

## **TA 2.6: Forestry Impact Assessment**



## Technical Appendix 2.6 Forestry Impact Assessment

### 1.1 Introduction

- 1.1.1 This Forestry Impact Assessment (FIA) Technical Appendix evaluates the potential effects of the Proposed Development on the forest and woodland areas within the Site.
- 1.1.2 This Technical Appendix has been prepared by Neil McKay MICFor, Director of Neil McKay Forestry Consultant Limited, a professional member of the Institute of Chartered Foresters (ICF) since 1994 with more than 35 years' forestry practice in the public and private sectors throughout Scotland (further details of professional competency are provided in Technical Appendix 1.2). Neil McKay has ten years' experience producing forestry inputs for EIARs for renewable energy and energy transmission infrastructure developments across Scotland.
- 1.1.3 Forestry is not regarded as a receptor for Environmental Impact Assessment (EIA) purposes. Commercial forests are dynamic and their structure continually undergoes change due to normal felling and restocking by the landowner; natural events, such as windblow, pests or diseases; and external factors, such as a wind farm development.
- 1.1.4 This Technical Appendix describes the plans resultant from the Proposed Development through the felling, replanting and maintenance of successor tree crops. The changes to the forest structure are also described as well as any forestry waste generated. The forestry proposals are interlinked with environmental effects which are outside the scope of this Technical Appendix but which should be read in conjunction with the following EIAR chapters in relation to forestry:
- Chapter 3: Design Evolution and Alternatives;
  - Chapter 5: Landscape and Visual Amenity;
  - Chapter 6: Cultural Heritage;
  - Chapter 7: Ecology;
  - Chapter 8: Ornithology; and
  - Chapter 9: Hydrology, Hydrogeology and Geology.
- 1.1.5 This Technical Appendix identifies areas of forest to be permanently or temporarily removed for the construction and operation of the Proposed Development and outlines the proposed management practices, while identifying the replanting proposals and subsequent aftercare. While the Proposed Development has direct implications to two privately owned conifer plantations, the Site covers an extensive area, and several other woodland areas are present. These are included in the woodland descriptions. The forestry proposals have been developed to:
- identify areas permanently lost to forest cover;
  - identify those areas which may be felled as a result of the Proposed Development and replanted on-site; and
  - demonstrate how the Proposed Development fits within the future forest structure.

1.1.6 This Technical Appendix is structured as follows:

- Legislation, Policy and Guidance;
- Assumptions and Limitations;
- Forestry Study Area;
- Forest Plans;
- Development of a Wind Farm Forest Plan;
- Baseline Conditions;
- Craig Watch Wind Farm Forest Plan;
- Requirement for Compensatory Planting;
- Forestry Waste;
- Forestry Management Practices; and
- Summary.

### 1.2 Legislation, Policy and Guidance

- 1.2.1 This Technical Appendix has been informed by consultation responses summarised in Table 2.6.1 and the following guidelines/ policies:
- Forestry Commission Scotland (2019): Scottish Government's policy on control of woodland removal: implementation guidance<sup>1</sup>;
  - Forestry Commission Scotland (2009): The Scottish Government's Policy on Control of Woodland Removal, Edinburgh<sup>2</sup>;
  - Forestry Commission (2017). The UK Forestry Standard: The Government's Approach to Sustainable Forestry, 4<sup>th</sup> Edition, Forestry Commission, Edinburgh<sup>3</sup>;
  - Forestry Commission (2017): The UK Forestry Standard Guidelines<sup>3</sup>;
  - The Scottish Government (2019) Scotland's Forestry Strategy 2019-2029<sup>4</sup>;
  - The Scottish Government (2020) Scotland's Forestry Strategy Implementation Plan 2020-2022<sup>5</sup>;
  - Forestry and Land Management (Scotland) Act 2018<sup>6</sup>;
  - The Scottish Government (2011). Scottish Land Use Strategy<sup>7</sup>;
  - The Scottish Government (2014a). Scotland's Third National Planning Framework (NPF3);
  - The Scottish Government: draft National Planning Framework 4 (NPF4);
  - The Scottish Government (2014b). Scottish Planning Policy;
  - Forestry Commission (2019) Managing forest operations to protect the water environment. Forestry Research Practice Guide. Forestry Commission;

<sup>1</sup> Forestry Commission Scotland, 2019. Scottish Government's policy on control of woodland removal: implementation guidance. Online. Available at: <https://forestry.gov.scot/images/corporate/pdf/Implementation-Guidance-Control-of-woodland-removal.pdf> [accessed 18/02/2022]

<sup>2</sup> Forestry Commission Scotland, 2009. The Scottish Government's Policy on Control of Woodland Removal, Edinburgh.

<sup>3</sup> Forestry Commission, 2017. The UK Forestry Standard: The governments approach to sustainable forestry. Online. Available at: <https://www.gov.uk/government/publications/the-uk-forestry-standard> [accessed 18/02/2022]

<sup>4</sup> The Scottish Government (Scottish Forestry) 2019. Scotland's Forestry Strategy 2019-2029. Online. Available at: <https://www.gov.scot/publications/scotlands-forestry-strategy-20192029/> [accessed 18/02/2022]

<sup>5</sup> The Scottish Government (Scottish Forestry), 2020. Scotland's Forestry Strategy Implementation Plan 2020-2022. Online. Available at: <https://forestry.gov.scot/publications/793-scotland-s-forestry-strategy-implementation-plan-2020-2022> [accessed 18/02/2022]

<sup>6</sup> Forestry and Land Management (Scotland) Act 2018. Available at <https://www.legislation.gov.uk/asp/2018/8/contents/enacted>

<sup>7</sup> The Scottish Government, 2021. Scottish Land Use Strategy: Land use - getting the best from our land: strategy 2021 to 2026. Online. Available at: <https://www.gov.scot/publications/scotlands-third-land-use-strategy-2021-2026-getting-best-land/> [accessed 18/02/2022]<sup>8</sup> The Ancient Woodland Inventory was derived from the Roy maps (c1750) and the OS 1<sup>st</sup> edition (c1860). Long-established woodlands of plantation origin (LEPO) 1860 and continuously wooded since 1860.

- SEPA (2013): SEPA Guidance Notes WST-G-027 "Management of Forestry Waste";
- SEPA (2014): LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land";
- UKWAS (2017) The UK Woodland Assurance Standard, Fourth Edition, UKWAS;
- Moray Council (2018) Moray Woodland and Forestry Strategy supplementary guidance January 2018; and
- Aberdeenshire Council (2017) Local Development Plan Supplementary Guidance Aberdeenshire Forestry and Woodland Strategy.

**Consultation**

1.2.2 Table 2.6.1 summarises the consultation responses received in relation to forestry and provides information on where and/ or how they have been addressed in this assessment.

1.2.3 Full details on the consultation responses can be reviewed in Technical Appendix 1.1: Consultation Register.

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
Scottish Forestry 21 December 2020	Scoping response	<p>Scottish Forestry (SF) is the main forestry consultee and should be consulted throughout the development of the proposal to ensure that proposed changes to the woodland are appropriate and address the requirements of the Scottish Government's Control of Woodland Removal Policy (COWRP) and the UK Forestry Standard (UKFS).</p> <p>If approved, both felling operations and on- and off-site compensatory planting must be carried out in accordance with good forestry practice. A key component of this is to ensure that even-age woodlands are progressively restructured in a sustainable manner: felling coupes should be phased to meet adjacency requirements and their size should be of a scale which is appropriate in the context of the surrounding woodland environment.</p> <p>The removal of large areas of woodland will not be supported.</p>	<p>This has been noted and standards have been followed within this Technical Appendix.</p>
		<p>The red line boundary of this development proposal includes two large primarily commercial forests as well as several smaller blocks.</p> <p>The land shown falls under several landownerships – this fact should be considered throughout the assessment process.</p> <p>To manage this a suitable legal agreement, laying out clear responsibilities and liabilities for the life of the development, will need to be established; this would be of particular concern for any compensatory planting on land not directly associated with the footprint of the wind farm infrastructure.</p> <p>There are also some felled areas with restocking obligations within the red line boundary, along with an area of woodland creation and a natural regeneration site on the northern boundary under the Forestry Grant Scheme (FGS).</p> <p>As identified in section 3.11.5, there is one area showing on the Ancient Woodland Inventory as being of Long Established Plantation Origin 2b, however the NWSS includes the pine area mentioned as well as an area of wet woodland and two of upland birch all within the red line boundary.</p>	

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
		<p>The existing forest, site survey, forest plan (restructured at year 10), felling permissions, FGS contracts and Land Information Search data should all be used to assess the baseline for this proposal.</p>	<p>any grant paid to the landowner will be reclaimed by SF. Design has sought to minimise woodland removal, where possible.</p>
		<p>There is a strong presumption in favour of protecting Scotland's woodland resources. Therefore the Applicant should demonstrate that woodland removal has been minimised and is the only viable option, by presenting the alternative options considered in the design stage of the proposal.</p>	<p>The Proposed Development design has sought to reduce woodland removal wherever possible. Figure 2.6.4 Wind Farm Felling Plan demonstrates the felling for the Proposed Development while Figure 2.6.6 represents the replanting within the Wind Farm Compensatory Planting as described in the Control of Woodland Removal Policy is being sought with the landowners within the Site, the search areas are shown in Figure 2.6.7 Compensatory Planting Search Area.</p>
		<p>As woodland removal is likely, potentially of a significant scale (affecting the entire Craig Watch block), and the duration of impact likely to be felt for decades, SF would request that there is a stand-alone forestry chapter included in the EIAR. Woodland removal should be allowed only where it would achieve significant and clearly defined additional public benefits. In appropriate cases a proposal for CP may form part of this balance.</p>	<p>Consultation meeting with Scottish Forestry (30/06/21) confirmed that the forestry assessment can be issued as a technical appendix and not a full EIAR chapter and that all information is contained within one technical appendix. Additionally the CP plan to be conditioned.</p>
		<p>In the forestry chapter, all EIAR sections where woodland benefits are discussed, should be clearly referred to and summarised, as well as referenced for ease of cross checking. The scoping report has omitted the public benefit of carbon sequestration specifically from the woodland, economic returns, provision of local farm shelter and job provision – these should be included in the discussions. An estimate of all public benefits relating to forestry and forestry interests affected by the development should be summarised in a table in the forestry chapter, so that the full suite of forestry derived public benefits, and therefore the full impact of this proposal on forestry, is clearly presented for consultees and assessment by the ECU.</p> <p>When assessing the potential public benefits of existing woodland, its future potentials, as well as its current attributes, must be considered.</p> <p>Approval for woodland removal should be conditional on the undertaking of actions to ensure full delivery of the defined additional public benefits.</p> <p>The applicant must clearly demonstrate how the proposed development and the compensation measures (including off-site CP) will deliver significant additional public benefits.</p>	<p>All forestry areas within the site boundary have been included in the report (including any woodland promotions currently in motion), the Forestry Plan and impact of access tracks have been included in the TA.</p> <p>Public benefits have been referred to in Section 1.8.</p>
		<p>Actions that the applicant intends to take (including entering into agreement with third parties) to implement the proposal must be clearly stated in the</p>	<p>The Applicant has an agreement in place with all of the landowners for on-site</p>

**Table 2.6.1: Consultation Responses**

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
		EIAR, including the feasibility of undertaking these actions and the timescale.	planting. All compensatory planting is proposed within the red line boundary and therefore no details of third parties have been provided. Should this not be possible, appropriate Compensatory Planting will be provided at an appropriate location in Scotland.
		Mitigation measures and proposed CP must be fully explained in the EIAR and agreed with Scottish Forestry. They should not be left to post-consent agreements, but conditioned within the planning approval.	This Technical Appendix presents the proposed CP Plan and that the detailed CP scheme would be covered as a condition of consent.
		SF welcomes the creation of a wind farm forest plan, however the concerns over multiple land ownership and responsibility for the delivery of the plan including mitigation should be clearly described and a legal agreement between the landowners committed to, for the life of the development.	This has been noted and will be prepared, however this sits outside of the EIAR. A single wind farm Forestry Plan will be prepared covering different ownerships and will be approved by SF in advance of construction.
		The Forest Plan should be provided as a technical appendix and follow the SF guidance on the production of Long Term Forest Plan (Long Term Forest Plans: Applicant's Guidance - Scottish Forestry).	Preliminary details on the Forest Plan have been provided within this Technical Appendix including a with and without wind farm felling and replanting plan. The detailed Forestry Plan will be covered as a condition of consent. The guidance on Long Term Forest Plans has been followed.
		Trees felled must be replanted on-site or compensated for (off-site planting). The replanting operations must be appropriately described. On-site replanting must always be considered first.	As noted above, the Applicant has agreements in place with landowners to allow for on-site planting arrangements within the Site boundary.
		The details of the proposed on-site and off-site mitigation measures must be clearly demonstrated and summarised in the Forestry chapter. This includes the location, size and timing of all of the proposed mitigation including the off-site CP. With regards to off-site CP, as the applicant does not own the land, appropriate landowner agreements and access rights should be put in place and clearly stated in the Forestry chapter and mitigation schedules. The CP proposals should be assessed under the forestry EIA process and the necessary consents should be in place.	Details of proposed CP areas have been provided within this TA. Currently all CP is proposed within the Site boundary. The CP proposals would fall within the S36 application and therefore a separate screening under the Forestry EIA process is not required.
		The CP Plan must be approved by SF and should be provided in the form of a technical appendix with the results summarised in the forestry chapter.	A forestry chapter would not form part of this EIAR, as outlined above. The preliminary CP Plan has been provided within this TA and would form a condition of consent.
		An independent, qualified and technically competent	This has been noted and would

**Table 2.6.1: Consultation Responses**

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/ Action Taken
		professional(s) (e.g. chartered forester) with the required experience should inspect the restocking and CP scheme at regular intervals (year 1, 5 and 10) to ensure that the trees are planted correctly, maintained to the required standard and ultimately established into woodland. This monitoring programme should be conditioned in the consent.	be included within the final CP Plan, to be conditioned in consent.
RSPB Scotland 21 January 2021	Scoping response	The opening up of the previously closed canopy woodland could make the area more attractive for open ground species such as hen harrier and merlin. NatureScot has produced guidance to inform such proposals.	Tree planting and forestry clearance is considered in the OHMP, provided as Technical Appendix 7.5, where measures are included to deter species such as hen harrier and merlin and are in accordance with NatureScot guidance.
Aberdeenshire Council 22 January 2021	Scoping response	SF will consider the proposals in greater detail. Infrastructure Services (Environment – Natural Heritage) raised no concerns in relation to the content or approach within their consultation. It is reminded that any compensatory planting plans should be included within the EIAR for consideration.	Outline compensatory planting (CP) proposals have been provided within the Outline CP Plan outlined in Section 1.9 and Figure 2.6.1.7.
Moray Council 19 February 2021	Scoping response	In support of the Scottish Government's Control of Woodland Removal Policy (CoWRP), Policy EP7 has a strong presumption against woodland removal and, where identified, will not support removal of ancient woodland. Garbet Wood, within the Site boundary, is identified on the Ancient Woodland Inventory (AWI), although it would appear that this woodland will be unaffected by development. Any remaining woodland removal proposed (0.1 ha or more), including Garbet Wood if not classed as ancient woodland, will be assessed against the remaining part of Policy EP7(c) which states that permanent woodland removal will only be permitted where it would achieve significant and clearly defined additional public benefits (excluding housing) and where removal will not result in unacceptable adverse effects on the amenity, landscape, biodiversity, economic or recreational value of the woodland or prejudice the management of the woodland. The provision of compensatory planting is not considered to be a sufficient justification for woodland removal. Where it has been demonstrated that it is technically unfeasible to retain trees, compensatory planting on a one-for-one basis must be provided in accordance with Policy EP7(e).	This has been noted, however Garbet Wood is not affected by the proposals. Policy EP7 has been considered within the Forestry Impact Assessment.
NatureScot 18 May 2021	Scoping response	Potentially 'converting' grazing ground to woodland reduces the extent of foraging in the wider countryside surrounding the SPA which could have an impact on the population. The relevant conservation objective would be the maintenance of the 'population of the species as a viable component of the site'. Reduced foraging ground could lead SPA birds having to travel further in search of food, impacting breeding success and survival as a consequence. Depending upon the extent of new planting, NatureScot advise a precautionary approach at this point and assume a likely significant effect that needs further assessment	This has been considered within the Outline CP Plan and Outline Habitat Management Plan.

<b>Consultee and Date</b>	<b>Scoping/ Other Consultation</b>	<b>Issue Raised</b>	<b>Response/ Action Taken</b>
		(Appropriate Assessment) to determine whether or not a loss of foraging would adversely affect the integrity of the SPA. NatureScot note that there may also be options within the compensatory planting scheme to create open wet areas that could support foraging gulls. NatureScot have requested the following: "Gull pairs at the SPA have been decreasing and reasons for this remain uncertain. Would it be possible to look at land use changes over recent years? Has there been a lot of woodland creation that may have resulted in loss of foraging? The cumulative situation is probably more important to focus on here than an individual area of woodland creation."	
SEPA 5 July 2021	Scoping response	Forest felling and management proposals should follow SEPA guidance.	SEPA guidance will be followed, particularly in relation to forestry waste. However, no Forestry waste is anticipated.

### 1.3 Assumptions and Limitations

1.3.1 Forests and woodlands are dynamic and are susceptible to natural influences such as catastrophic wind throw, infestation by pests and diseases as well as changes in management or owners' objectives. This Technical Appendix has been based on the baseline conditions outlined in desk sources as well as from site visits depicting the conditions on-site. Consideration will be given to the dynamic nature of forests and woodland, however this has not affected the assessment contained within this Technical Appendix.

### 1.4 Forestry Study Area

1.4.1 All woodland within the Site is shown in Figure 2.6.1. On-site woodland comprises two large coniferous plantations (Howeshalloch Forest and Brown Hill Forest), the Ben Main woodlands and several smaller woodland blocks and small approved woodland creation projects. The total area of established woodland on-site is 336.94 ha. As well as the commercial plantations, the Site includes an area of woodland classified in the Ancient Woodland Inventory (AWI)<sup>8</sup> as long established woodlands of plantation origin (LEPO) 1860 and Native Woodland Survey of Scotland (NWSS)<sup>9</sup> lists native pinewood, upland birchwood and a small area of wet woodland. Further information on the composition of the woodlands in the study area are provided in the baseline description below.

### 1.5 Forest Plans

#### Introduction to Forest Plans

1.5.1 One of the original key objectives of the Forestry Commission was forest expansion in both state and private forests, to produce a strategic reserve of timber, and consequently a limited range of species was planted. More recently, greater emphasis has been placed on developing multi-purpose forests, which require a restructuring of age and species in existing woodlands. Restructuring is achieved through the forest planning process. Scottish Forestry (SF) is the Scottish Government agency responsible for forestry policy, support and regulations.

- 1.5.2 A Forest Plan, termed either a Land Management Plan (LMP) or Forest Design Plan (FDP) is a 20 year strategic management plan to UK Forestry Standards (UKFS) and relates to individual forests or groups of woodlands. The term Forest Plan will be used throughout this Technical Appendix. It describes the woodlands, places them in context with the surrounding area and identifies issues that are relevant to the woodland or forest. Forest Plans describe how the long-term strategy would meet the management objectives of the owner, the criteria of the UKFS and the UK Woodland Assurance Standard 4<sup>th</sup> Edition (UKWAS), under which the woodlands would be managed if certificated.
- 1.5.3 A Forest Plan involves a scoping exercise whereby the views of Statutory Consultees, neighbours and stakeholders are sought, reported within a scoping report and resulting in an agreed scoping opinion. The results of the scoping exercise are incorporated into the long term forest plan (LTFP). The LTFP covers all aspects, such as conservation, archaeology, landscape and the local community, in addition to forestry and silvicultural considerations. Restructuring of age, class and species are important factors within the LTFP to ensure proposals meet the current standards. The plan provides a ten year approval, for felling, thinning and associated restocking.
- 1.5.4 Where a wind farm development has implications to an approved LTFP, the felling and replanting plans will require amending to cover the Proposed Development. The revised plan must still meet the UKFS guidelines.
- 1.5.5 Howeshalloch FDP (reference 16FGS08174) was approved on 6 August 2016 with a contract end date of 6 August 2026. The plan has approval for two phases of felling: 2017 to 2021 and 2022 to 2026.
- 1.5.6 Brown Hill Forest does not have an approved LTFP, however the forest has a SF approved Felling Permission (reference FPA-8366) issued 8 November 2021 with an expiry date of 8 November 2022. The Felling Permission condition states restocking is due by 30 June 2025.
- 1.5.7 Other Management Plans are in place for the various forest areas and are listed in Table 2.6.2 Woodlands within the Site Boundary and Management Plans.

### 1.6 Development of a Wind Farm Forest Plan

#### Introduction

- 1.6.1 Existing crop information for forestry plantations within the Site was provided by landowners or their agents. Landowner information varies but generally comprised existing species, planting year, felling and restocking plans.
- 1.6.2 Site inspections were undertaken in March 2021 to verify landowner data and update information where out of date. Information from aerial photographs was incorporated including more accurate mapping of species, open ground, and management boundaries.
- 1.6.3 This assessment is based upon details of turbine locations, new tracks, storage compounds, borrow pit search area, substations and other infrastructure as outlined in Chapter 2: Development Description. The location of turbines and infrastructure was heavily influenced by Site constraints and technical considerations, e.g., wind capture, ground conditions, etc. The final location of turbines and infrastructure has taken the various Site constraints into consideration. Environmental constraints, such as peat depth, habitat management requirements and ecological and hydrological buffers, together with any land management requirements, associated with the construction of the Proposed Development would also be incorporated into the forestry proposals, where appropriate. This data was amalgamated with the forestry data to construct the forestry proposals for the Proposed Development.

<sup>8</sup> The Ancient Woodland Inventory was derived from the Roy maps (c1750) and the OS 1<sup>st</sup> edition (c1860). Long-established woodlands of plantation origin (LEPO) 1860 and continuously wooded since 1860.

<sup>9</sup> Accessed from <https://forestry.gov.scot/forests-environment/biodiversity/native-woodlands/native-woodland-survey-of-scotland-nwss>

- 1.6.4 The Proposed Development felling programme would largely be driven by technical constraints. Within on-site forest habitats, areas of crop would be required to be felled to accommodate the construction and operation of the Proposed Development. Typically, a minimum felled area of 2.80 ha is required to accommodate each wind turbine hardstanding which is then developed to accommodate the stand-off between trees and turbines as mitigation following the NatureScot guidance, 'Bats and Onshore Wind Turbines, Survey, Assessment and Mitigation, August 2021'<sup>10</sup>. Any infrastructure also requires a safety buffer which has also been taken into consideration. Proposed Development access tracks would follow the forest access where possible although some widening shall be required, new access roads would be developed as appropriate through the forest crop (further detail has been provided within Chapter 2: Description of Development). Any felling associated with this infrastructure has also been taken into account.
- 1.6.5 The approach that would be adopted to on-site forestry felling is the "keyhole" approach. This is a minimal felling approach which would only be achievable by clear felling certain areas and replanting to a keyhole design.
- 1.6.6 No additional felling would be required for wind yield or turbine performance purposes. No felling of other woodland areas outside the main development areas within Howeshalloch and Brown Hill Forests would be required.

## 1.7 Baseline Conditions

### Desk Study

- 1.7.1 Scottish Forestry Map Viewer<sup>11</sup> reveals the forest management plans and felling permissions in place throughout the Site (as summarised in Table 2.6.2) which provide further detail on the composition of woodlands within the Site.
- 1.7.2 The Map Viewer also illustrates the NWSS noting that the Ben Main plantation contains a 1.43 ha of upland birchwood, 1.11 ha of wet woodland and 13.79 ha of native pinewood. Furthermore, Garbet Wood contains 10.60 ha of wet woodland.
- 1.7.3 There are no NWSS locations within the development area of Howeshalloch and Brown Hill Forests.

### Field Survey

- 1.7.4 The Site contains two main upland coniferous plantations where the Proposed Development would take place (Howeshalloch and Brown Hill Forests) planted in 1985 and 1986 respectively and while a number of coniferous species have been planted, the main crop is Sitka spruce (*Picea sitchensis*).
- 1.7.5 Field survey was carried out in March 2021 throughout the Site with a walk through of Howeshalloch and Brown Hill Forests. Both forests have varying tree growth with better form and yield observed within the more sheltered areas and poor growth and form on some of the upper margins. The pure Sitka spruce crops have grown well as have some of the Sitka spruce/ Lodgepole Pine (*Pinus contorta*) mixtures. Some mixtures with Scots pine and larches have suffered snow or insect damage and result in low stocking of live Sitka spruce.
- 1.7.6 Tree crop stability is firm for the most part, with the upper deeper peat having predictably poorer future stability. The plantations have some individual windblown or snow felled trees but no windthrown areas of any significance at the time of survey.

- 1.7.7 The forest roads are not developed for timber harvesting and show little or no public access taken.

### Baseline

- 1.7.8 The commercial plantations present on-site are at a stage where the felling and replanting will normally take place following typical forest practices and the individual landowners' objectives. This may also be influenced by any natural factors such as forest pests and diseases or wind throw.
- 1.7.9 Restructuring the age, class and species of such forests is desirable and would yield both forest management and environmental benefits in keeping with the UKFS.
- 1.7.10 There are several other woodlands on-site which would not be directly impacted by the Proposed Development, however they have been included for completeness. The woodlands and any agreed management plans within the Site are listed below in Table 2.6.2. A corresponding baseline age class plan is shown in Figure 2.6.2.

Woodland Name/ Location	Grid Reference	Composition	Management Plan	Wind Farm Development Area
Howeshalloch Forest	NJ398361	First rotation conifer plantation	Forest Design Plan 2017 – 2026. Ref no: 16FGS08174	Yes
Brown Hill Forest	NJ387348	First rotation conifer plantation	Felling Permission 2022 – 2023. Ref no: FPA-8366	Yes
Ben Main	NJ351347	Mixed conifer plantation with native woodland areas	Felling Permission 2021-2022. Ref no: FPA-7669	No
NE of Bridgend	NJ371317	Diverse conifer (with native broadleaf area)	Woodland creation Ref no: 20FGS54504	No
SE of Tombain	NJ382314	Native mixed broadleaves with Scots pine	Small or Farm Woodlands Ref no: 20FGS54504	No
Garbet Wood	NJ363336	Restocked conifer plantation and NWSS Upland birchwood.	Management Plan. Ref no: MPL310022	No
Unnamed	NJ379318	Conifer plantation	Management Plan. Ref no: MPL310022	No

- 1.7.11 As only Howeshalloch and Brown Hill Forests are impacted by the Proposed Development, the crop details and existing plans for these two forests only are presented below.

### Howeshalloch Forest

#### *Howeshalloch Forest Baseline Planting Year, Species and Area*

- 1.7.12 Howeshalloch Forest was planted in its entirety in 1985. The species is predominantly Sitka spruce in mixture with other species. The wooded area extends to 118.67 ha with a further 31.72 ha unplanted. Howeshalloch Forest species by area is presented in Table 2.6.3.

Planting Year	Species	Area (ha)
1985	European larch	0.6
1985	Japanese larch	3.43
1985	Norway spruce/ Scots pine	4.28

<sup>10</sup> Bats and Onshore Wind Turbines, Survey, Assessment and Mitigation, August 2021. Available at <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation>

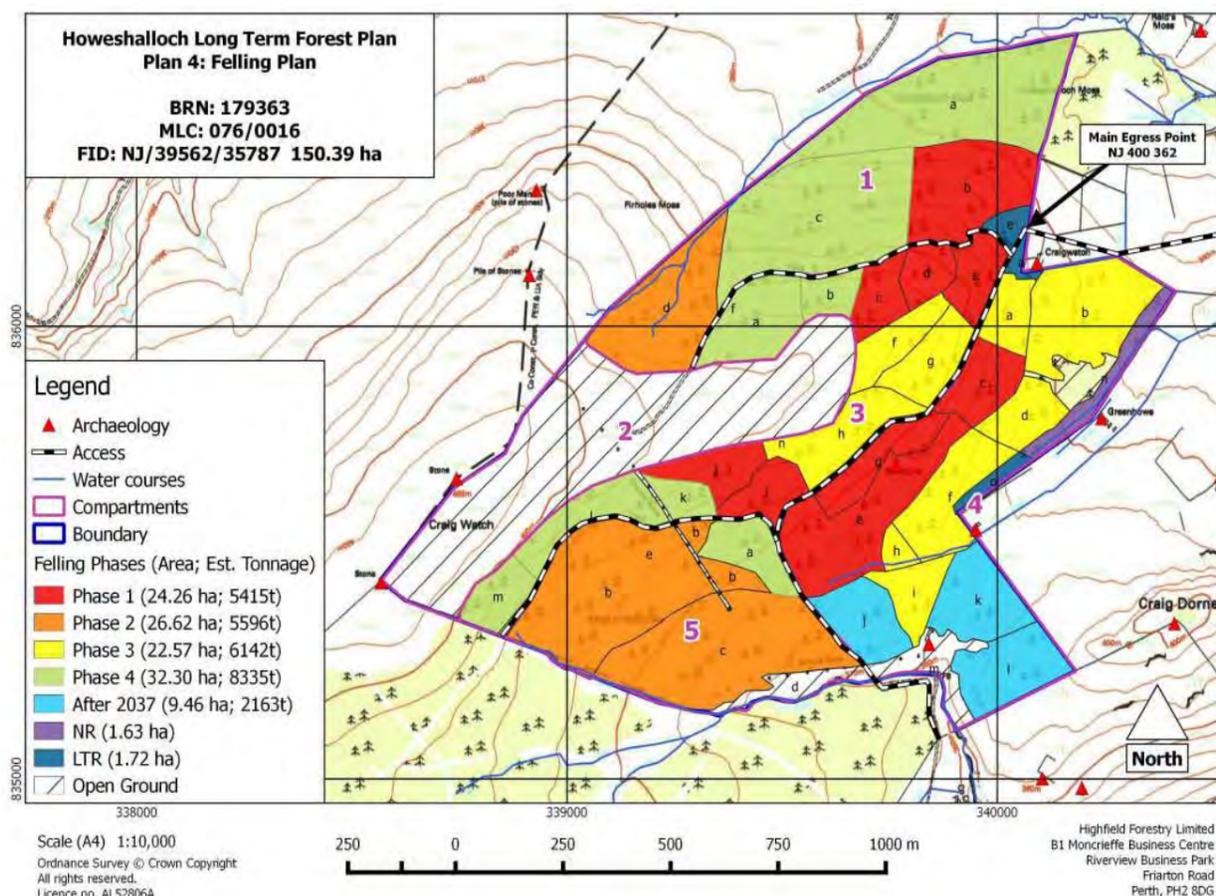
<sup>11</sup> Scottish Forestry Map Viewer. Available at <https://scottishforestry.maps.arcgis.com/apps/webappviewer>

**Table 2.6.3: Howeshalloch Forest Planting Year by Species and Area**

Planting Year	Species	Area (ha)
1985	Sitka spruce	9.49
1985	Sitka spruce/ hybrid larch	5.33
1985	Sitka spruce/ Japanese larch	17.08
1985	Sitka spruce/ lodgepole pine	54.76
1985	Sitka spruce/ lodgepole pine/ Scots pine	9.43
1985	Sitka spruce/ Scots pine	14.27
	Open Ground	31.72
<b>Total (ha)</b>		<b>150.39</b>

*Howeshalloch Forest Baseline Felling Plan*

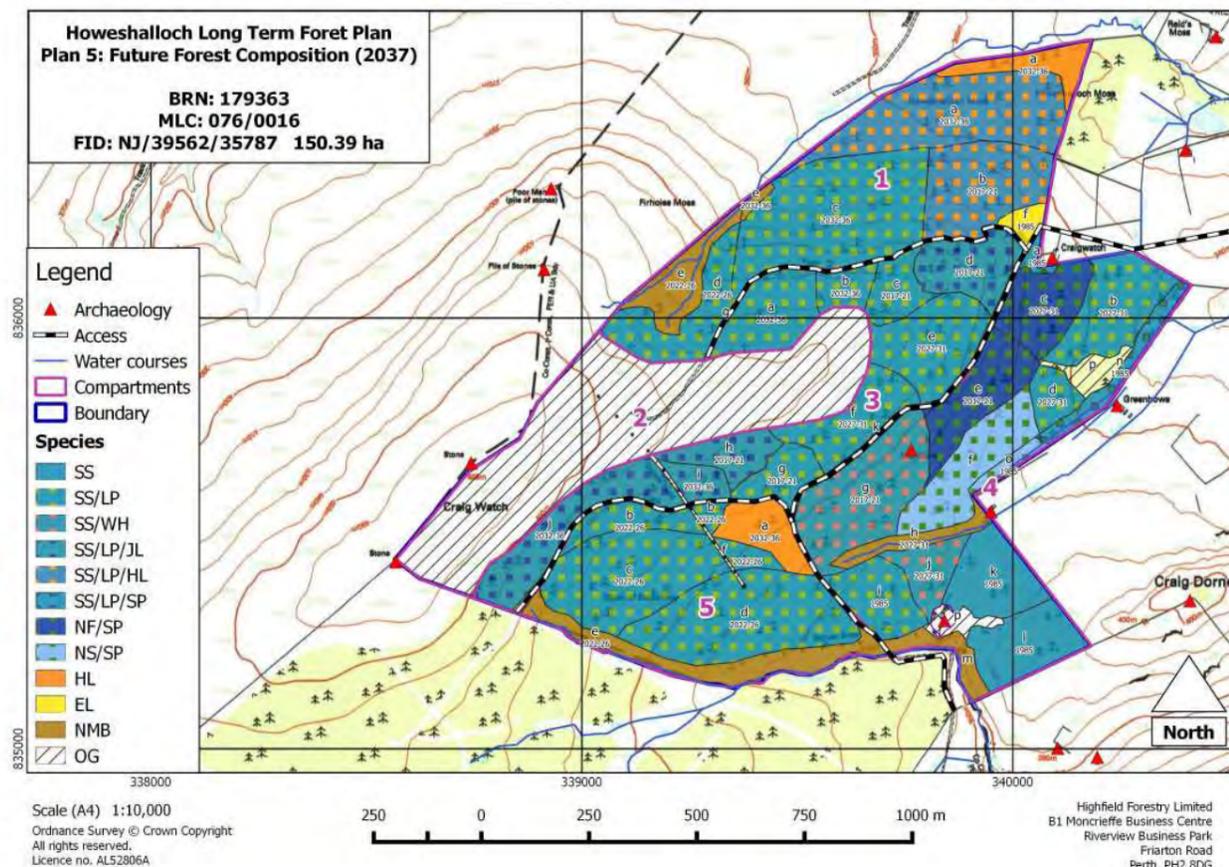
1.7.13 Howeshalloch Forest has an approved FDP (reference number 16FGS08174) which permits the felling of phases 1 and 2 displayed in Illustration 2.6.1. To date no felling has taken place.



**Illustration 2.6.1: Howeshalloch Forest Approved Felling Phase (Source Howeshalloch Forest FDP 2017-2026)**

*Howeshalloch Baseline Restocking Plan*

1.7.14 Howeshalloch Forest FDP includes a restocking plan presented as the Future Forest Composition (FFC) and shown in the FDP Plan 5 (Illustration 2.6.2). This includes native mixed broadleaf (NMB) species associated with watercourse buffers.



**Illustration 2.6.2: Howeshalloch Restocking Plan (Source Howeshalloch Forest FDP 2017-2026)**

**Brown Hill Forest**

*Brown Hill Forest Baseline Planting Year, Species and Area*

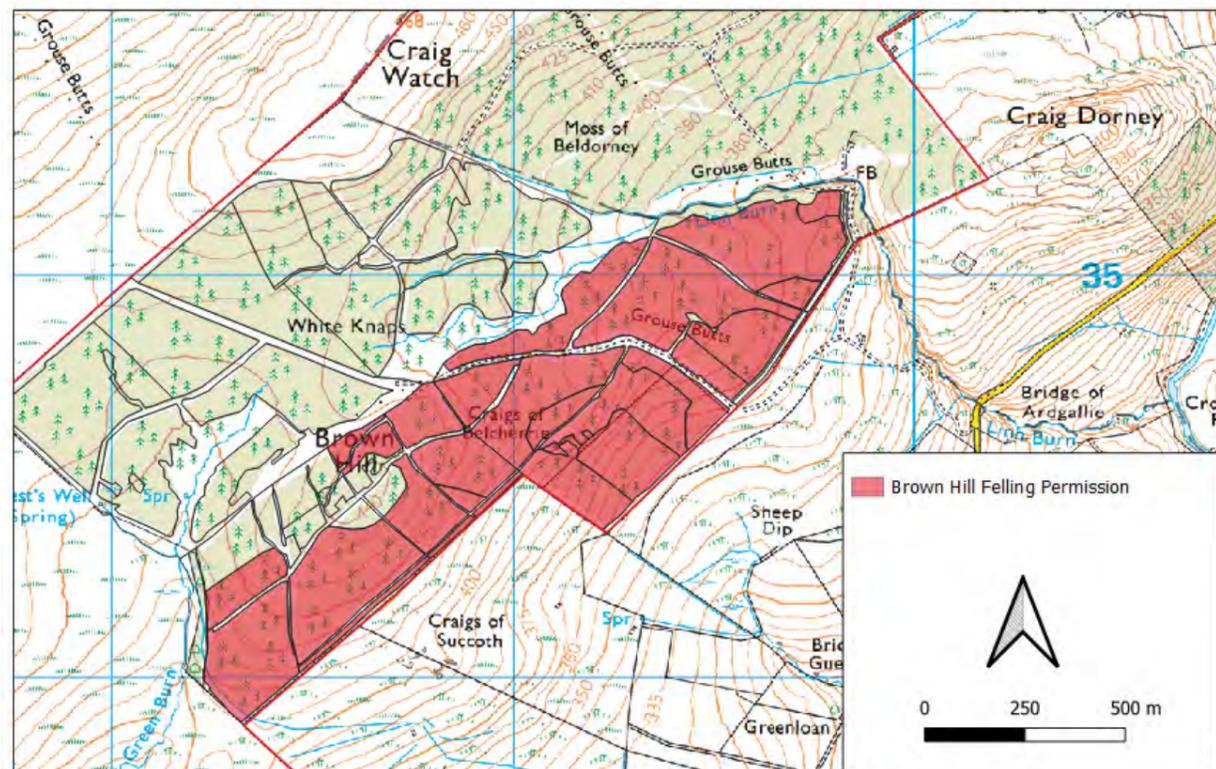
1.7.15 Brown Hill Forest was planted over two years, 1985 and 1986. The main species is Sitka spruce in mixture with other conifer species. Table 2.6.4 shows the areas of species by year.

**Table 2.6.4: Brown Hill Forest Planting Year by Species and Area**

Planting Year	Species	Area (ha)
1985	Japanese larch	1.66
	Norway spruce/ hybrid larch	3.65
	Scots pine/ European larch	1.79
	Sitka spruce	11.19
	Sitka spruce/ Japanese larch	17.79
	Sitka spruce/ lodgepole pine	12.74
	Sitka spruce/ Scots pine	21.68
1986	Scots pine/ Japanese larch	8.45
	Sitka spruce/ lodgepole pine	52.88
	Open Ground	35.21
<b>Total (ha)</b>		<b>167.04</b>

*Brown Hill Forest Baseline Felling Plan*

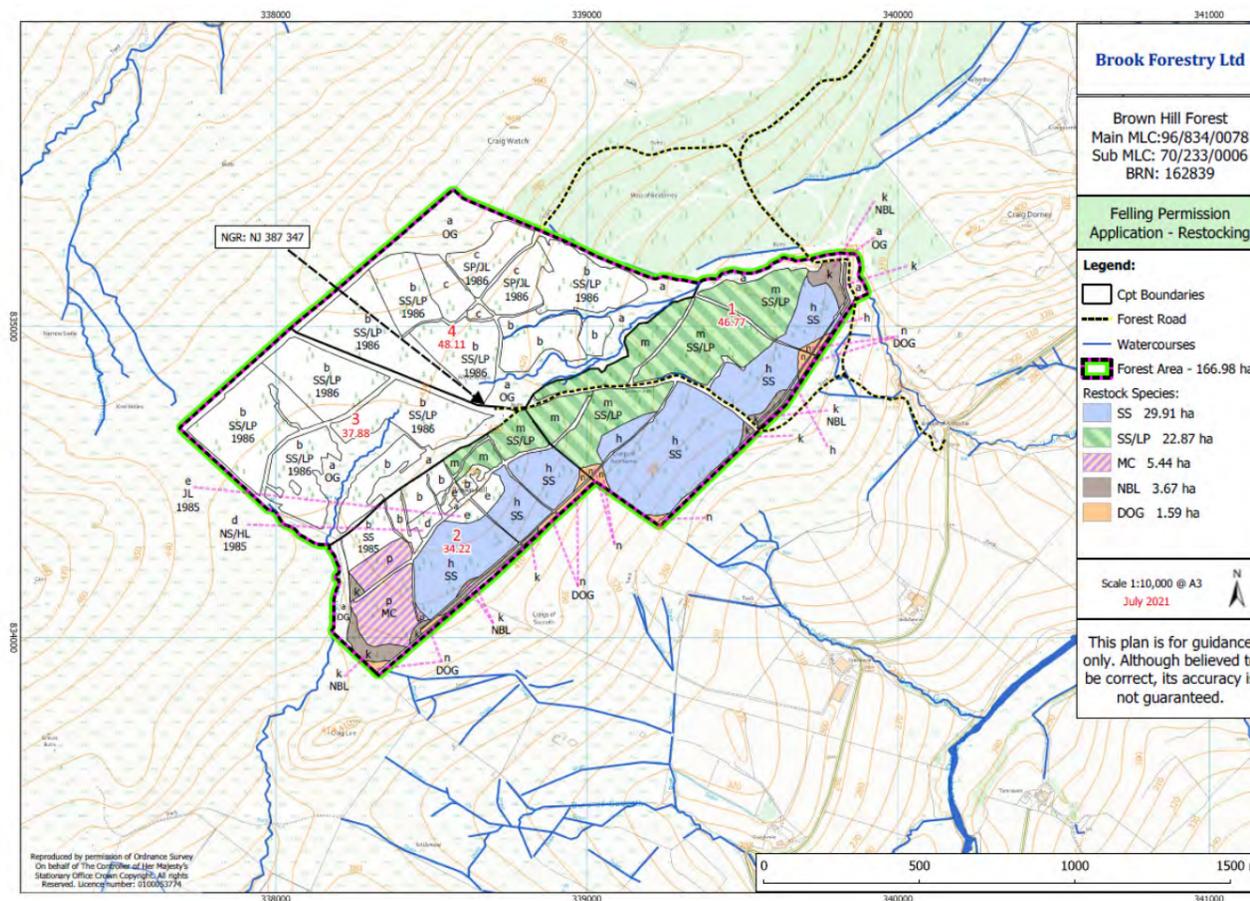
1.7.16 Brown Hill Forest has no approved Forest Plan. A Felling Permission Application (FPA) has been approved by SF to be undertaken from March 2022 to November 2023, covering 63.27 ha as shown in Illustration 2.6.3. At the time of writing in April 2022 it is unknown whether this felling has commenced.



**Illustration 2.6.3: Brown Hill Felling Permission (Source Brown Hill FPA March 2022)**

*Brown Hill Baseline Restocking Plan*

1.7.17 As part of the approved felling permission, a restocking plan for the areas to be felled has been provided, as shown in Figure 2.6.4. This outlines the increase in species diversity with the introduction of native broadleaves (NBL) species and designed open ground (DOG).



**Illustration 2.6.4: Brown Hill Forest – Felling Permission - Restocking (Source Brown Hill FPA March 2022)**

1.7.18 Other baseline characteristics of both Howeshalloch and Brown Hill Forests include the proportion of sustainable timber crops, crop resilience, biodiversity, landscape, conservation and recreation. The following considerations have been noted within these plans:

- There are no designated conservation areas within or adjacent to these forest management areas;
- There are no areas of native woodland habitat within the forest management areas;
- The current tree species and diversity within the woodland is low due to Site factors limiting the choice of species. With the restocking plan proposed, this would improve this during the restructuring process, particularly through the introduction of a broadleaved component. Limiting the proportion of single major species and designating areas of increased biodiversity and conservation value (long term retentions, natural reserves, open ground) in line with the UKFS would also contribute;
- Red and roe deer are present throughout the area;
- No badgers or setts have been sighted within the woodland;
- Threats through pest and disease: 'larch tree disease' (*Phytophthora ramorum*). Larch (*Larix spp*) is present on the Site mainly in mixture with Sitka spruce but with a few pure stands. The

plantations are within Zone 3 of *Phytophthora ramorum* infection risk zone map (lowest risk) as part of the official action advised by Forest Research<sup>12</sup>;

- *Dothistroma* needle blight: Most of the Site is classed “At risk due to high rainfall or low temperature” using Forest Research Environmental Site Classification (ESC) tools<sup>13</sup>;
- Public usage is minimal to date; and
- Neighbouring land use is predominantly used for upland agricultural grazing and field sport management.

## 1.8 Craig Watch Wind Farm Forest Plan

### Craig Watch Wind Farm Design

- 1.8.1 The impact of the Proposed Development considers the changes to the forest structure through felling and replanting as a result of the Proposed Development and compares this with the proposed felling and replanting plans for the individual forest units on Site.

### Craig Watch Wind Farm Felling Plan

- 1.8.2 The Proposed Development felling plan is shown in Figure 2.6.4. This plan illustrates the total area to be felled for the Proposed Development infrastructure both permanent and temporarily. For the permanent felling, this includes the turbine hardstandings, permanent buildings, substation compound, met mast, access tracks. Areas required for temporary felling include any temporary land take associated with the construction compounds and areas/ buffers surrounding the permanent land take which is required to construct the scheme. As outlined in the Baseline Conditions section, felling for the Proposed Development would be undertaken within Howeshalloch Forest and Brown Hill Forest only. None of the other woodland blocks within the Site would be impacted.

#### *Permanent Felling*

- 1.8.3 The total area required for permanent infrastructure would result in an area to be felled of 32.36 ha. This area would not be replanted as the infrastructure includes tracks, turbines, and other buildings including buffers of 10 m around hardstanding areas which would remain throughout the lifecycle of the Proposed Development. This area has been calculated on the required track clearance (approximately 25 m edge to edge for new tracks) and a turbine base radius of 96 m.
- 1.8.4 The turbine base radius relates to the stand-off distance between the turbine and adjacent trees which is required to reduce potential effects on bats. This is calculated in accordance with NatureScot onshore wind turbine bat mitigation guidance<sup>14</sup> which considers the potential tree height<sup>15</sup> against the scheme turbine dimensions. Illustration 2.6.5 outlines a stand-off distance calculation example. However in this instance in order to align with the guidance, the tree heights would need to be at a height of 38 m.

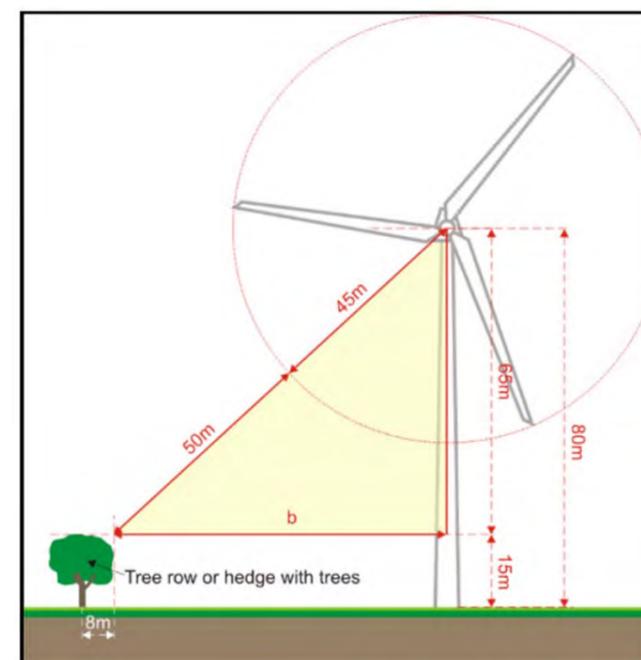


Illustration © Entec Ltd.

### Illustration 2.6.5: Example Bat Stand-off Area

#### *Temporary Felling*

- 1.8.5 Temporary Felling includes the area of woodland which is felled for the construction of the Proposed Development which would be replanted in situ once the construction activity is completed. The temporary felling area includes the borrow pit search area and a temporary construction compound within Howeshalloch Forest require trees to be felled for the duration of construction after which the area would be restored and replanted. Temporary felling also refers to felling beyond the requirements of the proposed infrastructure where wind throw<sup>16</sup> is likely or where woodland areas may become isolated or uneconomic for future harvest and are therefore not useable for commercial purposes. Felling coupes would be designed to rationalise these requirements and would be replanted in situ to the approved replanting design.
- 1.8.6 No temporary felling would be undertaken as a result of the Proposed Development other than within the commercial plantations of Howeshalloch and Brown Hill Forests.
- 1.8.7 All felling in Howeshalloch and Brown Hill Forests contain areas of non-native conifer species only and are detailed in Table 2.6.5 below.

<sup>12</sup> Forest Research, Ramorum disease (Phytophthora ramorum). Available at <https://www.forestryresearch.gov.uk/tools-and-resources/fthr/pest-and-disease-resources/ramorum-disease-phytophthora-ramorum/>

<sup>13</sup> Forest Research, Ecological Site Classification (ESC). Available at <https://www.forestryresearch.gov.uk/tools-and-resources/fthr/ecological-site-classification/>

<sup>14</sup> NatureScot, Bats and onshore wind turbines -survey, assessment and mitigation Version: August 2021. Available at <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation>

<sup>15</sup> Maximum tree height for the life of the Proposed Development

<sup>16</sup> Wind throw refers to trees uprooted by wind



Environmental Protection Act (EPA) 1990 (duty of care) (UK Government, 1990). Further guidance is contained within SEPA Guidance Notes WST-G-027 "Management of Forestry Waste"<sup>18</sup> and SEPA (2014): LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land".

- 1.10.2 A hierarchy of uses for forestry materials is proposed, derived from the waste hierarchy contained within the Regulations, summarised as follows:
- prevention via the production of timber products and associated materials for use in timber and other markets;
  - the re-use of materials on-site for a valid purpose, where such a use exists e.g. road construction;
  - there is no valid re-cycling use for forestry residues;
  - other recovery via collection and use as biomass for energy recovery or other markets, where not included above; and
  - where no valid on- or off-site use can be found for the material, disposal would be in a way that is considered to deliver the best overall environmental outcome.
- 1.10.3 Due to Howeshalloch and Brown Hill Forests being at the productive stage of commercial forestry, there is no expectation of forestry waste management as all utilisable material from timber harvesting would be exported from Site to the appropriate wood processing mills.

## 1.11 Forest Management Practices

### Crop Clearance

- 1.11.1 Tree crop clearance would be carried out by competent forestry specialists adhering to the safety and environmental guidelines current at the time. It is anticipated that tree felling would be undertaken by mechanised harvester which would work systematically through the timber crop to be felled. The harvester fells the tree and presents assorted timber products to one side while stripping off branches from the felled stem and laying these in front of the machine along with the small diameter tree top which form a brash mat. This mat offers support to the forest harvesting machinery and provides ground protection during the harvesting operation. This brash mat would form the network of extraction routes for a forest forwarder to collect and extract timber produce to the forest/ wind farm access roads. The forest products would then be uplifted by roadgoing timber lorries and delivered to the appropriate wood markets.

### Restocking/ Planting Methodology

- 1.11.2 Restocking is likely to be on a site prepared for planting by the production of suitably sized earth mounds in a systematic fashion following the safety and current environmental guidelines. During the Site cultivation, any drains to manage water runoff would be installed to meet the Forest and Water, Scotland Guidance documents<sup>20</sup>. Planting would be by manual means. All-terrain vehicle tracks may be installed at this time facilitating the distribution of plants and subsequent maintenance including deer control.
- 1.11.3 Maintenance to achieve successful establishment of the successor crop would include plant surveys to meet the required number and distribution of tree survival. Protection against damage through large pine weevil (*Hylobius abietis*) infestation would be carried out following best practices. Where necessary, "beating up" would take place. Beating up is the replacement of any failed trees to maintain the correct number of trees.

### Deer Control

- 1.11.4 As red and roe deer are known to be on-site. Deer control would be undertaken where necessary by the forest owners/ managers own arrangements. Should tree damage occur by the deer on-site, they would be culled to where tree damage is at an acceptable level to produce a future timber crop and to maintain and enhance the biodiversity within the forest holdings. Failing to manage Deer may result in failed timber crops and trees for other reasons including biodiversity and will therefore not meet the requirements of UKFS. Guidance provided by Scottish Natural Heritage Code of Practice on Deer Management<sup>21</sup> and as updated would be followed.

### Public Access

- 1.11.5 Public access within the forest is likely to be improved due to the access tracks for the Proposed Development. UKFS Guidelines on Forests and people provides information on how to comply with UKFS Requirements covering:
- Public involvement;
  - Accessibility;
  - Visitor information;
  - Recreation;
  - Traditional and cultural uses;
  - Education and learning;
  - Volunteering;
  - Vandalism and anti-social behaviour; and
  - Enterprise development.

### Standards and Guidance

- 1.11.6 All forestry operations would be conducted in accordance with current good practice guidelines. This would include, but is not limited to:
- The UKFS and the supporting guidelines;
    - Forests and Biodiversity;
    - Forests and Climate Change;
    - Forests and Historic Environment;
    - Forests and Landscape;
    - Forests and People;
    - Forests and Soil;
    - Forests and Water; and
  - Scottish Natural Heritage Code of Practice on Deer Management.

## 1.12 Outline Compensatory Planting Proposals

### Area 1

- 1.12.1 Area 1 (42.33 ha) on Compensatory Planting search area plan is adjacent to the NWSS native pinewood contained within Ben Main Plantation. Forest records show Ben Main was planted in 1982. A Felling Permission Application is current showing thinning proposals for the Scots pine.

<sup>20</sup> Forestry and Water Scotland Guidance Documents. Available at <https://www.confor.org.uk/resources/forestry-water-scotland/guidance-documents/>

<sup>21</sup> Scottish Natural Heritage Code of Practice on Deer Management. Available at <https://www.nature.scot/doc/code-practice-deer-management-leaflet>

- 1.12.2 The current vegetation is heather with wavy hair grass. Sitka spruce is invading the area and becoming established sporadically. Broom is present on the lower slopes.
- 1.12.3 Soil types are generally peaty gleyed podzols with upper margins as blanket peat (which are unplantable) and some brown earths on areas of lower ground.
- 1.12.4 The slope is very steep above the disused quarry at the Glacks of Ballock and is gentler to the eastern aspect.
- 1.12.5 Outline planting proposals for the plantable areas would be to plant as a Scots pine woodland, with silver birch as a secondary species. Rowan would be planted with juniper as shrub species. Local provenances would be sought with planting of Scots pine at a minimum target established density of 1,600 trees per ha. Other species would reduce in density to 400 trees per ha at the upper margins.
- 1.12.6 The object of management would be for a Scots pine productive woodland while increasing biodiversity and local shelter.
- 1.12.7 Local site cultivation would be required to provide an improved planting position amongst the heath site.
- 1.12.8 Fencing to protect the newly planted trees against browsing and fraying by red and roe deer would be installed.

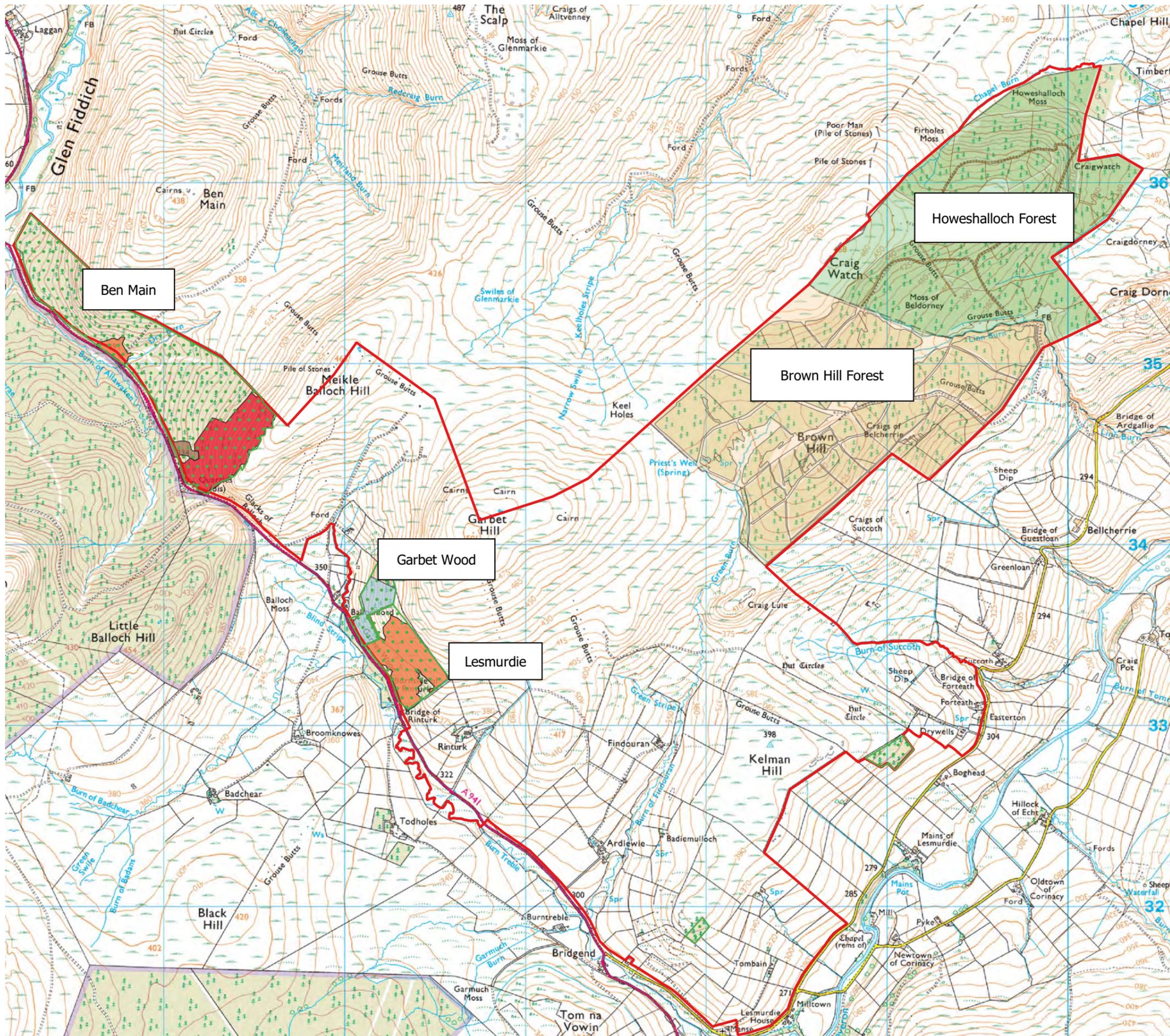
#### **Areas 2 to 5**

- 1.12.9 Areas 2 (5.82 ha), 3 (7.61 ha), 4 (4.42 ha) and 5 (1.20 ha) identified within the search area plan would offer more broadleaf woodland opportunities including Sessile oak and silver birch. Shrubs including hazel, hawthorn and juniper would be included within the detailed design. Planting density would be 1,600 trees per ha.
- 1.12.10 The object of management would be for biodiversity and local shelter.
- 1.12.11 Site cultivation would be required to provide an improved planting position and possibly management of any ironpan soil layer. Deer fencing would also be required.
- 1.12.12 Maintenance of all new planting would include beating up (replacement) of failed plants, weeding as necessary and ensuring fencing is continuing to prevent damage by ungulates.
- 1.12.13 The detailed design would meet the requirements of UK Forestry Standards for all proposed compensatory planting areas.

### **1.13 Summary**

- 1.13.1 The total wooded forest area extends to some 336.94 ha within the Site boundary. The woodland areas impacted by the Proposed Development are contained within two adjacent privately owned conifer plantations, Howeshalloch and Brown Hill. Other woodland areas are not impacted by the Proposed Development and should be managed according to approved plans and the landowners' objectives.
- 1.13.2 As the two forests are at the point of restructuring and in keeping with meeting UKFS, there shall be an increase in species diversity both in productive conifers and native broadleaves over the planned felling and replanting phases.
- 1.13.3 Total felling of 93.46 ha is required for the construction of the Proposed Development, while 61.10 ha would be replanted on-site leaving a balance of 32.36 ha unplanted for the permanent infrastructure and the associated environmental buffer areas. This area of permanent woodland loss is the calculated area to be taken forward for compensatory planting complying with the Scottish Government's Control of Woodland Removal Policy.

- 1.13.4 The Applicant is committed to providing at least 32.36 ha of appropriate compensatory planting and has sought agreement with the landowners for sufficient indicative areas within the Site. All compensatory planting is therefore intended to be on-site, however should this not be feasible, suitable compensatory planting would be provided at an appropriate location within Scotland.
- 1.13.5 The exact location, the extent and design shall meet UKFS guidance and a detailed Planting Plan shall be provided for approval by SF.



mckayforestry

### Craig Watch Wind Farm

On behalf of Craig Watch Wind Farm Limited

Figure 2.6.1: Forestry Study Area

#### Legend

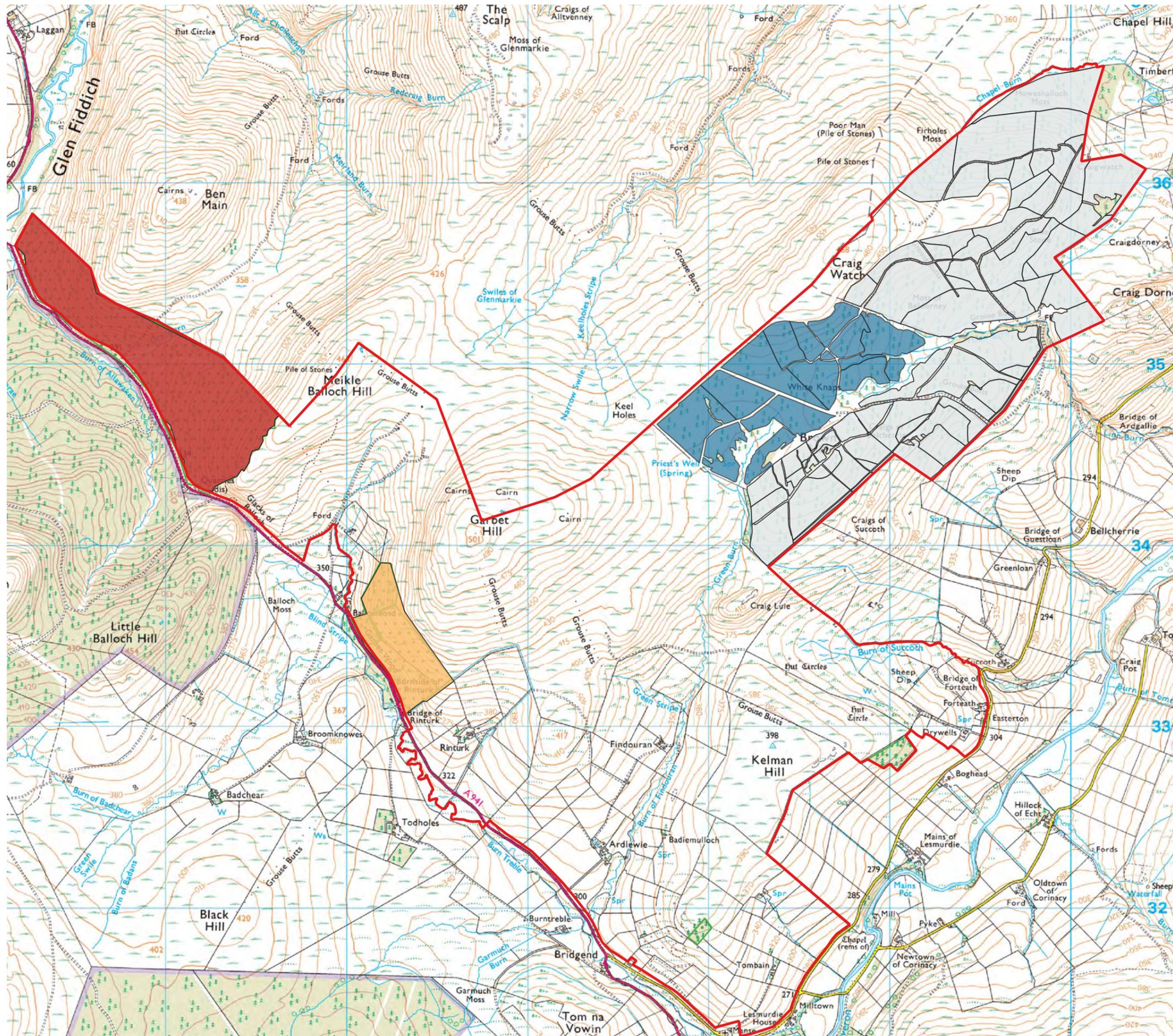
- Site Boundary
- Ancient Woodland
- Native Woodland (native pinewood)
- Native Woodland (upland birchwood)
- Native Woodland (wet woodland)
- Howeshalloch Forest
- Brown Hill Forest
- Other woodlands

0 0.1 0.2 km



Drawn by: nm Scale: 1:20,000 @ A3 Date: 14/04/2022  
Revision: 2

Digital map data reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2021. Ordnance Survey Licence Number: 0100031673



mckayforestry

### Craig Watch Wind Farm

On behalf of Craig Watch Wind Farm Limited

Figure 2.6.2: Forestry Age Class

#### Legend

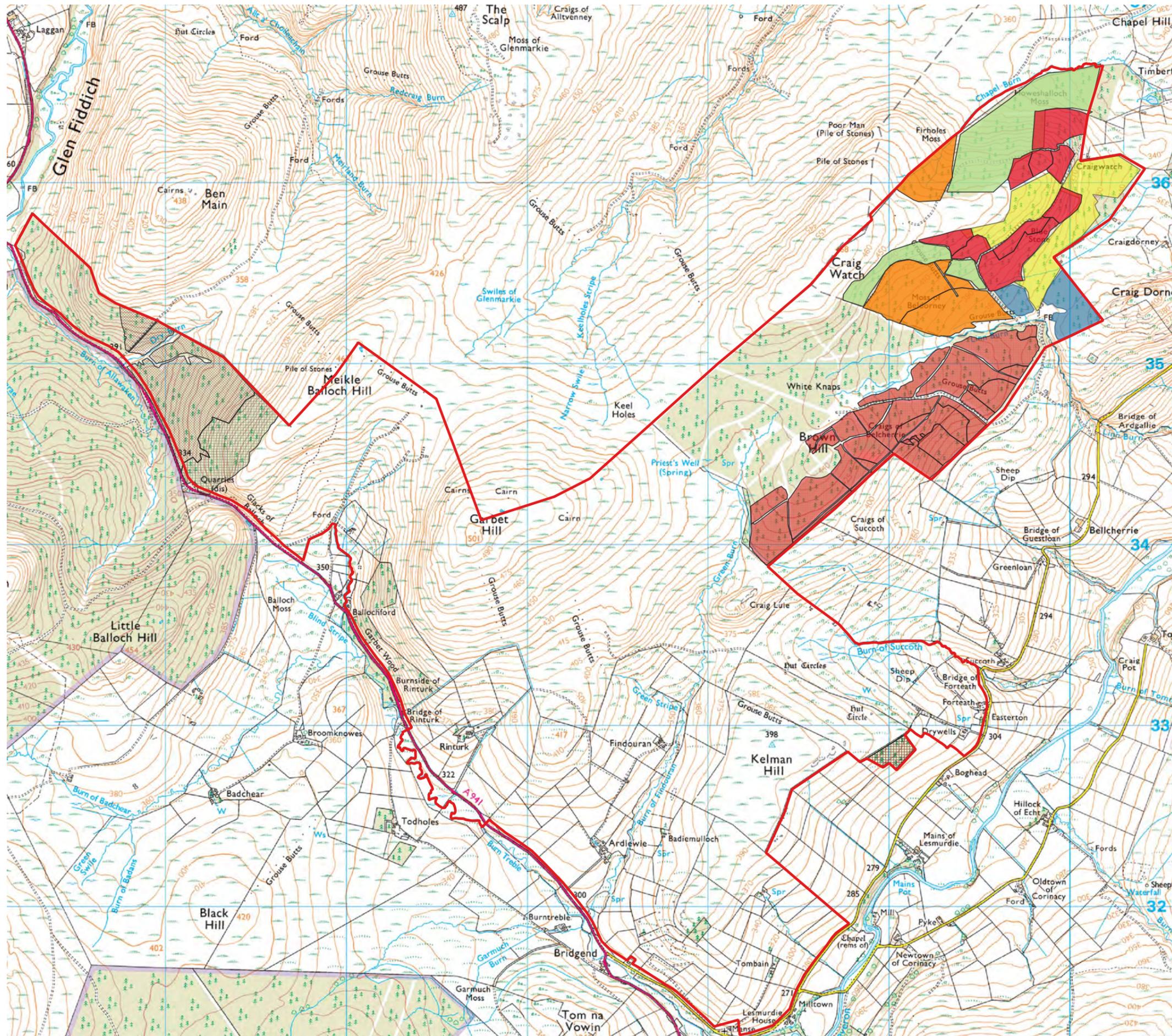
- Site Boundary
- Planting Year 1982
- Planting Year 1985
- Planting Year 1986
- Planting Year 2013
- Other woodlands

0 0.1 0.2 km



Drawn by: nm Scale: 1:20,000 @ A3 Date: 06/05/2022  
Revision: 3

Digital map data reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2021. Ordnance Survey Licence Number: 0100031673



mckayforestry

### Craig Watch Wind Farm

On behalf of Craig Watch Wind Farm Limited

Figure 2.6.3: Baseline Felling

#### Legend

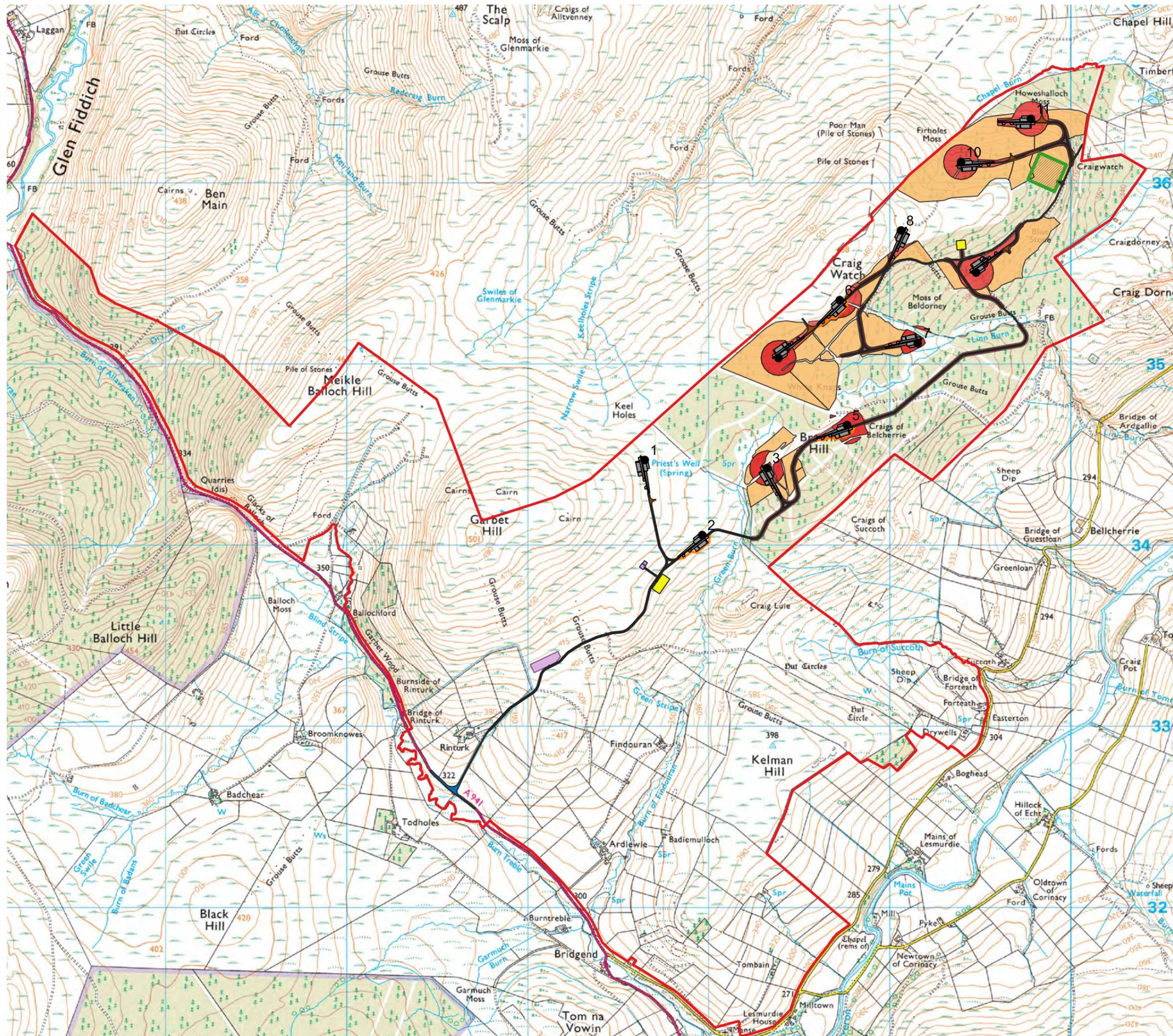
- Site Boundary
- Howeshalloch LTFP Fell Phase 1
- Howeshalloch LTFP Fell Phase 2
- Howeshalloch LTFP Fell Phase 3
- Howeshalloch LTFP Fell Phase 4
- Howeshalloch LTFP beyond 2037
- Brown Hill Felling Permission
- Ben Main Felling Permission
- Ben Main Felling Permission (Thinning)
- Other Felling Permission

0 0.1 0.2 km



Drawn by: nm Scale: 1:20,000 @ A3 Date: 14/04/2022  
Revision: 2

Digital map data reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2021. Ordnance Survey Licence Number: 0100031673



mckayforestry

### Craig Watch Wind Farm

On behalf of Craig Watch Wind Farm Limited

Figure 2.6.4: Wind Farm Felling

#### Legend

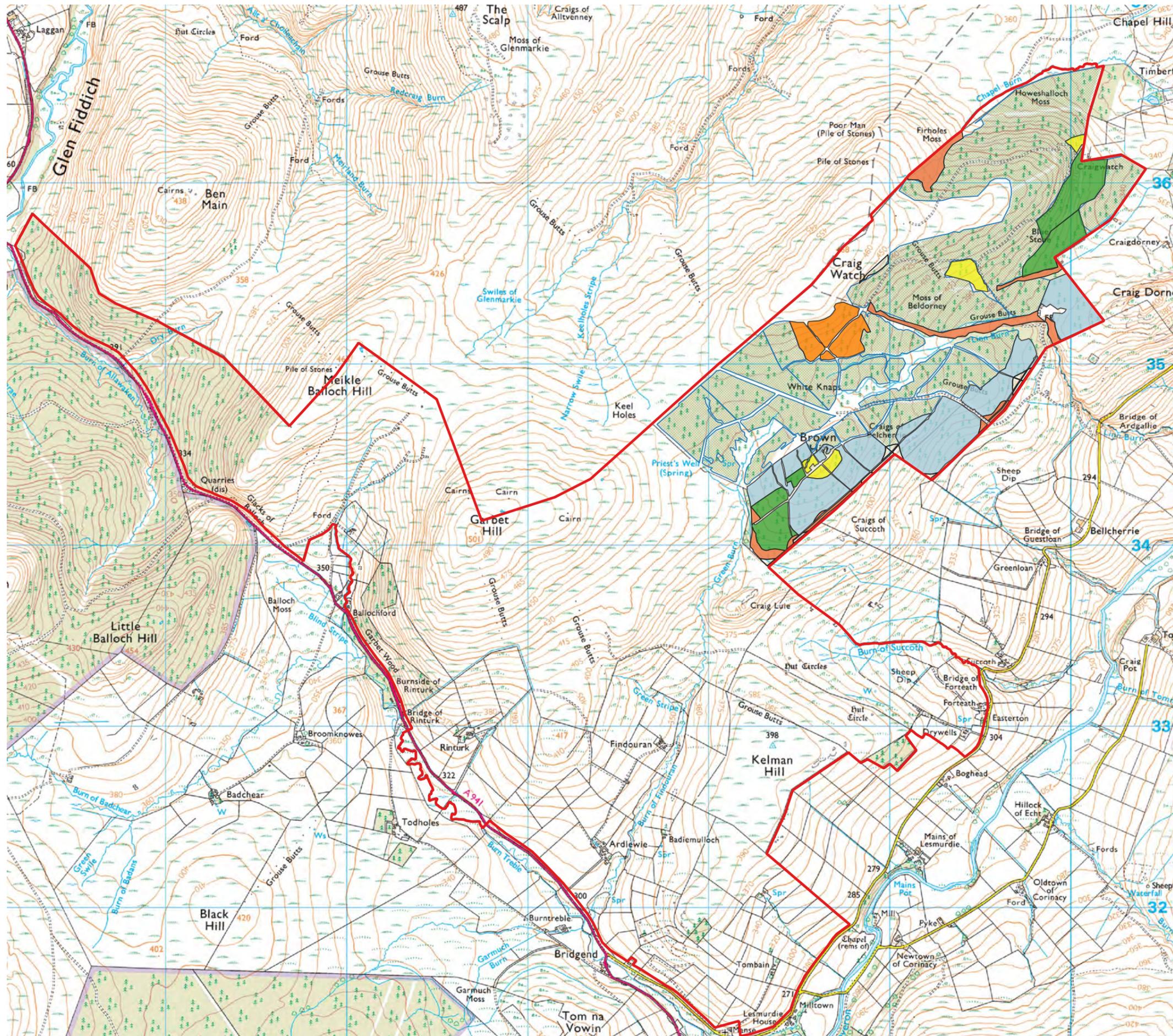
- Site Boundary
- Proposed Turbine
- Proposed Turbine Hardstanding
- Proposed Temporary Construction Compound
- Proposed Substation
- Proposed Turning Head
- Proposed Existing Track Upgrade
- Proposed New Track
- Proposed Met Mast Hardstanding
- Proposed Borrow Pit Search Area
- Proposed Emergency Vehicle Access
- Permanent Felling
- Temporary Felling

0 0.1 0.2 km



Drawn by: nm Scale: 1:20,000 @ A3 Date: 14/04/2022  
Revision: 2

Digital map data reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2021. Ordnance Survey Licence Number: 0100031673



mckayforestry

### Craig Watch Wind Farm

On behalf of Craig Watch Wind Farm Limited

**Figure 2.6.5: Restocking Without Wind Farm**

#### Legend

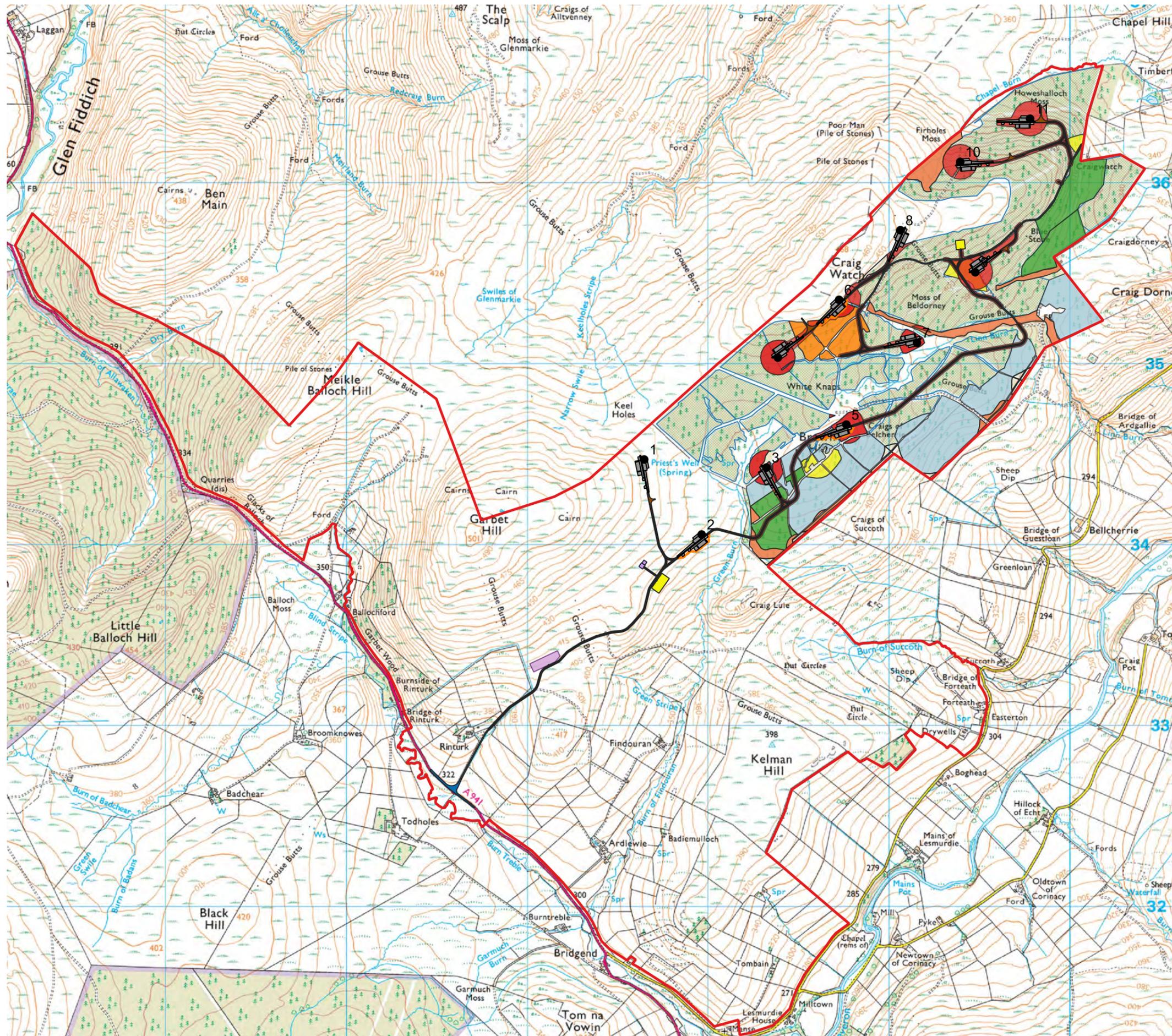
- Site Boundary
- Larches
- Native Broadleaves
- Mixed Conifer
- Scots Pine/Larch
- Sitka Spruce
- Sitka Spruce/Lodgepole Pine (and other conifer)

0 0.1 0.2 km



Drawn by: nm Scale: 1:20,000 @ A3 Date: 14/04/2022  
Revision: 2

Digital map data reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2021. Ordnance Survey Licence Number: 0100031673



mckayforestry

### Craig Watch Wind Farm

On behalf of Craig Watch Wind Farm Limited

Figure 2.6.6: Restocking With Wind Farm

#### Legend

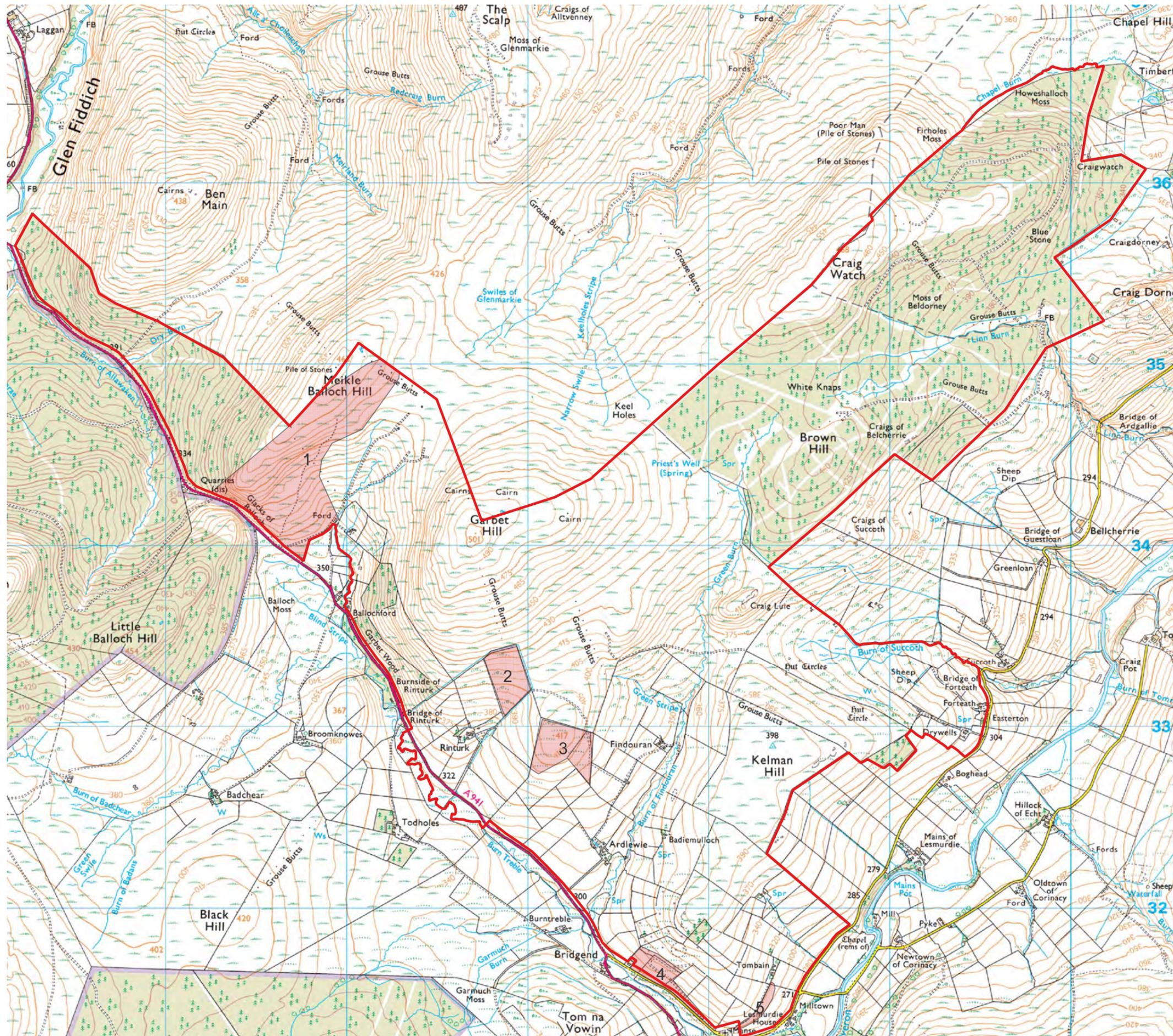
- Site Boundary
- Proposed Turbine
- Proposed Turbine Hardstanding
- Proposed Turning Head
- Proposed Existing Track Upgrade
- Proposed New Track
- Proposed Substation
- Construction Compound
- Proposed Emergency Vehicle Access
- Proposed Met Mast Hardstanding
- Larches
- Native Broadleaves
- Mixed Conifer
- Scots Pine/Larch
- Sitka Spruce
- Sitka Spruce/Lodgepole Pine (and other conifer)
- Wind Farm Open Ground

0 0.1 0.2 km



Drawn by: nm Scale: 1:20,000 @ A3 Date: 14/04/2022  
Revision: 2

Digital map data reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2021. Ordnance Survey Licence Number: 0100031673



mckayforestry

### Craig Watch Wind Farm

On behalf of Craig Watch Wind Farm Limited

Figure 2.6.7: Compensatory Planting Search Area

#### Legend

- Site Boundary
- Compensatory Planting Search Area

0 0.1 0.2 km



Drawn by: nm Scale: 1:20,000 @ A3 Date: 06/05/2022  
Revision: 3

Digital map data reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2021. Ordnance Survey Licence Number: 0100031673