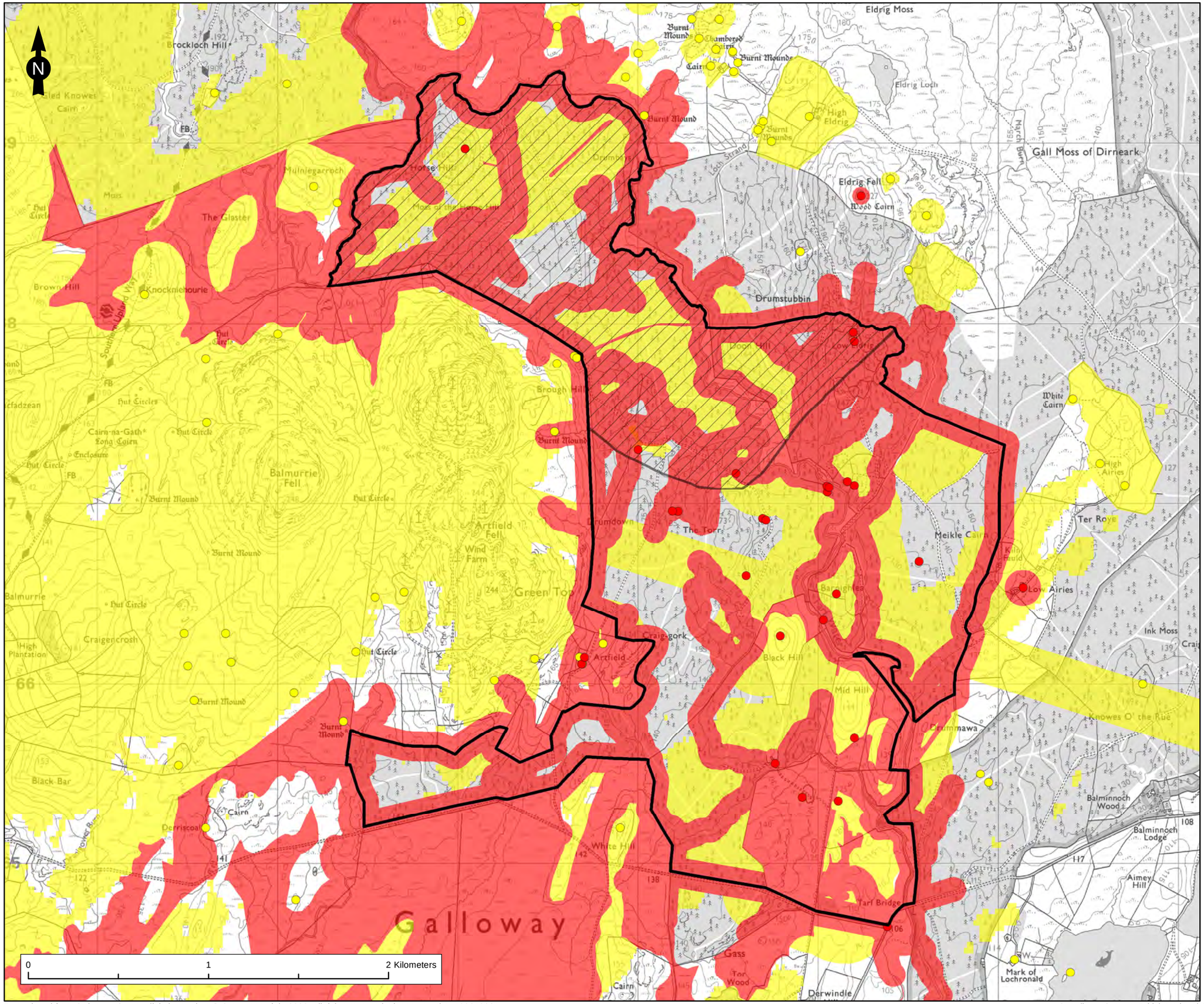

Legend

- Site Boundary
- **Heat Map**
  - Red
  - Amber
  - Landscape Preferred Development Area

Note: Please note that the constraints and heat map presented in this figure has been created for wind turbine design only and does not apply to track or other infrastructure design

Figure Title

Figure 3: Design Constraints Heat Map

Project Name

Artfield Forest Wind Farm Design and Access Statement

Project Number	Figure No.
1620008937	3
Date	**Prepared By**
November 2020	AC
Scale	**Issue**
1:20,000 @A3	1

Client

Artfield Forest Wind Farm Ltd

RAMBOLL

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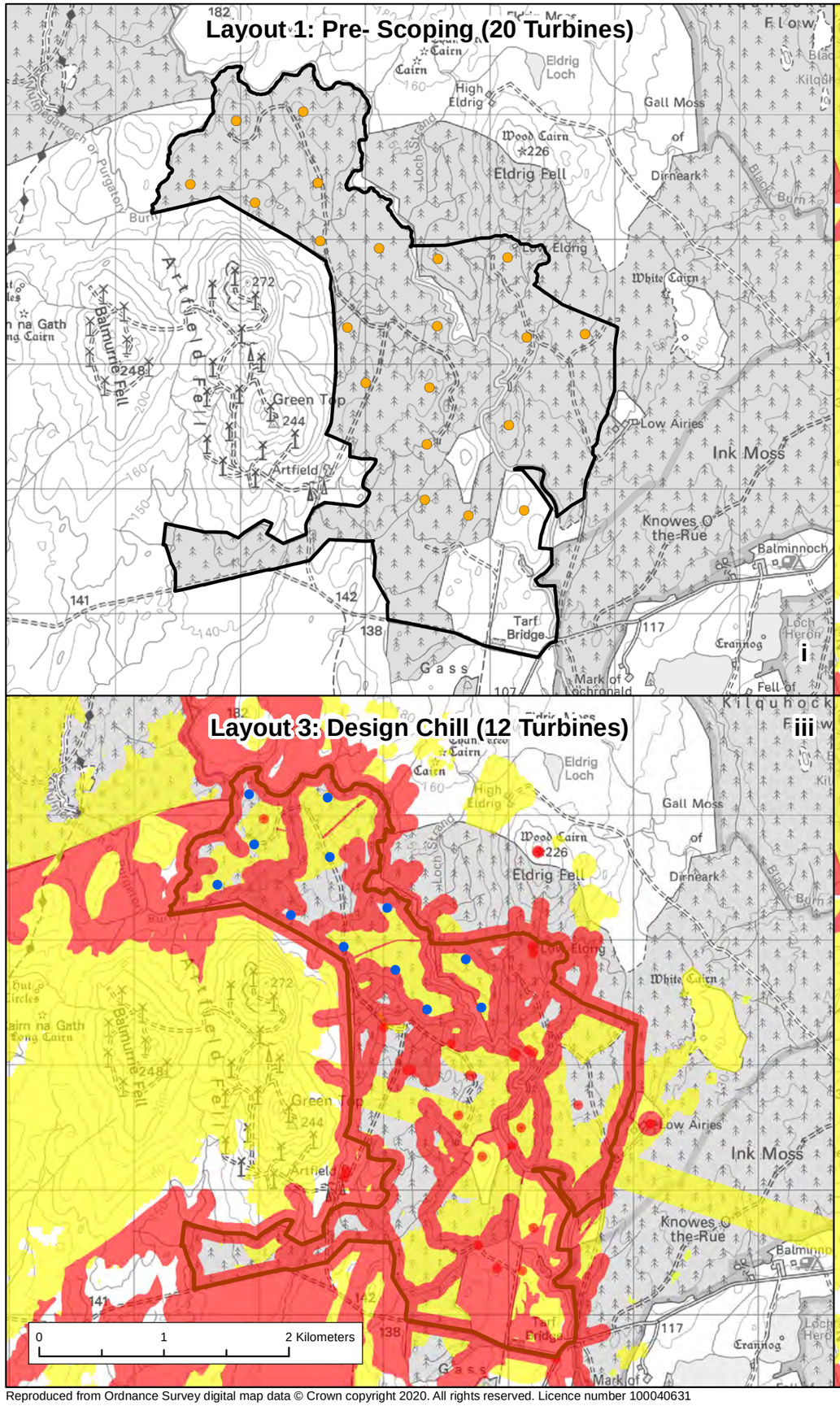

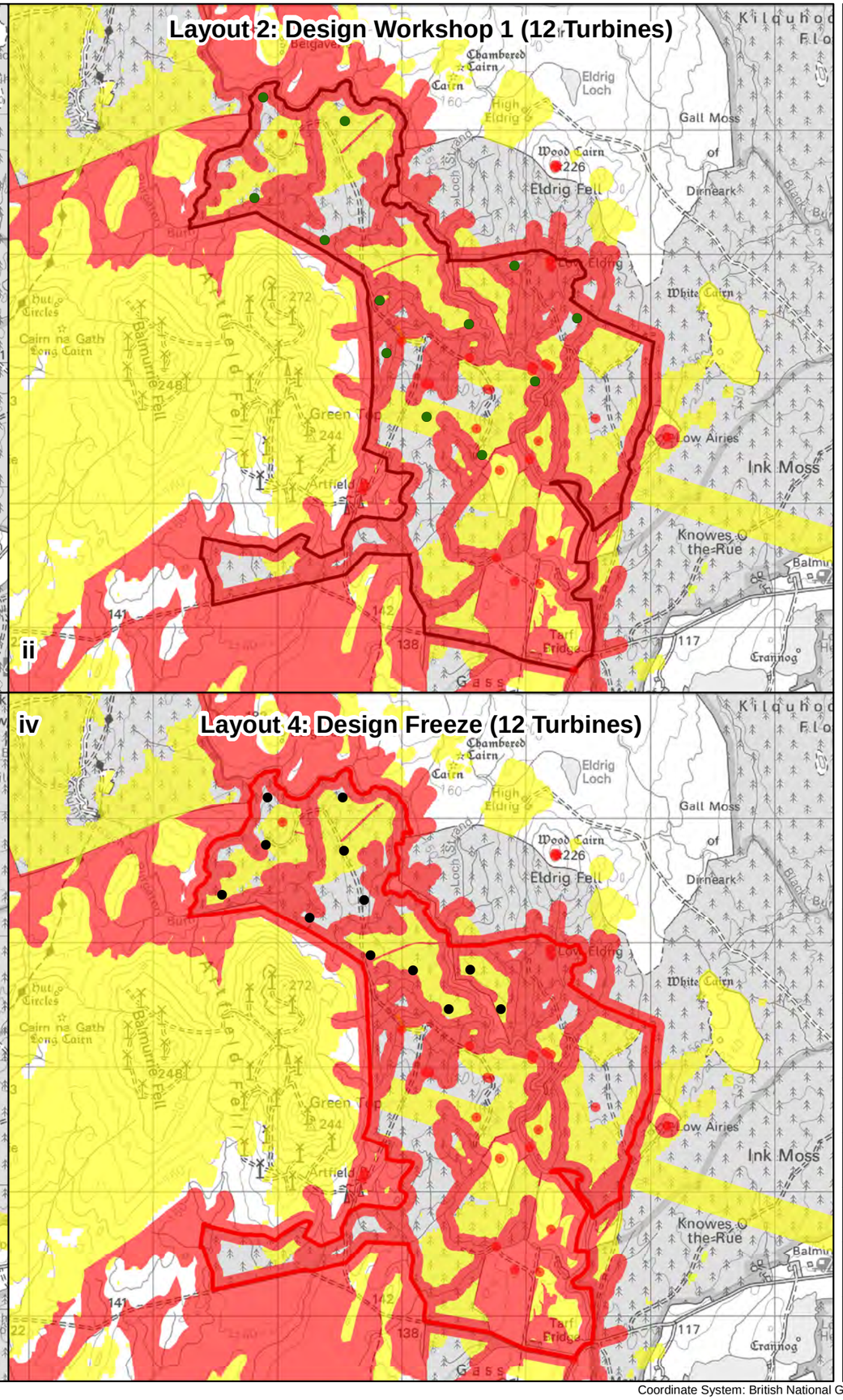

Legend

- Site Boundary (Pre-Scoping)
- Site Boundary
- Proposed Turbine (Pre-Scoping)
- Proposed Turbine (Design Workshop 1)
- Proposed Turbines (Design Chill)
- Proposed Turbines (Design Freeze)

Heat Map

- Red
- Amber

Note: Please note that the constraints and heat map presented in this figure has been created for wind turbine design only and does not apply to track or other infrastructure design

Figure Title

Figure 4: Turbine Layout Evolution with Heat Map

Project Name

Artfield Forest Wind Farm Design and Access Statement

Project Number	Figure No.
1620008937	4
Date	**Prepared By**
November 2020	AC
Scale	**Issue**
1:40,000 @A3	1

Client

Artfield Forest Wind Farm Ltd

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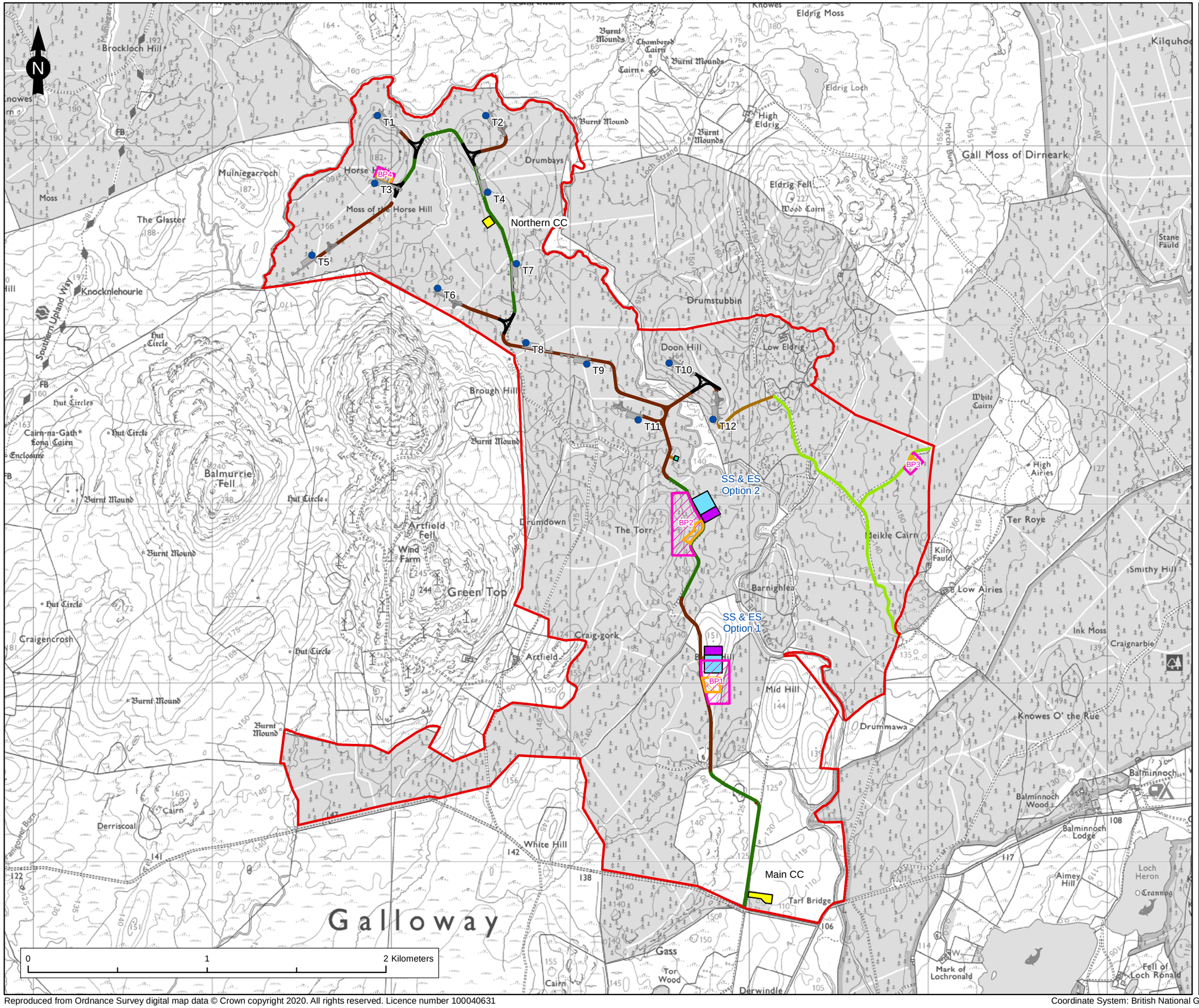

Legend

- Site Boundary
- Proposed Turbine
- Proposed Turbine Hardstanding
- Existing Forestry Track No Upgrade
- Existing Forestry Track Upgrade
- New Track (Infrastructure only 4m)
- New Track (6m)
- Proposed Turning Head (Loaded)
- Proposed Turning Head (Unloaded)
- Proposed Temporary Construction Compound (CC)
- Proposed Substation Option (SS)
- Proposed Energy Storage Option (ES)
- Proposed Met Mast and associated hardstanding
- Proposed Borrow Pit Search Area (BP)
- Potential Borrow Pit Excavation Area

Figure Title

Figure 5: Site Layout

Project Name

Artfield Forest Wind Farm
Design and Access Statement

Project Number	Figure No.
1620008937	5
Date	**Prepared By**
November 2020	AC
Scale	**Issue**
1:20,000 @A3	2

Client

Artfield Forest Wind Farm Ltd

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