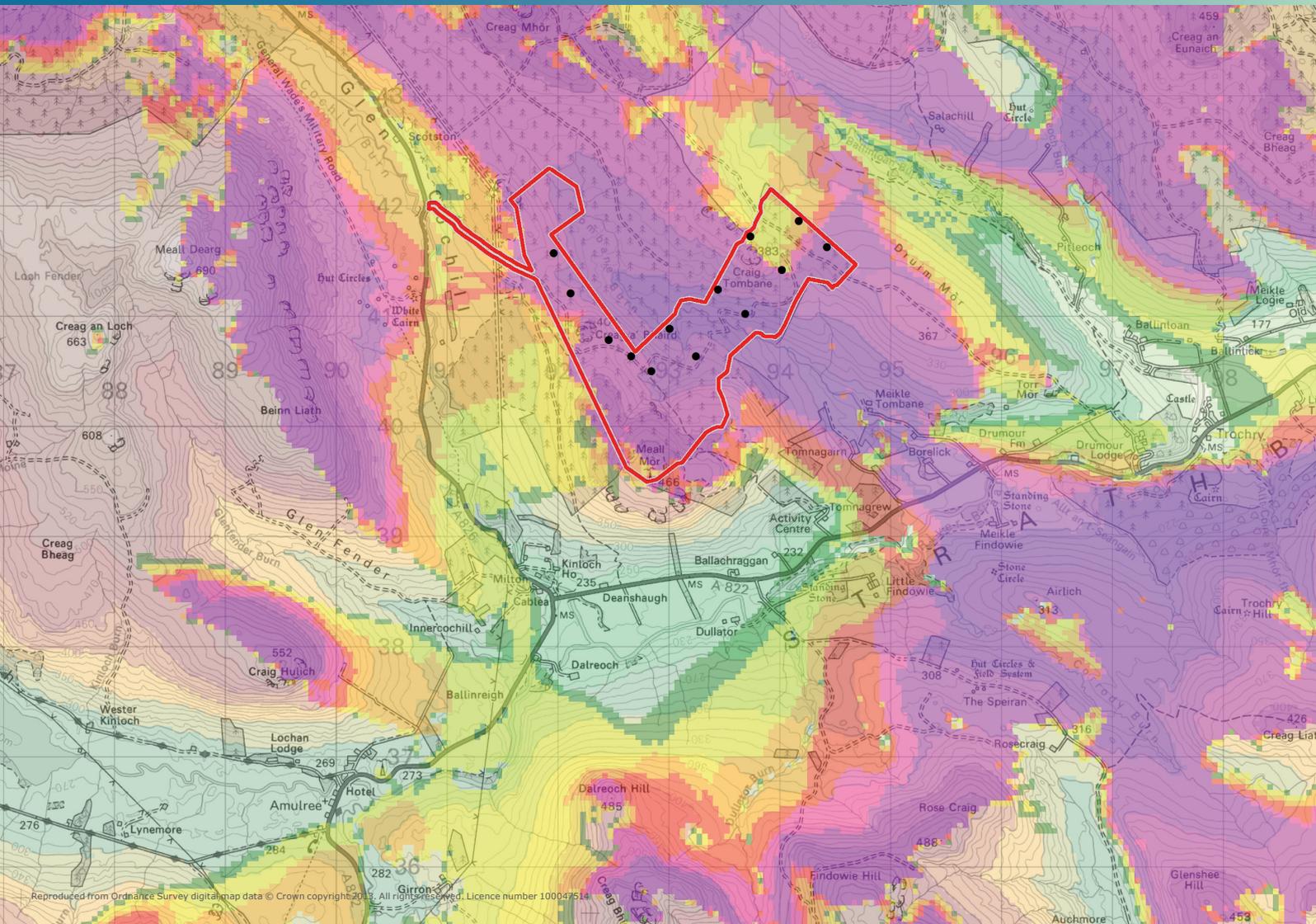


# Creag a' Bhàird Wind Farm Environmental Statement

## Non-Technical Summary

December 2013





**Creag a' Bhàird Wind Farm  
Environmental Statement  
Non-Technical Summary**

**Prepared by LUC  
on behalf of  
Force 9 Energy**

**December 2013**





## Preface

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This Non-Technical Summary (NTS) has been prepared in support of an Environmental Statement (ES) and application for planning permission to construct and operate the thirteen turbine Creag a' Bhàird Wind Farm. The wind farm is located approximately 8.5km south-east of Aberfeldy and approximately 20km north-west of Perth, and lies wholly within the Perth and Kinross Council area.

The ES comprises the following documents:

- Volume I: Main Text and Figures
- Volume II: Appendices

The ES has been prepared by LUC and supporting sub-consultants. In addition, the ES is also accompanied by a Planning Statement, Design and Access Statement and Pre-Application Consultation (PAC) Report.

Copies of the full ES and accompanying documents, or further information on the wind farm may be obtained from:

Force 9 Energy LLP and EDF Energy ER

c/o 272 Bath Street

Glasgow

G2 4JR

A copy of the NTS can be obtained free of charge. A hard copy of the ES and accompanying documents costs £250. In addition, all documents are available in an electronic format (as PDFs for screen viewing only) on CD/DVD for £2.

The ES and accompanying documents are available for viewing by the public during normal opening hours at the following locations:

Development Management	Birnam Arts Centre	Breadalbane Community Library
Perth & Kinross Council	Station Road	Crieff Road
Pullar House	Birnam	Aberfeldy
35 Kinnoull Street	Dunkeld	PH15 2DU
Perth	PH8 0DS	
PH1 5GD		

The documents will also be made available online through the Perth and Kinross planning portal at <http://www.pkc.gov.uk/article/2299/Viewing-and-commenting-on-planning-applications>

Comments in relation to the Planning Application should be forwarded to the Perth and Kinross Council Development Management department at the address above. Alternatively, comments can be made via Perth and Kinross Council's online planning portal.



# Non-Technical Summary

## Introduction

- 1.1 Force 9 Energy is applying to Perth and Kinross Council for planning permission to construct and operate Creag a' Bhàird Wind Farm. The site is located approximately 8.5km south-east of Aberfeldy and approximately 20km north-west of Perth as shown on **Figure 1**.
- 1.2 As Creag a' Bhàird Wind Farm will have a maximum generating capacity of less than 50 megawatts (MW), Force 9 Energy is applying to Perth and Kinross Council for planning permission under the Town and Country Planning (Scotland) Act 1997, as amended by The Planning etc. Act (Scotland) 2006<sup>i</sup>. The application is categorised as a 'Major Development' application under the Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009<sup>ii</sup> on the basis that the total installed capacity of the wind farm will be over 20MW.
- 1.3 Force 9 Energy is a dedicated wind farm development company with offices in Scotland and England and with a focus on the UK market. To date, and at the time of writing, Force 9 Energy has taken eight developments through the planning/consenting process, four of which will have been consented without appeal or public inquiry, one of which was consented on appeal, and one of which was refused after public inquiry. Two developments are currently at appeal. Two of the consented developments are now in operation, one is in the final stages of construction, one is in pre-construction and work is on-going to discharge planning conditions on the remaining consented project. Force 9 Energy is continuing to expand its wind farm development portfolio in response to the Government's targets for energy generation from renewable sources and is currently awaiting determination of a further three wind farm planning applications.
- 1.4 Force 9 Energy has a joint development agreement with EDF Energy Renewables (EDF). Through the agreement Force 9 Energy leads on the development process of wind farm proposals up to the start of construction. Should a wind farm be consented, EDF will take the lead during construction and subsequently own and operate the wind farm.
- 1.5 The application is accompanied by this Environmental Statement (ES) which has been undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011<sup>iii</sup> ('the EIA Regulations'). The ES presents information on the identification and assessment of the likely positive and negative environmental effects of the proposed development. Further details of the statutory requirements for Environmental Impact Assessment (EIA) are set out in **Chapter 2: Approach to the EIA** of the ES.
- 1.6 This Non-Technical Summary (NTS) summarises the findings and conclusions of the ES.
- 1.7 The ES has been prepared by LUC on behalf of Force 9 Energy. LUC produced the following ES chapters:
  - Chapter 1: Introduction;
  - Chapter 2: Approach to the EIA;
  - Chapter 3: Site Selection and Design Strategy (with input from Force 9 Energy);
  - Chapter 4: Scheme Description (with input from Grontmij, Force 9 Energy and Mouchel);
  - Chapter 5: Planning Policy Context;
  - Chapter 6: Landscape and Visual Amenity;
  - Chapter 13: Socio-Economics;
  - Chapter 14: Other Issues (with input from The Wind Consultancy Service, Force 9 Energy and Mouchel);
  - Chapter 15: Summary.
- 1.8 A number of sub-consultants undertook specialist assessments as follows:
  - **Hoare Lea** undertook the noise assessment;

- **Mouchel** undertook the geology, hydrology and hydrogeology assessment, borrow pit assessment, peat stability assessment and carbon balance assessment;
- **MacArthur Green** undertook the ecology and ornithology assessments;
- **CgMs** undertook the archaeology and cultural heritage assessment;
- **Grontmij** undertook the access, traffic and transport assessment.

## Environmental Impact Assessment

- 1.9 EIA involves the compilation, evaluation and presentation of any potentially significant environmental effects resulting from a proposed development, to assist the consenting authority, statutory consultees, and wider public in considering an application. Early identification of potentially adverse environmental effects also leads to the identification and incorporation of appropriate mitigation measures into the scheme design to avoid, reduce and, if possible, remedy potentially significant adverse environmental effects. The ES presents information on the identification and assessment of the likely environmental effects of Creag a' Bhàird Wind Farm. **Major** or **moderate** effects are considered to be significant in the context of the EIA Regulations<sup>1</sup>.
- 1.10 The scope of the EIA was informed by the Scoping Opinion provided by Perth and Kinross Council in May 2013, and includes responses from Scottish Natural Heritage (SNH), the Scottish Environment Protection Agency (SEPA), Historic Scotland and Transport Scotland. These responses have been presented in **Chapter 2: Approach to the EIA** of the ES.

## Site Selection and Design Strategy

- 1.11 The Creag a' Bhàird Wind Farm site was selected by Force 9 Energy for a number of reasons, including the following:
- there are no international or national natural heritage or landscape designations within the site;
  - there are no Local Plan or Structure Plan policies which, in principle, preclude wind energy development;
  - the site is at distance from the nearest residential receptors;
  - it has a good wind resource and is available for wind energy development;
  - there are potential connection options to the electrical grid system;
  - there is no obvious radar or other technical constraints;
  - there is good access to the site for construction traffic and turbine deliveries;
  - with appropriate mitigation and proposed compensation measures there was no indication of likely significant bird or other environmental concerns on site;
  - the landscape is, in part, defined by the existence of the nearby Griffin Wind Farm.
- 1.12 Wind farm design must balance technical, economic and environmental considerations, with the iterative EIA process acting as a tool to further refine the design process to achieve the most appropriate balance. In addition the design of a wind farm is driven by the key objective of positioning turbines so that they capture the maximum energy possible within a suitable area determined by environmental and technical constraints.
- 1.13 The overall aim of the design strategy was to create a wind farm with a cohesive design that relates to the surrounding landscape, and existing Griffin Wind Farm, in line with appropriate published guidance<sup>iv</sup>. The inherent nature of wind turbines as tall, modern structures means that

<sup>1</sup> This is the case for all topic chapters with the exception of: Chapter 7: Noise; Chapter 12: Access, Traffic and Transport; and Chapter 14: Other Issues.

the form of the wind farm as a whole is important, and a clear design strategy is necessary. The strategy therefore considered the appearance of the wind farm as an object or composition in the landscape as the primary factor in generating the layout.

1.14 The objectives of the design strategy were as follows:

- to produce a layout that would relate well to its landscape setting and appear contained within its extents;
- to develop a layout that would appear cohesive and well considered from all aspects;
- to develop a layout that seeks to match the perceived scale of the turbines, and the scale of the overall wind farm, with the scale of the landscape;
- to develop a layout that relates well to other wind farms in the local area; including the adjacent Griffin Wind Farm, as well as being coherent in its own right;
- to develop a layout that fulfils the above objectives whilst respecting other environmental and technical constraints including ecological, hydrological and ground conditions (including peat) related constraints identified during the EIA process.

1.15 An early 19 turbine (125m to blade tip) wind farm design, based purely on technical and operational efficiency criteria, was developed by the applicant prior to specialist landscape design advice being sought in 2011. This led to a 15 turbine layout design and through the EIA process, there have been further modifications (culminating in the final 13 turbine layout) to avoid or minimise environmental effects without compromising the overall design strategy. These modifications have been made as a result of the findings of the baseline survey work and consultation undertaken with consultees and the public and have included the relocation and reduction in the number of turbines to:

- ensure that predicted wind farm noise levels from the wind farm operating do not exceed acceptable noise limits;
- avoid construction activity in areas of potentially deeper peat and in the vicinity of steep slopes;
- ensure appropriate buffer distance (minimum 50m buffer) between wind farm infrastructure and the site boundary;
- minimise the number of watercourse crossings required and ensure appropriate buffer distances between surface waters and GWDTEs zones and turbine bases and associated infrastructure;
- minimise the visual effects of the wind farm in views from Strathbraan.

1.16 Design changes made as a consequence of the key constraints to site design are considered to be mitigation which is 'embedded' in the design. Further details of the design strategy can be found in **Chapter 3: Site Selection and Design Strategy** of the ES.

## Scheme Description

1.17 As shown on **Figure 2**, the main components of the wind farm are:

- thirteen wind turbines (including external transformers) of up to 115m (to blade tip) height, with a maximum combined output of up to 29.9 megawatts (MW);
- crane hardstandings;
- onsite underground electrical cables;
- a control building;
- two permanent meteorological masts;
- a temporary site construction compound/laydown area;
- two areas within which it is proposed to win rock for wind farm construction (borrow pits);

- approximately 8km of onsite access tracks.
- 1.18 Two permanent freestanding meteorological masts will be erected to aid performance monitoring of the wind turbines and to gather meteorological data throughout the lifetime of the wind farm. The masts will be of a lattice design and will have a maximum height of 70m. The proposed location of the masts is shown in **Figure 2**.
  - 1.19 The site will be accessed via the existing site access track which connects to the A826 to the west. Full details of the assessment of effects on the local road network are provided in **Chapter 12: Access, Traffic and Transport** of the ES.
  - 1.20 All forestry within the site boundary is to be clear felled prior to commencement of construction activity. Replanting on site will primarily involve commercial conifers (Sitka Spruce) with no planting within a 100m radius of each of the turbines. This forest would be felled within the lifetime of the wind farm upon reaching 10m in height. Small areas of open ground and mixed native broadleaf trees will be included (in accordance with contemporary forestry design standards).
  - 1.21 New sections of access track, branching-off from the existing track (which will be upgraded to accommodate wind farm construction traffic) will be constructed to facilitate access to the turbines and other infrastructure locations as shown on **Figure 2**. In total, approximately 3km of new onsite access track will be constructed.
  - 1.22 Creag a' Bhàird Wind Farm will be connected to the national electricity grid. The grid connection will be subject to a separate consenting process and will be made via underground cables in roadside verges.
  - 1.23 Electrical power from the turbine transformers will be transferred to the electricity distribution system through a switchgear unit, housed within the control building. The control building will be located in the centre of the site as shown on **Figure 2**.
  - 1.24 Subject to the granting of planning permission, it is anticipated that the construction of Creag a' Bhàird Wind Farm will take place over 20 months, including forestry clearance. The operational life of the wind farm is 25 years. At the end of the 25 year operational period, the wind farm will either be decommissioned, or an application made for consent to extend its operational life. It is estimated that decommissioning the wind farm will take approximately 12 months.

## Landscape and Visual Amenity

- 1.1 The landscape and visual amenity assessment considers the potential effects of Creag a' Bhàird Wind Farm on the landscape and visual resources of the site and the surrounding study area during construction and operation of the wind farm. More details on the assessment are provided in **Chapter 6: Landscape and Visual Amenity** of the ES.
- 1.2 The study area for the assessment covers a radius of 35km from the outermost turbines of the wind farm in all directions, as recommended in current guidance for turbines of 100 m to blade tip or higher<sup>[1]</sup> and in agreement with Perth and Kinross Council and Scottish Natural Heritage (SNH). In accordance with SNH guidance, the cumulative assessment initially considers wind farms within a 60km radius study area from the wind farm site. The assessment of effects focuses on developments that are likely to give rise to significant cumulative effects, and therefore concentrates on a more localised set of operational and proposed developments. To assess the likely effect of the wind farm on visual amenity, nineteen viewpoints have been identified across the 35km study area, and agreed through consultation with Perth and Kinross Council and SNH.
- 1.3 The method for assessment included field survey, computer modelling, mapping and photography. Field survey work was carried out between April 2013 and October 2013, and records were made in the form of field notes and photographs. Evaluation of the theoretical extent to which the wind farm would be visible across the study area was undertaken by establishing a Zone of Theoretical Visibility (ZTV) using specific computer software designed to calculate the theoretical intervisibility between the wind farm and its surroundings. The ZTV was calculated to show the number of turbines visible to blade tip or hub height.

- 1.4 The study area comprises a number of landscape character types (LCTs), from the highland summits and plateau in the central and north-western part of the study area, dissected by broad glens and linear water bodies, to the lowland hills and farmed valley lowlands in the more settled south-eastern part of the study area. The north-eastern tip of the Loch Lomond and The Trossachs National Park is within the study area, approximately 27km south-west of the site at its closest point, and the southern boundary of the Cairngorms National Park is approximately 20km to the north of the site. There is no theoretical visibility from the Loch Lomond and The Trossachs National Park, and visibility from the Cairngorms National Park is limited to hill tops. There are four National Scenic Areas (NSAs) within the 35km study area, the closest of which is the River Tay (Dunkeld) NSA, with theoretical visibility from all four being limited. There are also five Areas of Great Landscape Value (AGLV) within the study area, though these are more distant from the site. Settlements in the study area tend to be located in the straths and glens, along minor or major transportation routes where there will be limited theoretical visibility. The main settlements in the study area include Perth, Crieff, Pitlochry, Auchterarder, Aberfeldy, Blair Atholl, Dunkeld and Blairgowrie. Smaller settlements closer to the site, within Strathbraan, include Milton, Trochry and Amulree. Theoretical visibility from key routes through the study area is also limited, with no visibility from the Rob Roy Way long distance footpath.
- 1.5 In terms of landscape effects, during construction it is predicted that there will be a major and significant landscape effect on the site relating to excavations and track construction, the presence of tall cranes and partially built towers whilst turbines are being erected. In addition, it is anticipated that there will be a significant effect on the local area of LCT 3: Highland Summits and Plateaux during construction. However, this effect will be limited to within 2km of the site and as such is not considered to equate to a significant effect on the LCT. It is also predicted that there will be major and significant effects on the site during operation of the wind farm, as well as significant effects on the local area of LCT 3: Highland Summits and Plateaux. Again this effect will be limited to within 3km of the site, and is not therefore considered to equate to a significant effect on the LCT. No effects are anticipated upon the special qualities of the River Tay (Dunkeld) NSA, or those of any of the other designated landscapes in the study area.
- 1.6 Visual amenity will be affected during construction at locations from which construction activity will be noticeable. These areas are very localised in extent, and likely receptors are residents in Strathbraan and Glen Cochill, road users travelling on the A826 and A822, and hill walkers in the local area, including Druim Mor, the hills on the south side of Strathbraan and on the west side of Glen Cochill. Effects on views will be moderate and significant in the short term. During the operational phase, effects may occur where the turbines are visible, as shown by the ZTV. Significant visual effects are predicted for six of the 19 representative viewpoints during operation of the wind farm. The findings of the viewpoint assessment indicate that significant effects on views will be experienced by viewers who are susceptible to change, at locations up to 6km from the proposed turbines, where there are open views towards the wind farm.
- 1.7 No significant cumulative landscape and visual effects are predicted, since the wind farm has been designed to relate to the existing presence of Griffin Wind Farm, and does not introduce turbines into landscapes and views where they are not already a feature.
- 1.8 Measures to reduce landscape and visual effects were largely achieved through the design of the wind farm, although effects during construction will be further minimised through site restoration measures in accordance with good practice.

## Noise

- 1.9 Once operational, wind farms may emit two types of noise. Aerodynamic noise relates to the movement of the rotating blades through the air, and mechanical noise may emanate from components within the nacelle of a wind turbine, where the rotor blades meet. However, modern turbine designs have evolved to ensure that mechanical noise radiation from wind turbines is negligible. Aerodynamic noise is usually only perceived when wind speeds are fairly low; in higher winds, aerodynamic noise is generally masked by the normal sound of wind blowing through trees and around buildings.

- 1.10 Noise will also be generated during the construction phase of the wind farm from the operation of a range of construction plant and machinery and from construction traffic. This will be temporary in nature, during the 20 month construction period. Details of the noise assessment are provided in **Chapter 7: Noise** of the ES.
- 1.11 The study area for the assessment extends up to 2km from the wind farm, for the purposes of assessing operational and cumulative noise effects, and also includes residential dwellings along the construction traffic route in relation to construction traffic noise. Reference was made to the baseline noise surveys undertaken as part of the EIA for Griffin Wind Farm.
- 1.12 The consideration of potential noise effects was an integral part of the wind farm's design. The layout of the wind farm has been designed so that predicted wind farm noise levels from the wind farm operating do not exceed noise limits derived in accordance with best practice guidance.
- 1.13 The noise assessment concluded that noise levels at the nearest residential properties will not exceed accepted limits during both the construction period and all operational conditions. Cumulative noise effects will not exceed acceptable limits. Therefore, it is predicted that noise effects of the wind farm will not be significant.
- 1.14 To further limit the effects of noise during construction, good practice measures will be implemented and set out in a site specific Environmental Management Plan (EMP) and relevant Construction Method Statements.

## Geology, Hydrology and Hydrogeology

- 1.15 The geology, hydrology and hydrogeology assessment considers the potential effects of pollution incidents, erosion and sedimentation and modification of surface water drainage patterns, in addition to modification to groundwater levels and flows, compaction of soils and peat instability during construction and operation of Creag a' Bhàird Wind Farm. More details on the assessment are provided in **Chapter 8: Geology, Hydrology and Hydrogeology** of the ES.
- 1.16 The study area comprised the area dominated by the hills known as Creag a' Bhaird, Meall Mor and Craig Tombane. The assessment was informed by consultation with Perth and Kinross Council, SEPA and SNH. Field surveys were undertaken between February and October 2013.
- 1.17 The Tombane Burn (and tributaries) drain the main area of the site, flowing generally south east towards the River Braan. An unnamed tributary of the Ballinloan Burn drains the north-east of the site, with the Cochill Burn draining the western fringe of the site adjacent to the A826.
- 1.18 There are no designated sites which relate to hydrology, geology and hydrogeology within 5km of the site. The River Tay SAC is approximately 5.3km downstream of the Ballinloan Burn and River Braan confluence, and is of European importance with several fish species, mammals and rare vegetation. The average peat depth across the site is 0.3m. The site is not within a source zone for public water supply, with the nearest public water supply assets in the Dunkeld area. There are a number of private water supplies within the vicinity of the site which provide water to local properties or businesses.
- 1.19 The hydrology, hydrogeology and peat distribution within the site influenced the design of the turbine and infrastructure layout to avoid and/or minimise potential effects on these receptors where possible. The application of a minimum distance for the location of infrastructure from watercourses is the principal means by which surface hydrology can be protected (and therefore any dependent ecology or water supplies). 50m buffers were applied around water features shown on OS mapping 1:10,000. The presence of peat within the site also formed a key design layout consideration. Informed by the peat probing survey, the design process minimised the location of turbines and infrastructure within areas of deeper peat. The design process also sought to minimise the number of watercourse crossings required and avoid steep slope angles.
- 1.20 The assessment predicted the potential for a moderate pollution effect on private water supplies during the construction of Creag a' Bhàird Wind Farm. With the implementation of mitigation proposals, such as surface water monitoring downstream of site and at abstraction locations this effect will be reduced to minor. No significant cumulative effects are predicted in relation to geology, hydrology and hydrogeology.

## Ecology

- 1.21 The ecology assessment considers the potential construction and operational effects of the wind farm on designated areas, terrestrial habitats, aquatic habitats and protected species. More details of the assessment are provided in **Chapter 9: Ecology** of the ES.
- 1.22 Field surveys were carried out to establish habitat type and distributions and the presence of badgers, bats, fish, fresh water pearl mussel, otter, wildcat, pine marten, red squirrel and water vole.
- 1.23 There are no designated sites of nature conservation within the site. The River Tay Special Area of Conservation (SAC)/Site of Special Scientific Interest (SSSI) is located approximately 5km to the east of the site, and is designated for its importance to atlantic salmon, river lamprey, brook lamprey, sea lamprey, otter and clear-water lakes or lochs with aquatic vegetation.
- 1.24 Sitka spruce coniferous plantation forestry is the dominant habitat type within the site and covers approximately 80% of the site. Dry dwarf shrub heath is present across much of the unplanted parts of the site and occupies approximately 12% of the site. In relation to protected species, no signs of badger were recorded during field surveys, with the site considered generally unsuitable for the species. No bat roosts were identified during surveying and no significant potential for roosting was noted. The otter survey revealed the presence of otter along the length of the Tombane Burn and tributaries. No signs of water vole or wildcat presence were recorded during surveying. Pine marten surveys identified suitable habitat on site for foraging and breeding, although no dens were found. No signs of red squirrel were recorded and the woodland within the site is considered to be unattractive for red squirrel. No records of freshwater pearl mussel were found during the desk study and fish surveys found that brown trout was the main species on the site.
- 1.25 No significant effects on designated sites, habitats or protected species during construction and operation of Creag a' Bhàird Wind Farm are predicted.
- 1.26 A Species Protection Plan (SPP) is proposed to be implemented during construction, and will be agreed with Perth and Kinross Council and SNH. The SPP will detail measures to protect otter, wildcat, pine marten, water vole, red squirrel and badgers, and will include pre-construction surveys and good practice measures. An Ecological Clerk of Works (ECow) will be present onsite during construction. Pollution Prevention Measures will be implemented, in consultation with Perth and Kinross Council and SNH, and will ensure that any potential effect on the River Tay SAC is avoided. During operation, it is proposed that enhancement measures will be incorporated into the forest re-planting design. These measures will benefit both red squirrel and pine marten.
- 1.27 No significant cumulative effects in relation to ecology are predicted.

## Ornithology (Birds)

- 1.28 The assessment of potential effects on ornithology (birds) considers direct habitat loss during construction, displacement of birds as a result of indirect habitat loss, habitat modification, death or injury through collision and cumulative effects. Particular attention has been paid to species of high or moderate conservation status ('target species') including hen harrier, short-eared owl and black grouse. More details on the assessment are provided in **Chapter 10: Ornithology** of the ES.
- 1.29 The study area for the assessment comprises the site and appropriate survey buffers as recommended by SNH Guidance<sup>v</sup>. In addition, the assessment has also been informed by a Collision Risk Analysis Area (CRAA) which comprised a survey buffer of 500m in all directions from each turbine. The purpose of the CRAA was to inform collision risk modelling. A desk study was undertaken to collate existing bird records and/or data, along with consultation with Perth and Kinross Council and SNH, and field surveys were undertaken. All field surveys were undertaken between March 2011 and August 2012.
- 1.30 There are no statutory designations relating to birds within the site. Within 20km of the site, there are nine designations with ornithological qualifying features.

- 1.31 Hen harrier was the most frequently occurring target species during field surveys with 11 flights being recorded between March 2011 and August 2012. 10 of these flights passed through the CRAA, with the majority during the 2011 and 2012 breeding seasons. Black grouse was the second most frequently recorded target species during surveys; 10 flights were recorded during the survey period, although these flights were below the potential collision height (PCH). Black grouse are present throughout the year within the site and wider area. Black grouse surveys and other records in 2011 and 2012 suggested that four lek (communal courtship ground) locations are present within 1.5km of the site, with lekking activity recorded at two of these locations in 2011 and at three locations in 2012. In addition, a total of four peregrine flights were recorded during surveys, of which three were 'at-risk', being within the CRAA at PCH. The species was not recorded during any breeding bird surveys, and no breeding behaviour was observed. A possible but unconfirmed short-eared owl breeding attempt was recorded adjacent to the access track and around 580m from the site boundary in 2011. No flight activity was recorded for the species. Greylag goose was the only goose species recorded during baseline surveys. No breeding evidence was observed, and activity was confined to two flocks of 4 and 20 individuals that traversed the CRAA at PCH in winter 2011-12. Observations of other raptors on site and within the survey area included red kite, goshawk, white-tailed eagle, merlin, buzzard, kestrel and sparrowhawk.
- 1.32 During construction, it is considered likely that activities will displace black grouse from foraging areas, and this is considered to represent an effect of minor-moderate significance. It is proposed therefore that black grouse lekking surveys will be undertaken during the construction phase. If any leks are identified, it is proposed that a 500m disturbance buffer shall be implemented, and no work shall be undertaken in these areas for a period of one hour before or after dawn. It is predicted that the implementation of this mitigation shall result in a residual minor effect. The assessment has also identified a minor-moderate displacement effect on short-eared owl during construction. It is anticipated that a minor residual effect will remain once committed mitigation is implemented, including the commencement of construction works prior to the breeding season, visual deterrents to exclude breeding attempts and pre-construction surveys on the site to determine breeding and the implementation of a 500m exclusion zone around construction activities until breeding is complete.
- 1.33 During operation of the wind farm, it is predicted that there will be a moderate collision effect on hen harrier. To mitigate this effect, it is proposed that a cutting regime will be implemented within the site boundary with the aim of keeping grass sward low to prevent increases in prey utilisation and ultimately the attraction of hen harriers. In conjunction with this, post-construction prey and bird surveys will be undertaken to record any changes in activity levels. The implementation of this mitigation will result in a residual minor effect.
- 1.34 No significant cumulative effects are predicted on target species during construction and operation of the wind farm.
- 1.35 It is proposed that a Breeding Bird Protection Plan will be agreed in consultation with SNH in advance of construction of the wind farm. This plan will ensure that all reasonable measures are taken to avoid disturbance to breeding birds and to avoid damage to, or destruction of, nest sites.

## Archaeology and Cultural Heritage

- 1.36 An archaeology and cultural heritage assessment has been carried out to investigate the potential physical and setting effects on archaeological and cultural heritage assets during construction and operation of the wind farm. More details on the assessment are provided in **Chapter 11: Archaeology and Cultural Heritage** of the ES.
- 1.37 Archaeology and cultural heritage assets include sites, features and areas with statutory and non-statutory designations, including Scheduled Monuments; Listed Buildings; Conservation Areas; Gardens and Designed Landscapes (Inventory and Non Inventory status); Non Statutory Register sites and other historic environment interests.
- 1.38 For the site study area, data has been gathered to identify any potential physical effects on assets. Data has been gathered for the wider study area to identify potential setting effects on all

designated assets within 5km of the turbine locations, including Scheduled Monuments and Listed Buildings.

- 1.39 The method of assessment has included desk based data collection and field surveys. Field surveys of the site were undertaken in April 2013. Relevant assets in the wider study area were visited to assess potential effects on their setting in September 2013.
- 1.40 There are no designated assets or previously recorded undesignated assets within the site. Within the wider area, there are 11 scheduled monuments and eight listed buildings; five of which are category A listed and three of which are category C listed. There are no inventory battlefields, world heritage sites, inventory gardens and designed landscapes (GDL) or conservation areas within the wider study area.
- 1.41 There is potential for construction effects upon previously unrecorded heritage assets, currently obscured by forestry, resulting in major and significant effects. It is proposed that a programme of archaeological recording would offset the loss of any unrecorded assets, resulting in a residual minor effect. A residual beneficial effect on previously unrecorded assets is anticipated, as their baseline condition may degrade if the 'do nothing scenario' continues.
- 1.42 During operation of the wind farm, it is predicted that there will be minor effects on the setting of the stone circle at Meikle Findowie; the settlement, field system and cairn at St Louis, the mill at Meikle Tombane and on the settlement at Salachill.
- 1.43 The assessment has found that there will be minor cumulative effects on the setting of the stone circle at Meikle Findowie; the settlement, field system and cairn at St Louis and the mill at Meikle Tombane. It is likely that a moderate and significant cumulative effect on the setting of the Salachill settlement will occur.

## Access, Traffic and Transport

- 1.44 The access, traffic and transport assessment considers the potential effects of construction and operational traffic, associated with the wind farm, on the local road network. It identifies the likely volume of traffic that will be generated during construction (including forestry traffic) and operation and the subsequent effect this will have on the local road network. More details on the assessment are provided in **Chapter 12: Access, Traffic and Transport** of the ES.
- 1.45 The study area for the assessment has been defined as the public road network in the vicinity of the wind farm, which will be used as access routes by traffic bound for the site, and includes the M90, A9, A822 and A826. The method of assessment included a combination of desk-based study, field surveys and consultation with statutory consultees.
- 1.46 Although the M90 motorway and the A9 were included in the study area, the likely effects have not been considered within the assessment as it is not anticipated that the effect of the additional traffic generated by the wind farm on these roads will be significant.
- 1.47 The A826 is a typical rural road which accommodates a two-way flow, although HGVs may have to slow to pass each other. The road is generally well maintained – the geometry is of a mixed standard with a number of relatively sharp bends. The A826 connects to the A822 approximately 3.5km south of the site. The A822 is relatively lightly trafficked and comprises a standard single carriageway suitable for HGVs. The M90 motorway and A9 are strategic routes in Scotland and form part of the Scottish Trunk Road Network.
- 1.48 During construction of Creag a' Bhàird Wind Farm, turbine components and materials will be delivered to the site. Some materials will be transported by HGVs and turbine components will need to be transported on vehicles capable of carrying 'abnormal loads' (vehicles longer than 17m and/or more than 4m wide). Turbine components will arrive into the Port of Rosyth.
- 1.49 The assessment has determined that there will be no significant effects on the local road network during construction of the wind farm. However, a Traffic Management Plan (TMP) will be implemented, in agreement with the Police and Roads Authorities, for the construction works. The TMP will include a more detailed timetable of works including how traffic associated with the site will be managed including, permitted delivery times, traffic control measures and any mitigation measures required to accommodate the passage of abnormal loads.

- 1.50 Once operational, wind farms typically generate very low levels of traffic. It is estimated that the wind farm will generate no more than two vehicle movements per week for the purposes of maintenance, repairs and servicing, and therefore this does not represent a significant effect.
- 1.51 No cumulative effects have been identified in terms of other construction projects that could run concurrently with the wind farm. Should such circumstances arise, liaison will take place between the contractors appointed for the affected project(s) and the police and the Roads Authority in the development of the construction TMP.

## Socio-Economics

- 1.52 This assessment considers the potential effects of construction and operation of Creag a' Bhàird Wind Farm on direct employment and indirect economic benefits, public access and recreation and tourism. More details on the assessment are provided in **Chapter 13: Socio-Economics** of the ES.
- 1.53 With respect to potential effects of the wind farm on employment and indirect economic benefits and tourism, the assessment considers potential effects at the Perth and Kinross Council administrative level. In addition, the assessment focuses on the site in terms of direct effects on public access and the site and surrounding area with regard to effects on recreation. The cumulative assessment of effects considers the socio-economic effects of the construction and operation of schemes within 35km of the site, as identified in **Chapter 6: Landscape and Visual Amenity** of the ES.
- 1.54 The Perth and Kinross area had an estimated population of 147,740, which accounted for 2.8% of Scotland's population as a whole<sup>vi</sup>.
- 1.55 From April 2012 to March 2013 4,600 people within the Perth and Kinross area were unemployed, equating to 5.9% of the population. Over the same period, the employment rate for Perth and Kinross was 80.4% and the sector which employed the highest proportion of workers in the area was 'Professional Occupations' (employing 20.2% of people aged 16+).
- 1.56 There are no Rights of Way (RoW), core paths or formal recreational facilities within the site. The closest RoW is approximately 1.2km to the south of the site. This RoW (also designated as a core path) runs for 3.9km from Strathbraan, off the A822, to Little Glenshee via Aldmad Bridge.
- 1.57 The Amulree to Aberfeldy section (24.75km) of the Rob Roy Way (also designated as a RoW and core path) lies within the wider area and comes within approximately 4km of the site at its closest point.
- 1.58 An outdoor activity centre, based at Tomnagrew Farm, is located approximately 1km south-east of the site and is accessed from the A822. A quad biking centre is located approximately 1km east of the site.
- 1.59 Tourist destinations within the wider area include Beatrix Potter Exhibition Centre in Birnam, which is approximately 10km north-east of the site, Highland Safaris; located approximately 12km north-west of the site and Castle Menzies which is approximately 12.5km north-west of the site.
- 1.60 During construction of the wind farm it is anticipated that 2-4 FTE (full-time equivalent) jobs will be created. This is considered to represent a temporary minor (positive) effect to the local economy.
- 1.61 It is likely that there will be some local employment generated as an indirect result of the construction of Creag a' Bhàird Wind Farm. It is considered that indirect employment as a result of the wind farm will result in a temporary minor (positive) effect to the local economy.
- 1.62 It is anticipated that there will be no access to the site for informal recreational purposes for the duration of the construction period, and the existing access track is likely to be closed to pedestrians. Users of the nearest RoW and core paths and visitors to the outdoor activities and quad biking centres may be adversely affected in terms of visual amenity, noise and dust nuisance during construction, however, this effect will be temporary and intermittent. The visual amenity of users of the Rob Roy Way, Amulree to Aberfeldy section, and corresponding RoW and

core path may also be adversely affected during construction, however, this effect will again be temporary and intermittent. Given the extensive scope for informal recreation in the surrounding area, the informal nature of recreational activity, as well as the proposed measures to control dust and noise emissions from construction activities, it is not anticipated that Creag a' Bhàird Wind Farm will directly affect public access, or recreational activity in the wider area, therefore, a temporary negligible residual effect on access and recreation is predicted during construction.

- 1.63 The wind farm will not prevent visitors accessing the identified attractions and popular points of interest during construction or operation, and the effects on tourism will be negligible.
- 1.64 Once operational, the wind farm will require a small team of personnel to service, maintain and operate it. It is predicted that 1 FTE job will be created during the lifetime of the wind farm (25 years), resulting in a negligible (positive) effect to the local economy. It is likely that there will be some indirect economic benefits as an indirect result of the operation of Creag a' Bhàird Wind Farm. This represents a negligible (positive) effect.
- 1.65 The effect that changes in views will have on recreational activity will depend on the personal opinion of the viewer, however, there will be no restrictions on access to the site during operation of the wind farm. Therefore, the effect on public access and recreation during operation is assessed as negligible.
- 1.66 No significant cumulative effects in relation to socio-economic aspects are predicted.

## Other Issues

- 1.67 The assessment of the potential effects of the wind farm on aviation and defence, telecommunications, television reception and dust has been undertaken primarily through desk based study and consultation. Further details of the assessment are provided in **Chapter 14: Other Issues** of the ES which also presents a summary of the findings of the carbon balance assessment.

### Aviation and Defence

- 1.68 The Ministry of Defence (MOD) was consulted on the scoping stage wind farm design by Force 9 Energy in February 2011. The MOD responded confirming no objections to the project in February 2011. Force 9 Energy consulted for a second time in August 2012 and, again, no objection was raised. The Civil Aviation Authority (CAA) and NATS En Route have raised no concerns about the wind farm. The predicted effect of the operation of the wind farm on radar is therefore considered not significant.

### Telecommunications

- 1.69 Consultation with The Office of Communications (Ofcom) , Atkins and the Joint Radio Company (JRC) found that there are four communications links (two from MLL Telecom, one each from BT and Orange) located in the vicinity of the site which may have had the potential to be affected by the development. The early identification of these links allowed for them to be mapped and setback distances applied to site turbines away from them.
- 1.70 The predicted effect of operation of the wind farm on telecommunications is considered not significant as the paths of the links were identified in order to design out any link/turbine interactions.

### Television Reception

- 1.71 The online BBC Windfarm Tool (which provides an estimate of the population numbers potentially affected by the installation of wind turbines) indicated in December 2010 there is unlikely to be interference with local transmitters, with the result that no homes are expected be affected.
- 1.72 Effects on television reception will be confirmed following an onsite survey should issues arise. Installation of satellite television or upgrades of the current antenna systems will be the most appropriate form of mitigation, if required.
- 1.73 The predicted operational effect of the wind farm on television reception is considered not significant.

## Dust

- 1.74 The movement of vehicles as they transport equipment, goods and timber to and from the site is the most likely source of dust during the construction period. The level and distribution of emissions will vary according to factors such as the duration of dust-generating activity and weather conditions.
- 1.75 Force 9 Energy is committed to adopting good practices for dust management during construction, thereby controlling and reducing any potential effects. With adherence to these good practice measures, the predicted dust effects on the nearest residential receptors will be temporary and will not be significant.
- 1.76 No significant cumulative effects are predicted in relation to aviation and defence, telecommunications, television reception and dust effects.

## Carbon Balance

- 1.77 The purpose of Creag a' Bhàird Wind Farm is to generate electricity from a renewable source of energy, offsetting the need for power generation from the combustion of fossil fuels. Consequently, the electricity that will be produced by the wind farm results in a saving in emissions of carbon dioxide (CO<sub>2</sub>) with associated environmental benefit.
- 1.78 The carbon balance assessment (**Appendix 14.1** of the ES) has calculated that the expected payback time (the length of time for the wind farm to become a 'net avoider', rather than a 'net emitter' of carbon dioxide emissions) will be approximately 29 months. This is based on the assumption that backup generation capacity of 5% from non-renewable sources will be required. With a 25 year operational life, this would mean that the wind farm would save over ten times the carbon emissions generated, making a positive net contribution to reducing carbon dioxide emissions.

## Summary

- 1.79 The EIA for the proposed development been carried out in accordance with regulatory requirements and guidance on good practice. The findings of the surveys undertaken, in addition to extensive consultation, have informed the design process and, as a result, design changes have been introduced to reduce effects on the surrounding landscape, hydrological regime and taking into account local ground conditions.
- 1.80 Prior to committed mitigation, significant effects are predicted in relation to: landscape and visual amenity; geology, hydrology and hydrogeology; ornithology; and archaeology and cultural heritage. However, there is scope to mitigate many of the predicted significant effects and several effects are therefore considered not significant following the proposed mitigation. With the exception of temporary effects during construction, significant residual effects are associated with landscape and visual amenity and archaeology and cultural heritage, and cannot be avoided in their entirety given the inherent nature of wind farm development.
- 1.81 Overall, this EIA shows that, given the iterative design process, and with the committed good practice measures and proposed mitigation in place, most potential environmental effects associated with the construction and operation of the development can be avoided or minimised.

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<sup>i</sup> The Town and Country Planning (Scotland) Act 1997, as amended by The Planning Act (Scotland) 2006

<sup>ii</sup> The Town and Country Planning (Hierarchy of Development) (Scotland) Regulations 2009

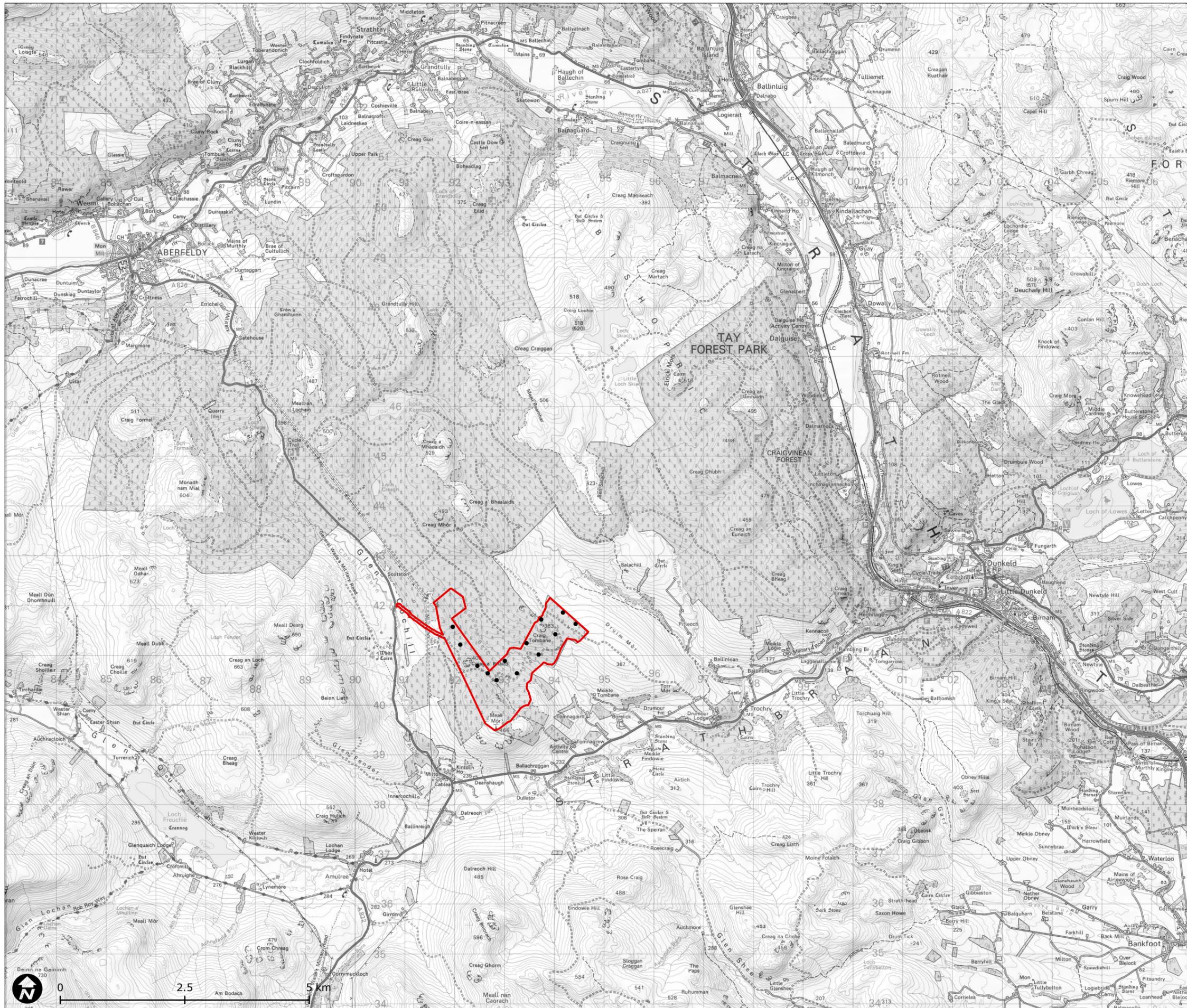
<sup>iii</sup> The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011, Available [online] at: <http://www.legislation.gov.uk/ssi/2011/139/contents/made>, Last accessed on: 12/12/2012

<sup>iv</sup> Scottish Natural Heritage. (2009). Siting and Designing windfarms in the landscape (Version 1), Chapter 5

[1] Scottish Natural Heritage. (2006). Visual Representation of Windfarms: Good Practice Guidance

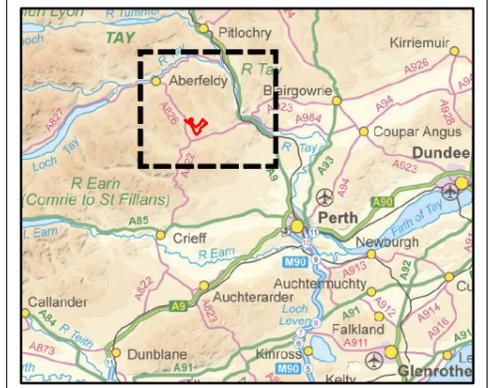
<sup>v</sup> Scottish Natural Heritage. (2010). Survey methods for use in assessing the impacts of onshore windfarms on bird communities. SNH.

<sup>vi</sup> General Register Office (GRO) for Scotland, (2013), 'Perth and Kinross Council Area – Demographic Factsheet', Available [online] at: <http://www.gro-scotland.gov.uk/files2/stats/council-area-data-sheets/perth-and-kinross-factsheet.pdf>, Last accessed on: 02/10/2013



**Location Plan**

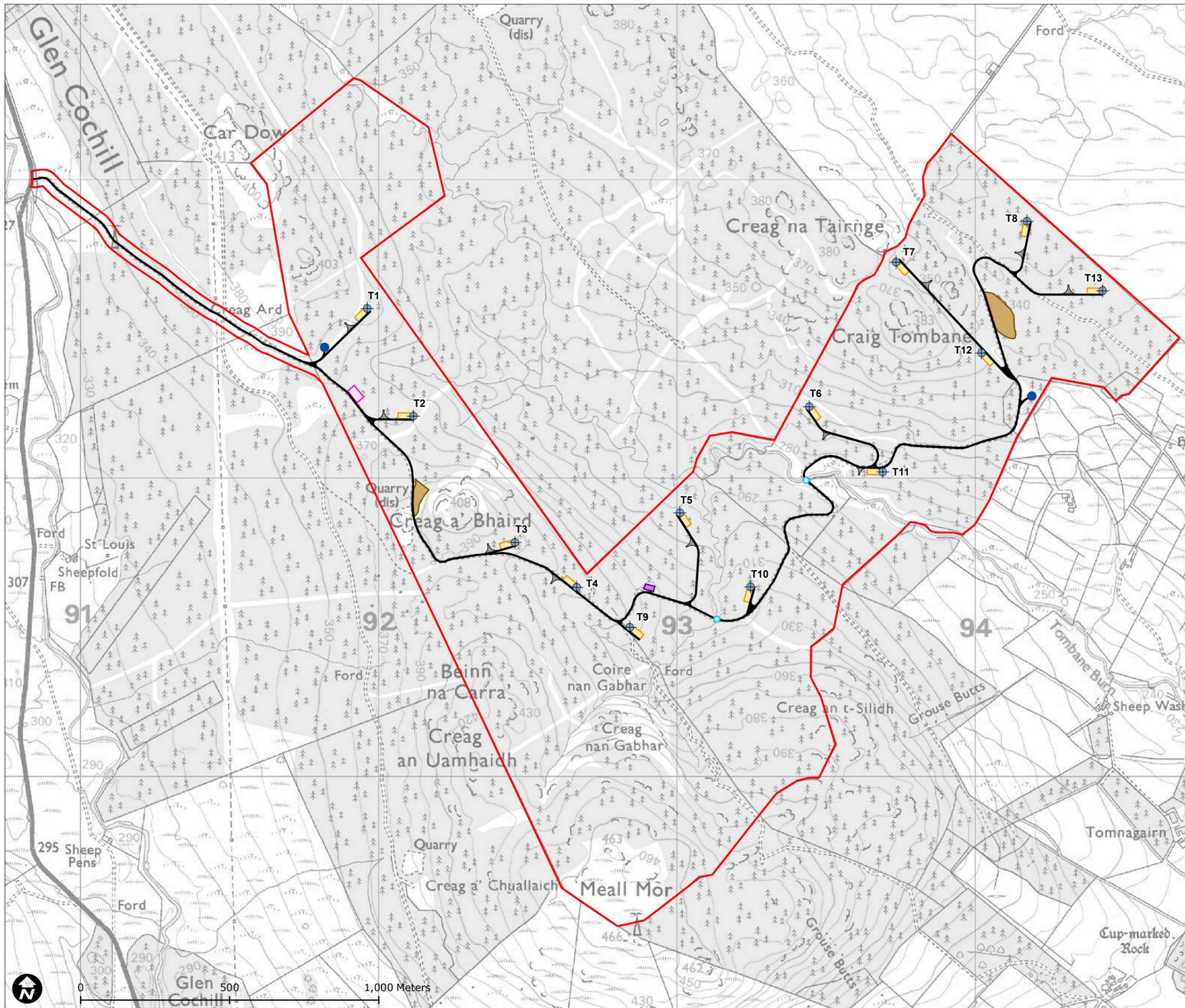
- Site boundary
- Turbine location



**Figure 1**

Map Scale @ A3: 1:75,000





**Development Layout**

- Site boundary
- Turbine location
- Meteorological mast
- Access track
- Turning head
- Crane hardstanding
- Construction compound
- Control building
- Borrow pit search area
- Watercourse crossing

**Figure 2**

Map Scale @ A3: 1:12,500