

Appendix 3 – LVIA Residential Assessment

(Included as a separate document)

Appendix 4 – Cultural Heritage Assessment

(Included as a separate document)

Appendix 5 – Hydrological drawing

ITEM 3.2



Green Cat Renewables

CROFTS FARM WIND TURBINES

Non-Technical Summary

Crofts Farm Renewables Ltd

January 2014

Prepared for:
Crofts Farm Renewables Ltd

CROFTS FARM WIND TURBINES

Prepared By:
Green Cat Renewables

Non-Technical Summary

Crofts Farm Renewables Ltd

January 2014



Green Cat Renewables

Edinburgh Office
Midlothian Innovation Centre
Roslin
EH25 9RE

Tel: 0131 440 9053
Fax: 0131 440 6150

Checked By: Brian Sawers	Date: 16/01/14
Approved By: Glen Moon	Date: 17/01/14

Preface

This Non-Technical Summary (NTS) provides an 'Executive Summary', presented in a non-technical manner, of the Environmental Statement (ES) prepared in support of the planning application for the proposed Crofts Farm wind turbines.

Green Cat Renewables Ltd is a consultancy which is acting as an agent on behalf of the applicant Crofts Farm Renewables Ltd, and is responsible for the studies compiled in the ES. The ES package comprises the following documents:

- Environmental Statement (ES); and
- Non-Technical Summary (NTS);

It is supported by the following separate technical appendix:

- Landscape and Visual Figures.

Hard copies of the ES package can be viewed at:

**Angus Council
County Buildings
Market Street
Forfar
DD8 3WB**

Hard copies of the the ES package (including the NTS and landscape figures documents) can be purchased for £200 per hard copy. Electronic copies (CD-ROM) can be purchased for £10. Please contact:

Glen Moon (Project Manager)
Green Cat Renewables Ltd
Stobo House
Midlothian Innovation Centre
Roslyn
Midlothian
EH25 9RE

glen@greencatrenewables.co.uk
0131 4409064

Table of Contents

1	Introduction	7
2	The Proposed Development	9
3	Planning and Environmental Policy Context.....	13
4	Local Economic Benefit	17
5	Site Selection and Design Evolution.....	19
6	Ecology/Fauna.....	21
7	Landscape & Visual Impact Assessment (LVIA).....	23
8	Noise	27
9	Cultural Heritage / Archaeology	29
10	Surface and Groundwater Hydrology	31
11	Shadow Flicker	33
12	Existing Infrastructure, Telecommunications, Television, Aviation and Electromagnetic Safety	35
13	Climate Change	37
14	Conclusion	38

1 Introduction

Background

Crofts Farm is owned by the McDonald family, which has farmed in the Redford area for three generations. The farm business comprises 400 acres of owned land together with a further 750 acres of farmland rented from 18 local farming businesses. The business specialises in intensive vegetable production, annually producing and grading 1,500 tonnes of broccoli, 900 tonnes of cauliflower, 450 tonnes of brussel sprouts and 3,000 tonnes of potatoes. All produce from the farm is marketed to leading retailers through local companies including East of Scotland Growers, The Co-operative Farm facility in Carnoustie and Kettle Produce in Fife. Alongside the farm, the business runs an agricultural engineering enterprise, building agricultural equipment for supply throughout the UK.

The business currently employs 8 full time members of staff, 4 part time and 80 seasonal workers during peak harvest periods.

The main aims of the project are to:

- Generate clean electricity. A portion of this will be used to power the farm's cold stores and the remainder will be exported to the National Grid;
- Generate an additional income stream for the business through the sale of any electricity not used by the farm; and
- Reduce the businesses' carbon footprint, which is of increasing importance to major suppliers.

Green Cat Renewables is a Scottish environmental consultancy that has been commissioned by Crofts Farm Renewables Ltd to undertake the required environmental assessments in support of the application.

Renewable energy in Scotland

Recent years have seen the rapid development of strongly pro-renewables policy frameworks at the EU, UK and Scottish levels. The main driver for these policy frameworks has been the ambition to reduce greenhouse gases and dependence on fossil fuels in order to combat climate change, and the requirement to fill the resulting energy gap with low carbon alternatives. A secondary driver within the UK has been energy security, with North Sea oil and gas production steadily in decline and concerns arising about sourcing energy from politically unstable regions. Furthermore, within Scotland many existing power stations are reaching the end of their design lives, thus raising the potential of a shortfall in indigenous electricity generating capacity. The Scottish Government's very ambitious target of 100% of Scotland's electricity demand being generated from renewable sources by 2020 has placed an even greater sense of urgency in the sourcing of environmentally acceptable sites for onshore windfarm developments as other sources such as tidal

and offshore are at an early stage in development and much more expensive at present.

Approach to the Environmental Impact Assessment (EIA)

An Environmental Statement (ES) has been prepared in support of this application in line with the Planning EIA Regulations (the Environmental Impact Assessment (Scotland) Regulations 2011).

The ES addresses the social, economic and environmental issues associated with the proposal, in line with the relevant environmental policies, planning guidance and requirements of the planning authority. The scope of the ES was discussed and agreed with Angus Council, statutory consultees (such as Scottish Natural Heritage) and a wide range of other potentially interested parties. The statement is structured as follows:

- The Proposed Development;
- Planning and Environmental Policy;
- Site Selection & Alternative considered;
- Site Layout;
- Climate change;
- Socio-Economics;
- Ecology and Ornithology;
- Landscape, Visual and Cumulative Impact;
- Noise;
- Cultural Heritage and Archaeology;
- Hydrology;
- Existing infrastructures, telecommunication, Television, Aviation and Electromagnetic safety;
- Shadow flicker; and
- Traffic and Transportation.

The ES includes a description of how the work was undertaken and the assumptions that have been made. It sets out the results of the assessment of likely impacts of the development on the environment and describes measures proposed to reduce any environmental impacts identified (known as ‘mitigation’).

2 The Proposed Development

The proposal is for the installation and operation of two wind turbines with a maximum tip height of 80m. The final turbine selection will be determined at the post-planning stage, but the favoured machine is an Enercon E48, which is classified as being of medium size by comparison to large turbines, which are generally in excess of 100 metres to tip height.

Site Location

The proposed development is located approximately 8km north-west of Arbroath and 1 km north-east of the village of Redford in Angus, as shown in **Figure 2.1** below. This plan can be seen at a larger scale in the Planning Application Drawing (**APP-001**).

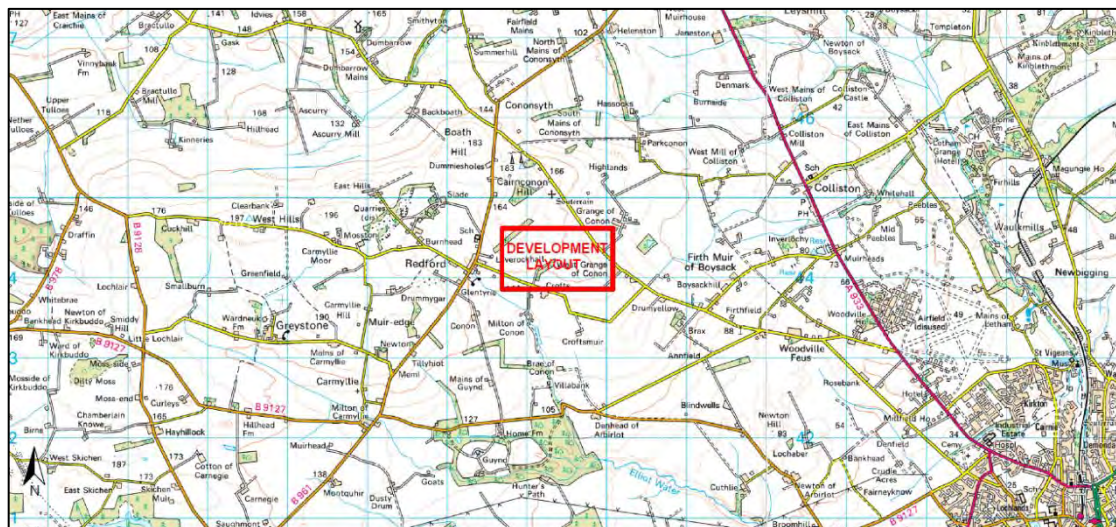


Figure 2.1 – Proposed Development location

The site is located on the south-eastern shoulder of Cairnconon Hill, which rises gently to a height of 183m. The turbines themselves would be located at 155m and 161m altitude respectively. The hill is bounded by the B961 to the west, which connects Redford to Carmyllie in the south and Friockheim in the north, and two further minor roads pass the site to the south and east. Two shelter belts of coniferous trees bound the site to the north-west and north-east respectively, and the communication masts on top of Cairnconon Hill are other noticeable features.

The landscape around the site is described within the '*Strategic Landscape Capacity Assessment for Wind Energy in Angus*¹' as being gently rolling or undulating, with large arable fields in which boundaries have been removed or have become minimal, giving an open, simple character.

The proposed development layout is shown on **Figure 2.2**.

¹ November 2013



Figure 2.2 – Site Layout

Key:	
●	Proposed turbine/foundation
	Hardstanding
	Access tracks
	Substation building
	Land ownership boundary
	Application boundary

Ordnance Survey Grid References for the proposed turbines are shown in **Table 2.1**.

Table 2.1 – Turbine national grid references (10m accuracy)

Turbine	Easting (m)	Northing (m)
1	357190	744555
2	357325	744415

The development would have a lifespan of 25 years. At the end of the project’s operational life the wind turbines would be decommissioned, the principal elements removed, and the site restored leaving little if any visible trace.

Proposed Turbine

The proposed turbine has a hub height of 56m and a rotor diameter of 48m, producing a maximum tip height of 80m. The nacelle housing contains the generator and other operating equipment. The transformer of this turbine type is usually contained within the tower base. It is proposed that the finish of the wind turbine, tower and blades will be semi-matt and pale grey in colour. **Figure 2.3** below shows the dimensions of the candidate wind turbine.

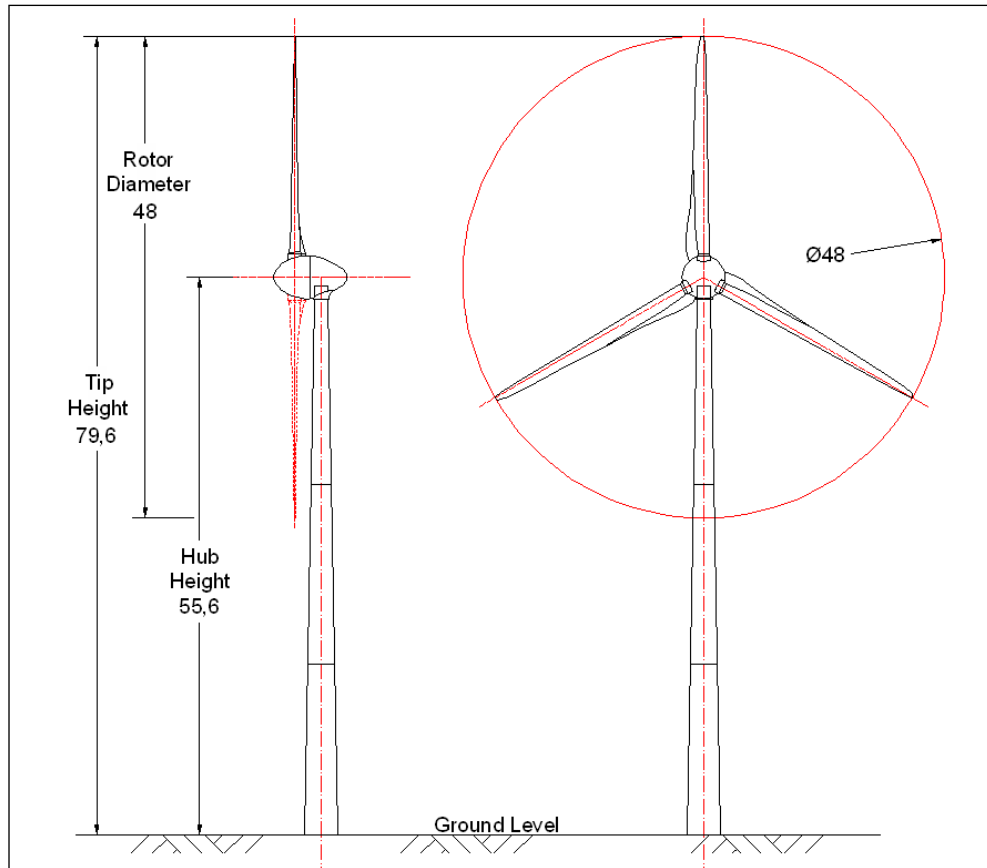


Figure 2-3 –Principal dimensions of maximum impact turbine

Site access

The upgrading of 360m of existing farm track would be required, along with the construction of approximately 750m of new on-site track to provide access to the wind turbines. The tracks would be typically 4.0m wide with 0.5m shoulders on each side and would consist of crushed stone to an average depth of up to 500mm. On corners, it will be necessary to construct wider areas of track to reflect the minimum bend-radii for the longest construction loads (the blades).

Delivery Route

It is intended that the turbines would be landed at Montrose and then transported east to the outskirts of Arbroath on the A92. Here they would head north-west on the A933 before reaching the site on the minor road that skirts the southern edge of the site. It is intended to send all construction traffic to the site via this route to avoid construction vehicles passing through Redford.

3 Planning and Environmental Policy Context

The acceptability of the proposed development will be assessed in the context of:

- National policy and guidance;
- The Local Planning Authority Development Plan; and
- Supplementary Planning Guidance.

National Policy

The Crofts Farm development will:

- Provide enough clean energy per year for approximately 650 homes;
- Assist the UK and Scottish Governments to meet national and international targets for the reduction of emissions including greenhouse gases;
- Help provide secure, diverse, sustainable and competitive energy supplies; and
- Contribute to the Scottish Government's target that 100% of Scotland's electricity demand should be generated by renewable means by 2020.

Local Policy

The key local development documents are:

- TAYplan (Approved 2012); and
- Angus Local Plan Review (Adopted 2009).

In addition to the development plan a number of other publications are also particularly relevant to the consideration of the application. These include:

- Tayside Landscape Character Assessment (1998);
- Angus Council Implementation Guide for Renewable Energy Proposals (2012);
- Angus Windfarms Landscape Capacity and Cumulative Impacts Study (Ironsides Farrar, 2008);
- Strategic Landscape Capacity Assessment for Wind Energy in Angus (prepared by Ironsides Farrar for Angus Council and SNH, November 2013)

Tayside Landscape Character Assessment (TLCA)

The TLCA, published in 1999, identifies that the application site falls within the Dipslope Farmland Landscape Character Type (LCT), which extends over a large area from the Montrose Basin south-westwards as far as the countryside north of Dundee adjoining the Sidlaw Hills. Its key characteristics are its general slope from north-west to south-east; the dominance of productive agricultural land; low woodland cover, except on large estates and along river corridors; a variety of historic sites; and the limited visual impact of Dundee and Arbroath. The landscape is described as being of medium scale, semi-enclosed to open, with extensive arable production on

very fertile land, medium to large fields and a scattered settlement pattern of hamlets and farmsteads.

Angus Windfarms Landscape Capacity and Cumulative Impacts Study (AWLCCIS)

The Study, published in September 2008, provides further information on the characteristics and capacity of the Dipslope Farmland LCT.

*The Study suggests that “the area is considered to have a medium landscape value. Together with a medium sensitivity this gives an **overall medium capacity for windfarm development**. Large or medium windfarms would not be appropriate in this area due to scale and visual sensitivity limitations. Any proposed development should be of limited scale and extent, reflecting the scale and pattern of the local landscape and would be limited by proximity of the settlements and scattered residential population”.*

The study defines a small/medium windfarm as “A windfarm of more than three turbines up to 20MW output”, the examples given being four turbines of over 50m, ten turbines of 2MW power or six turbines of 3MW power.

2MW turbines are typically 100m in height, and 3MW turbines around 125m in height. Set against these criteria, the proposed Crofts Farm development, with two turbines of 80m in height, would not be considered a large enough development to be a small/medium scale windfarm, and would fall below this threshold.

Strategic Landscape Capacity Assessment of Wind Energy in Angus (November 2013)

The most recent guidance on landscape capacity is provided by the ‘*Strategic Landscape Capacity Assessment (SLCA) for Wind Energy in Angus November 2013*’. This provides specific guidance on each Landscape Character Type (LCT) within the Local Authority Area, and assesses the acceptable future level of change within each area. The Crofts Farm site is fully situated within the ‘Redford Farmland’ sub-section of the ‘Dipslope Farmland’ character type.

The SLCA states that, “This (character type) has the highest capacity for wind energy in the Dipslope Farmland and can accommodate medium/large turbines, subject to local constraints. Groupings should remain relatively small and well separated to avoid overwhelming the underlying character. Turbines should not interfere with the ridge that marks the break of slope above the A92”.

In terms of cumulative impact, the Redford LCT is currently described as being ‘*Dipslope Farmland with occasional/No wind turbines*’. The SLCA states that the *Redford Farmland landscape character type has the potential to become a ‘Dipslope Farmland with Wind Turbines’.*

The SLCA assesses the Redford landscape area as having a medium capacity for groups of 1-5 turbines up to circa 80m to tip, with a suggested minimum separation distance between clusters of wind turbines or windfarms of around 5-10km.

The SLCA also highlights the sensitive visual nature of The Guynd, which is a Garden and Designed Landscape located ~2.2km south of the Crofts Farm site at its nearest point.

Conclusion

The scale of turbines proposed is in line with that deemed to be acceptable in the latest guidance available in the SLCA, which is consistent with the TLCA and AWLCCIS. Furthermore, the Crofts Farm site is located to the north of the ridge that marks the break of slope above the A92, highlighted within the SLCA as being an important factor.

The impact on The Guynd GDL has been assessed in detail within the ES. The assessment found that there are no predicted views of the turbines from within the property or from the immediate surrounding gardens which form the GDL, and there would be no impact on the setting of the house or gardens. The proposed development would therefore seem to satisfy all of the criteria set out within the SLCA.

The proposed development at Crofts Farm is therefore deemed to comply with national, regional and local policies relating to wind energy.

4 Local Economic Benefit

Construction phase benefits

Excluding the turbine component supply, the typical construction cost of a single turbine of the size and type proposed is in the region of £600,000. Past experience of projects of this size indicates that in fact around 50 % of construction expenditure occurs at a local level through the following:

- Contracts awarded to local firms for electrical works, civil engineering, fencing etc;
- Expenditure on hotels and services in the local area by contractors throughout the construction period; and
- Sourcing of appropriate materials such as crushed stone for the road surfaces and crane hardstandings from local suppliers.

It is the intention of the applicant to actively seek out opportunities to work with contractors and businesses in the local area prior to the construction phase. Preference will be given during any tendering procedures to local firms in order to maximise the extent to which the investment can be channelled into the local economy.

Operational phase benefits

The operational benefits of the turbines are:

- The turbines will generate ~2,900MWh of clean electricity every year, enough to power the equivalent of 650 homes.
- Electricity from the turbines will be used to directly power business operations at Crofts Farm, including two large cold stores, and indirectly a third, offsite cold store.
- The additional revenue from the sale of excess electricity will allow money to be re-invested into the business, providing more job security for existing employees and opening up the possibility of further employment through the expansion of the business.
- The project will co-exist alongside existing farming operations on the site.
- It is estimated that the project will save ~32,000 tonnes of CO₂ over its 25 year lifecycle, helping to contribute to the UK and Scottish Government's environmental targets.
- A total community payment over the life of the project of £162,500 (details below).

Community benefits

As a long-established business in the area, and with strong links to the local community, the applicant is keen to offer a community benefit package as part of the scheme.

It is intended to offer a sum of £5,000 per installed MW to the local community. This would amount to £162,500 over the 25 year lifetime of the project. This will be confirmed during the post-planning process.

Further discussions will be undertaken at the post-planning stage with the Council and Local Community Council to discuss the best way forward.

5 Site Selection and Design Evolution

Site selection

The first project design stage involves confirmation of the site's overall viability. Initial assessments confirmed that there were no 'showstoppers' in terms of developing a turbine scheme. The site was confirmed as:

- Having a viable wind resource;
- Being a suitable location in terms of on-site and nearby planning designations;
- Having the potential to maintain an acceptable separation distance from nearby residences;
- Being unlikely to have a significant impact on on-site or off-site cultural heritage features;
- Having sufficient nearby local grid capacity; and
- Allowing for provision for access for delivery of wind turbine components;

The site at Crofts Farm satisfied all of the above considerations. A potential aviation issue was identified with the radar at RAF Leuchars, and mitigation options have been investigated at an early stage. The site has therefore been through a rigorous assessment before the decision was taken to progress to a planning application.

Detailed Design

Once the overall site had been identified as being suitable for wind development, a more detailed assessment of the on-site conditions was undertaken.

Initially, a three turbine development was considered for the Crofts Farm site with the anticipation of it meeting the above criteria. Upon further assessment, it was determined that a two turbine development would be more comfortably accommodated, taking into account the visual and noise considerations.

A two turbine layout reduces the horizontal extent of the view from properties to the east and west, thereby minimising the residential and landscape visual impact. Initial noise predictions for the three turbine layout also showed that cumulative noise impacts with the operational North Mains of Cononsyth might prove to be restrictive.

The on-site constraints and a resultant layout are shown in **Figure 5.1**.

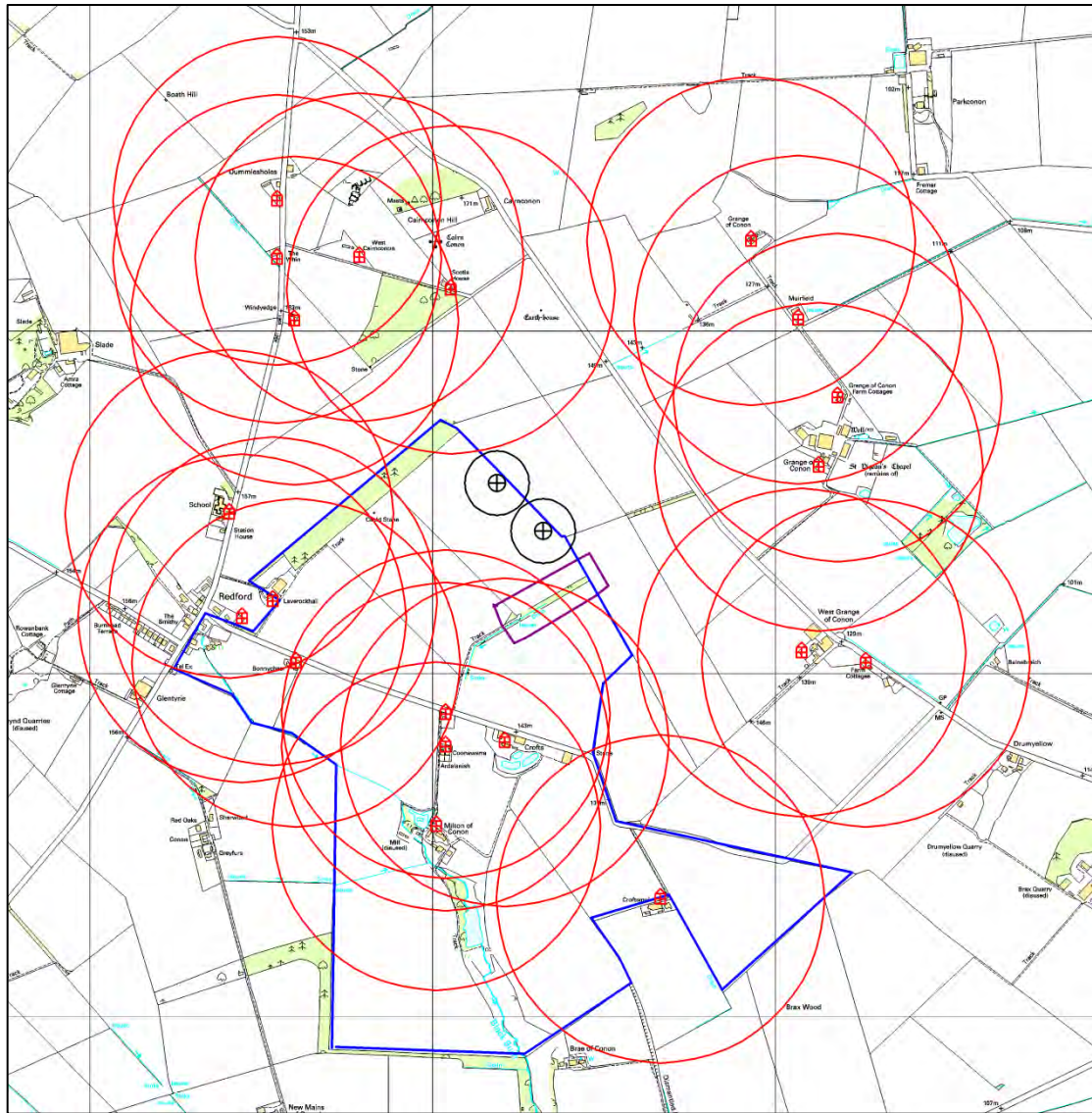


Figure 5.1 – Constraints Map

	10 rotor diameters (480m) boundary		Turbine
	Land ownership boundary		Properties
	Shelter belt separation		4 x Rotor diameter separation

Conclusion

The Crofts Farm site meets all of the outline criteria required for a suitable wind turbine project. The final site layout is the result of an iterative process which has considered a wide range of environmental factors. It has been carefully developed to achieve the best landscape fit from important viewpoints and to satisfy other environmental constraints.

6 Ecology/Fauna

Introduction

A detailed Ecological Impact Assessment (EclA) has been completed to assess the impact of the development upon the plant and animal species that are present at Crofts Farm.

These assessments were carried out by Garry Mortimer PhD, GLM Ecology, an experienced field ecologist with several years' experience of ecological assessments at wind farm sites.

Methodology

This programme of surveys was agreed with SNH, and comprised the following surveys:

- Breeding Birds;
- Geese Vantage Point Surveys;
- Winter Walkovers;
- Bats;
- Badgers; and
- A Phase 1 Habitat Survey.

The surveys were carried out according to current guidance published by the Institute of Ecology and Environmental Management (2006), which is recognised as best practice.

Main findings

Breeding birds

Twenty-four species of birds were recorded as breeding and five as possibly breeding within the survey area. These included the Linnet, Yellowhammer and Song Thrush, as well as Mistle Thrush, Skylark and Willow Warbler.

All of the recorded birds are recorded locally as common residents or summer visitors whose populations are not threatened and are in favorable conservation status in Scotland. No significant impact on high sensitivity species is expected, as the construction footprint is on existing tracks or arable fields.

VP surveys/winter walkover

Common passerines were recorded mostly around the plantations and wooded areas and included flocks of finches, tits, fieldfare and redwing. Wood pigeon, rooks and jackdaws were frequently on and over site. No birds of conservation concern were recorded and no geese or swans were recorded foraging on site.

The VP surveys recorded only two Schedule 1 raptors; a hen harrier in October and a peregrine falcon in December. Neither of these flights was at collision risk height. At various times numbers of flights of geese were recorded offsite. These were predominantly to the east and invariably travelling in an approximate north-south bearing.

Bats

The results reveal a very low usage of the site by bats. Only one species, a single soprano pipistrelle was recorded near Laverockhall Farm. No bats were recorded over open ground or near the proposed turbine locations.

No trees or buildings are to be removed for construction and therefore no significant impact on bats is expected from the two turbines.

Badger

Field signs of badger were recorded including tracks, hair, latrines and small scrapes. Regular tracks/pathways were also recorded in the area. No signs were recorded in the arable fields where the turbine is proposed.

Possible signs of badger were recorded but no setts are present on site within the fields near the proposed turbine locations. As badgers are present in the general area and often wander widely and expand their territories, a number of recommendations have been made to protect this species during the construction stage, including:

- On site speed restrictions for all vehicles;
- The covering of trenches; and
- The inclusion of ramps within trenches that cannot be covered.

Badgers can move into areas and dig setts over a short period of time. Prior to construction commencing a final badger survey will be carried out along the route of the access track and in the vicinity of the turbine.

Conclusion

A range of ecological assessments have been undertaken to investigate the ornithological and other ecological interests of the site. These surveys have shown that there are unlikely to be any adverse effects as a result of the proposal.

7 Landscape & Visual Impact Assessment (LVIA)

Introduction

An LVIA was undertaken to assess the potential effects of the proposed Crofts Farm development on the character of the site and the surrounding landscape.

Methodology

The key visual effects to be addressed include the following:

- Visual effects on the views experienced by local communities and residents;
- Visual effects on the views experienced by users of footpaths and general recreational areas/tourist destinations; and
- Visual effects on the views experienced by road users along the main transport routes.

The methodology for the LVIA adopted the guidelines set out by the Landscape Institute and the Institute for Environmental Management and Assessment, as well as other guidance from Angus Council and Scottish Natural Heritage (SNH). The study considered an area of 35 km radius around the site.



Figure 7.1 – Predicted view from the B961 near Newton

Zones of Theoretical Visibility (ZTV) were used to establish areas from which the development could potentially be seen. Based upon these ZTV's, photomontages for 18 viewpoints were assessed, comprising a selection of settlements, recreational areas and key transport routes. These viewpoints are presented in **Table 7.1**.

Table 7.1 – Viewpoint selection for the proposed Crofts Farm development

The Guynd	White Caterthun
B961 near Newton	Crombie Park
A933 near Colliston	Pitmuies
Minor Road near Woodville Feus	A92 Inverkeilor
Arbroath	Balmashanner Hill
Friockheim	Turin Hill
Dodd Hill	North of Drumyellow
Tentsmuir	South of Parkconon
Kirriemuir	Redford

These photomontages are presented in the separate Landscape Figures document.



Figure 7.2 – Predicted view from Crombie Park

The visual effects on all settlements within 10km of the development were also considered. A detailed assessment of the potential for visual effects from the B961 between Newbigging and the A933 has also been undertaken, as well as an assessment of the impact upon other routes along the A933, A90 and A932.

In order to assess potential cumulative impacts with other wind developments, wind projects within a 60 km radius of Crofts Farm were identified. CZTV's were then produced to show the potential for intervisibility between other projects and the wind cluster. As well as assessing each viewpoint in terms of the visual impact that the Crofts Farm would have, all viewpoints were also assessed cumulatively with other projects.

Main findings

Visual Assessment

Typically the two proposed turbines at Crofts Farm would form a linear balanced layout which would relate well to both the scale of the landscape and the form of the topography. Assessed effects are isolated, only occurring within ~1.6km of the turbines. These relate to the visual impact at one property and to three of the assessed viewpoints. Effects outside this distance quickly diminish.

Out of the eighteen viewpoints assessed, only three, from South of Parkconon, North of Drumyellow and Redford are expected to be significant.

None of the transport routes assessed were expected to be significantly affected by the introduction of the proposed scheme.

Nearest Properties

The impact on each of the twenty-two properties within a radius of 1km of the proposed wind turbines has been assessed. This involved a site visit to each property and an assessment of the likely views from the main living areas and gardens.

Of the assessed properties, only one, Grange of Conon, is expected to experience a significant level of impact.

The primary windows and garden area of this property face the turbines, however the turbines are not considered to be overbearing features and would not constitute an unacceptable change to the quality of living for the residents.



Figure 7.3 – Predicted view from The Guynd

Conclusion

The proposed development is in keeping with the current capacity as set out in the “*Strategic Landscape Capacity Assessment for Wind Energy*” produced by Angus Council. The study states that this area of landscape has capacity for development of between 1-5 turbines up to 80m in height.

The LVIA concluded that the project can be accommodated within the surrounding landscape, with no significant effects being found on either the landscape character or on any designated landscapes.

One of the twenty-two properties within 1km was found to experience significant visual effects.

Overall the project was deemed to have a low level of impact on the landscape, settlements, transport routes and properties.

8 Noise

Introduction

Noise can have an effect on the environment and on the quality of life enjoyed by individuals and communities. The impact of noise is therefore an important consideration in the determination of planning applications.

Methodology

The aim of the noise assessment is to demonstrate that the turbine noise levels do not exceed recommended limits at nearby properties as a result of the Crofts Farm turbines and also when considered in addition to the North Mains of Conynsyth turbine.

The results of the scoping report showed that background noise surveys would be required at three properties to represent the background noise levels for a number of properties in the area. These were:

- Scotia House
- Grange of Conon; and
- Crofts Cottage

Background noise was recorded at a full range of windspeeds, with the specific aim of recording noise levels during quiet daytime (evening and weekends) and night-time periods, the times during which the noise from the turbines might be expected to be most prominent due to quieter background noise levels.

Main findings

Noise constraints based upon the measured background noise levels were established at all nearby properties using the relevant guidance. The additional turbine noise from the Crofts Farm turbines was then added to the recorded background noise levels and compared to the noise limits at each property.

Calculations show that the turbine noise levels from the proposed scheme will remain below the guideline limits at all of the identified properties.

The proposed wind turbines are able to meet these constraints, both when considered alone and in conjunction with the operational turbine at North Mains of Conynsyth. On this basis, noise from the turbines is not expected to have an unacceptable, adverse impact on any nearby sensitive properties.

Conclusion

No adverse impacts on residential amenity due to noise are therefore predicted as a result of the scheme.

9 Cultural Heritage / Archaeology

Introduction

Cultural heritage is represented by a wide range of features, both above and below ground, which result from past human use of the landscape.

These include standing buildings, sub-surface archaeological remains and artefact scatters. These also include earthwork monuments as well as landscape features such as field boundaries and industrial remains.

Methodology

The Cultural Heritage assessment examined the impact of the development on:

- Local archaeological features;
- A and B listed buildings;
- Scheduled Ancient Monuments; and
- Gardens and Designed Landscapes.

Main findings

Direct impact

No features of historical significance are present within 200m of the turbine or 50m of the access track. The closest feature to the development is a findspot at West Grange of Conan located ~250m from the most northerly turbine. This has been recorded as, *“The upper stone of a circular rotary quern, 52.5cm in diameter, found in the field which lies to the S of that containing souterrain NO54NE 12, is now in Dundee Museum (1970-10).”*

Indirect impact

Within 2km

The study has found that there are; 3 ‘B’ listed buildings within 2km of the site. These are:

- Carmyllie East Parish School;
- Earth-House, Cairn Connan; and
- Conansyth Farmhouse

At ~500m from the development the **Earth-House Cairn Connan** is the closest feature of historical significance to the development. The current setting of the cairn is within a modern agricultural field, and the cairn itself is covered by vegetation with no long distance views available.

Only the blade tips of the western-most turbine are expected to be visible from **Carmyllie East Parish School**, with an intervening mature shelter belt of woodland screening most of the turbines.

One hub and a blade tip are predicted to be theoretically visible from **Conansyth Farmhouse**, but an intervening pocket of mature woodland is predicted to screen views of the development.

Between 2km and 5km

The assessment has identified a further 1 'A' listed buildings, 9 SAMs and 1 GDL within 5km of the project.

The tips of the proposed turbines are expected to be visible at ground level in views to the south from **Gardyne Castle**. The castle's associated mature woodland policies are predicted to screen views of the development from ground level. From the upper floors of the castle the development is expected to occupy a narrow extent of the horizontal view.

The comparatively elevated position of **Dumbarrow Hill Fort** (SAM 5) is such that it has an open setting with panoramic views. The proposed wind cluster is expected to occupy a narrow extent of the horizontal views available to the south east, and at a distance of ~3.9km the development is expected to appear as part of the wider landscape.

Cairn Knap is currently covered by vegetation, thus there are no long distance views available from this feature.

The remaining 7 **SAMs** are only discernible as cropmarks on oblique aerial photographs. Consequently the proposed development is not expected to have an adverse indirect visual impact upon these features.

Conclusion

No significant impacts on cultural heritage features are predicted as a result of the scheme.

10 Surface and Groundwater Hydrology

Introduction

Surface water includes watercourses, water bodies and runoff. Groundwater includes all water stored in permeable underground strata (or aquifers). Understanding surface and groundwater environments is critically important to designing a successful project.

Potential Impact

The major potential risk to the water environment is from erosion of exposed ground and the runoff of material into watercourses. There is also a smaller risk from chemical pollution from, for example, oil, or fuel spills and concrete.

Intrusive ground investigations will be completed prior to final design, to confirm groundwater levels, soil permeability and geology. Mitigation measures will be designed according to SEPA best practice.

These measures include:

- The micro-siting of the turbines and access tracks;
- The provision of adequate bunding and storage of any potentially polluting substances;
- The minimisation of individual drain lengths and gradients; and
- Directing the flow of surface water drainage through swales, infiltration trenches and soakaways.

An emergency response plan for potential pollution incidents would be produced as a matter of course.

Hydrological context of the site

The site is positioned on the south face of a shoulder of Cairnconon Hill, with the track and turbines lying at elevations of between approximately 140m and 160m above sea level. There are slopes down from the site of up to 5% to the south east down the face on the shoulder.

Any runoff generated by rainfall on the proposed track and hard standing areas currently flows downhill to the south, into a system of field drains that join to form the Black Burn. This Burn discharges into the Elliot Water approximately 3.3km downstream and south of the site. There are a number of field drains located throughout the study boundary.

In total, two wells were identified in the study area, one of which is extinct and the other which supplies water for irrigation only. All of the houses within 1.2km of the turbine locations have a mains water supply.

Conclusion

The majority of potentially significant negative impacts on water quality are only predicted to occur in the short term through potential increased sedimentation and construction pollution during the construction phase. The adoption of best practice management and control procedures by all site personnel and the implementation of the mitigation methods proposed will manage these risks. There are not predicted to be any impacts on private water supplies as a result of the development.

11 Shadow Flicker

Introduction

Rotating wind turbine blades can cast moving shadows which can affect neighbouring properties. As the blades rotate, alternating light and shadow can result inside buildings, particularly those with small windows. The effect can only occur when the sun is shining or when it is bright, and is worst when the turbine blades are facing the windows concerned.

Methodology

DECC's guidance suggests that an acceptable level of shadow flicker at residential properties is 30 hours per year. Angus Council guidelines suggest that shadow flicker impacts should not be problematic beyond a distance of 10 rotor diameters from a wind turbine.

Main findings

A shadow flicker map has been produced for the Crofts Farm turbines, based on a conservative approach which assumes that the sun is always shining, and that the turbine blades are always rotating and facing towards each property. This is shown in **Figure 11.1**.

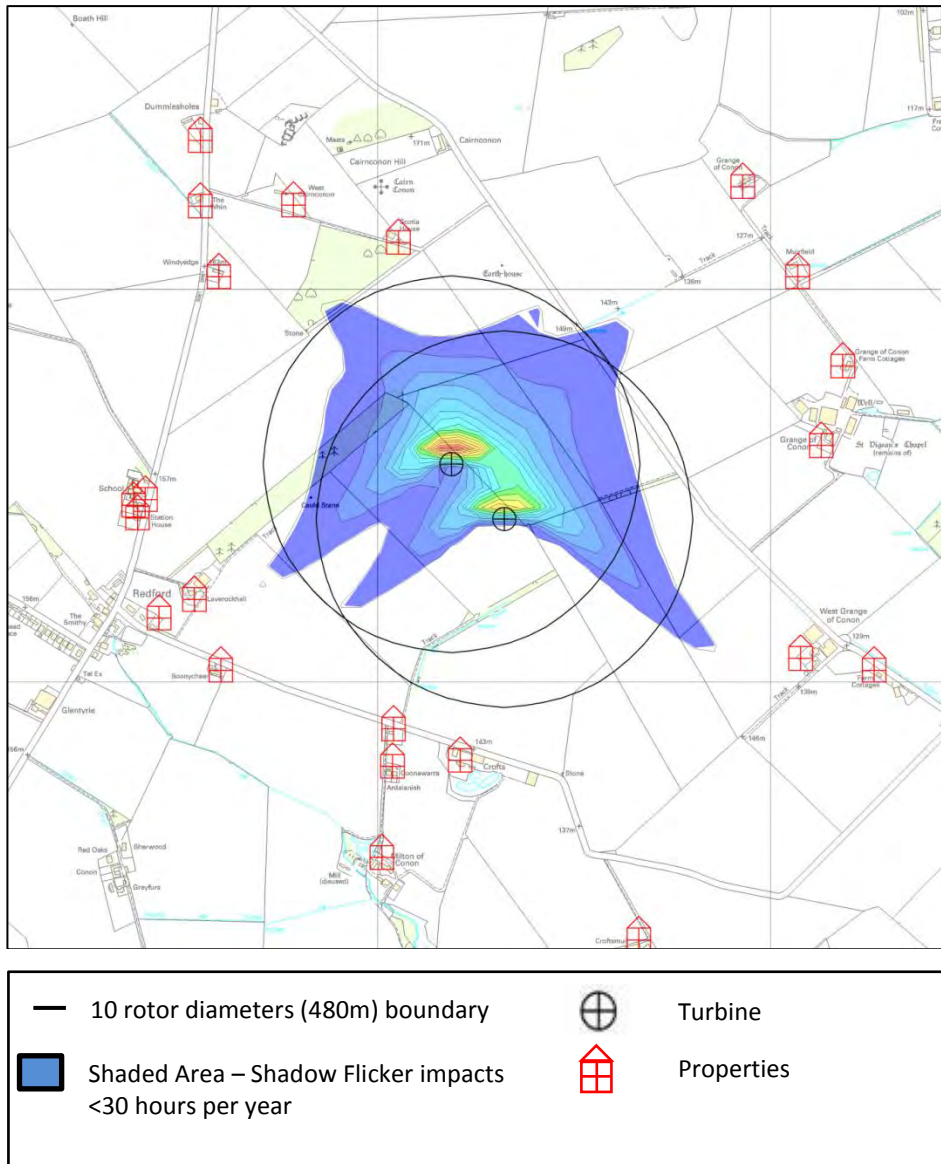


Figure 11.1 – Zone of theoretical shadow flicker (>30hrs per year)

Figure 11.1 demonstrates that:

- There are no properties located within 480m of the turbine locations. The nearest property is Crofts Cottage at 620m from the nearest turbine; and
- No properties are likely to experience shadow flicker in excess of 30 hours per year as a result of the development.

Conclusion

There are not expected to be any significant shadow flicker impacts on the nearest residential properties a result of the scheme.

12 Existing Infrastructure, Telecommunications, Television, Aviation and Electromagnetic Safety

Introduction

The installation of wind turbines can have a number of impacts on operators who use electromagnetic signals for communication and information transfer purposes and aviation or radar interests.

Methodology

Organisations with local interests in telecommunications, television, aviation, safety, defence and infrastructure were consulted to determine whether their systems would be affected.

Main findings

Civil aviation

There are not expected to be any conflicts with civil aviation at this location.

Ministry of Defence (MoD)

The MOD now no longer comments on proposals at the pre-application stage, but a specialist aviation study has identified that the turbines are likely to be visible to the radar at RAF Leuchars. An 'in-fill' mitigation measure is currently being developed by a third party provider, and it is hoped that the MoD will agree to its implementation. This approach has been successfully adopted for other wind developments in the area.

Telecommunication

Ofcom has identified three links in the vicinity of the proposed development, operated by Ericsson and BT. Further correspondence with these organisations established that the turbines would not affect these links.

Atkins and JRC were also contacted, and had no objections to the proposal

Television

In the unlikely event that the wind turbines are found to cause some interference to TV signals there are a number of options open to mitigate the effects.

It is standard practice for the Council to request a television survey as one of the planning conditions. This is undertaken soon after the turbines are built, and if there are found to be any problems then these must be remedied at the developer's expense.

Conclusion

The turbines will be visible to the radar at RAF Leuchars, but a specialist in-fill radar solution is proposed to solve any issues. The details of this will be agreed with the Ministry of Defence as part of the planning process. It is considered unlikely that there will be any problems with television reception, but this issue can be investigated further at the post-planning stage if required.

13 Climate Change

Introduction

Wind developments impact upon CO₂ emissions at two stages of their lifecycle:

- During wind turbine manufacture, construction and decommissioning; and
- During wind turbine operation.

The wind farm manufacture, construction and decommissioning phases will lead to the emission of greenhouse gases.

During operation, the turbines will lead to a reduction in CO₂ levels when compared to the production of electricity by conventional sources such as coal-powered power stations.

Main findings

Estimates show that the Crofts Farm development would result in a carbon saving of ~1,270 tonnes per year when compared to overall grid mix electricity generation.

In addition, the operation of the scheme would also reduce the emissions of the 'acid rain' gases sulphur dioxide and nitrogen oxides.

Conclusion

The development will make a small positive contribution to the reduction of carbon emissions over its 25 year lifecycle.

14 Conclusion

An extensive programme of environmental assessment has been carried out in relation to this proposed development at Crofts Farm. No unacceptably adverse effects have been predicted and it is concluded that the project could be successfully accommodated into the local area.





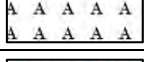

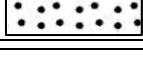
ITEM 3.3




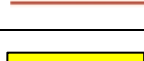

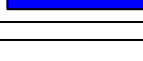
Project Name:
Crofts Farm Wind Turbines

Document Title:
Appendix 1 - Phase 1 Habitat Map

Scale:
NTS

Key:

Code	Phase 1 Habitats Description
	A1.2.2 Coniferous woodland - plantation
	A1.3.1 Mixed woodland - semi-natural
	A3.1 Broadleaved scattered trees
	C3.1 Other tall herb and fern - ruderal
	J1.1 Cultivated/disturbed land - arable
	J2.6 Dry ditch
	J4 Bare farm ground

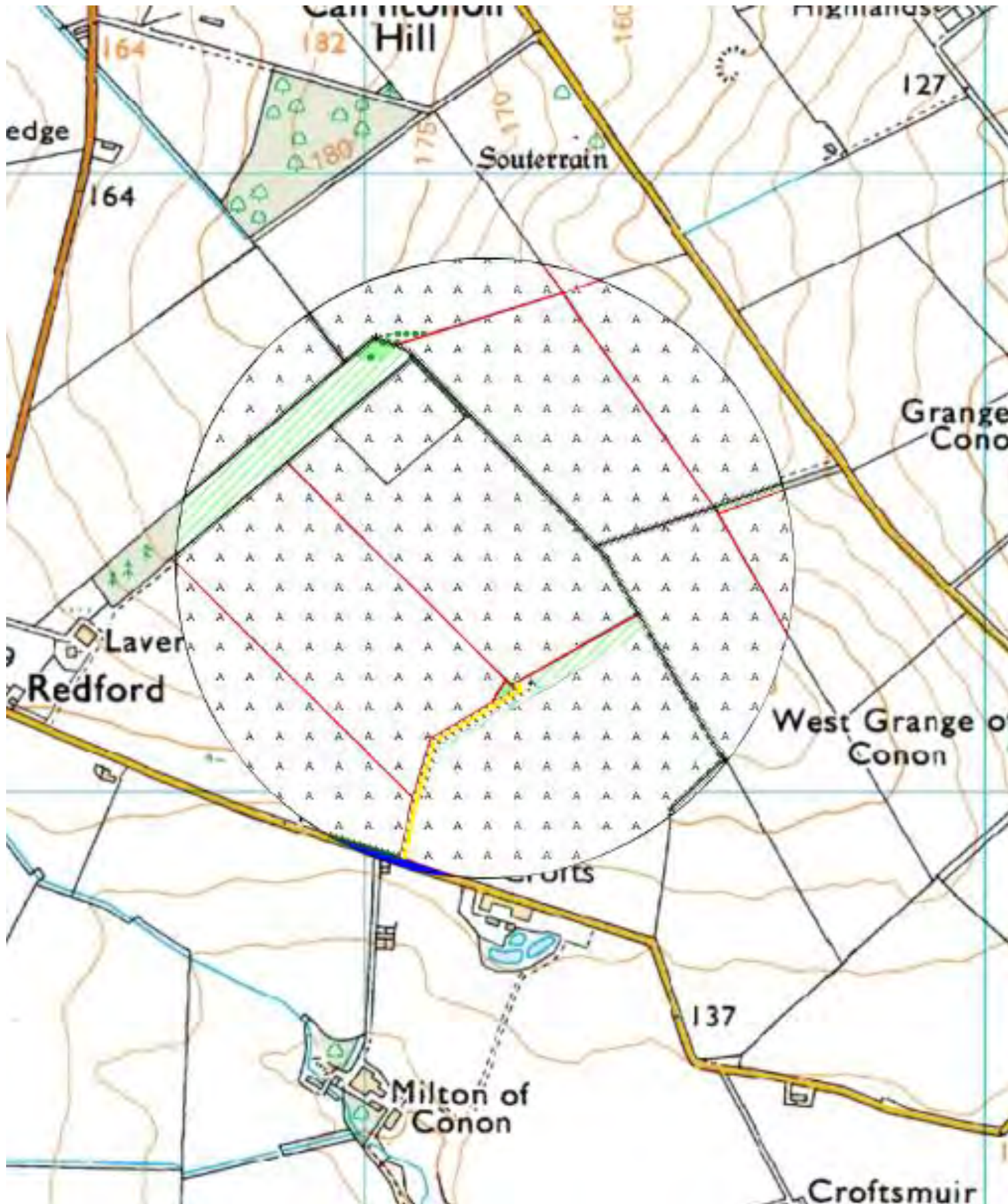
	A3.1 Broadleaved scattered trees
	J2.3.1 Hedge with trees - native species-rich
	J2.4 Fence
	J2.5 Wall
	Farm Track
	Road

Client:
Crofts Farm Renewables Ltd

Drawing By:
Green Cat Renewables Ltd



Version: 1.0
Checked by: BS
Approved by: GM
Date: 15/01/2014



Appendix 3 - Crofts Farm Wind Turbines

LVIA Residential Assessment

to accompany

Crofts Farm Wind Turbines Environmental Statement

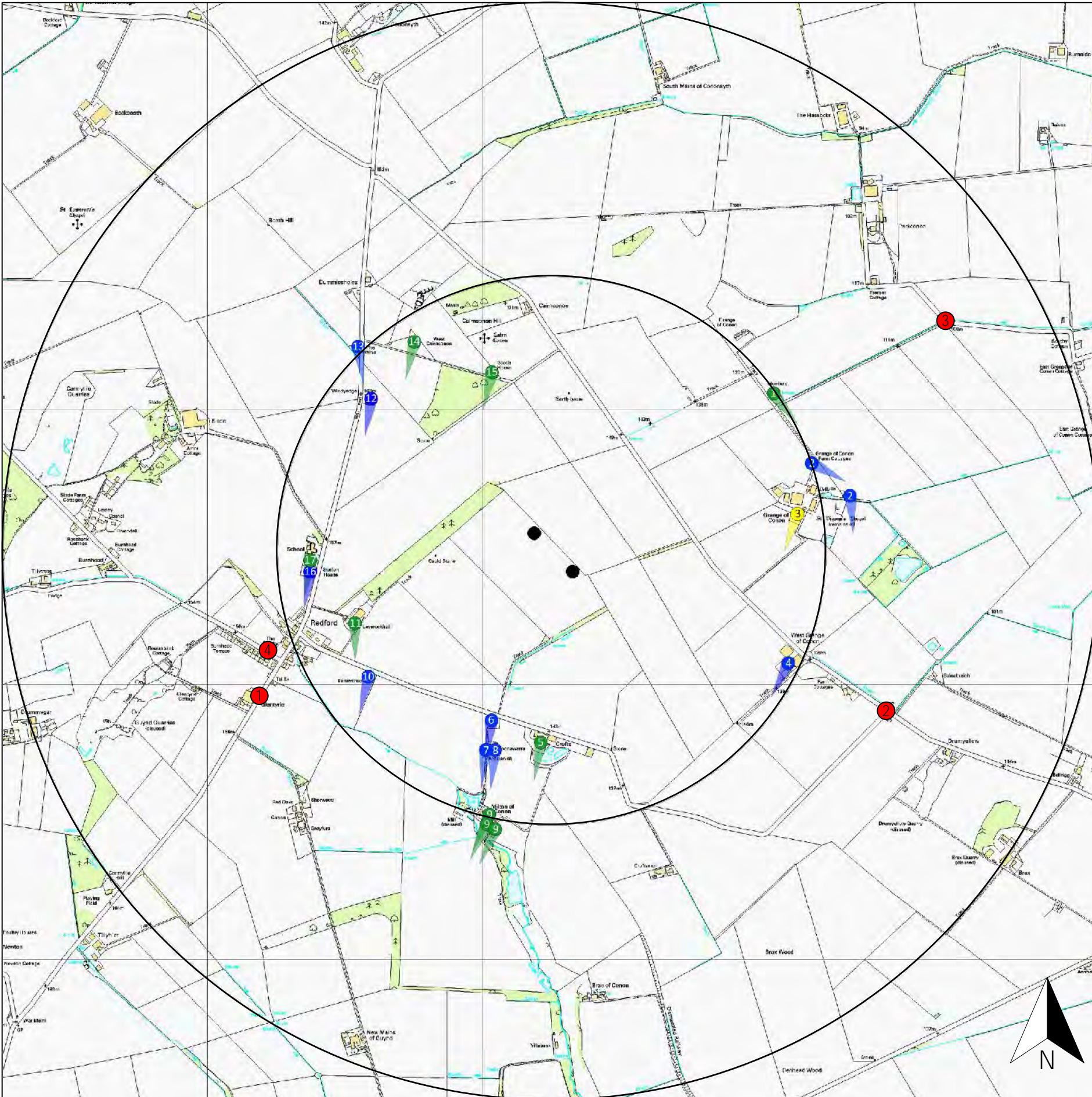
for

Crofts Farm Renewables Ltd

produced by

Green Cat Renewables Ltd.





Project Name:
Crofts Farm Wind Turbines

Document Title:
Residential Map 2km Radius

Scale:
1:16,000 @ A3

Key:

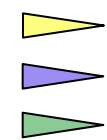
● Proposed Wind Turbine Locations

— 1 & 2km radii

Level of Effect

- Major/Moderate
- Moderate
- Moderate/Minor

Primary View Direction



Properties

- | | |
|----------------------------------|---------------------|
| 1. Muirfield | 11. Laverockhall |
| 2. Grange of Conon Farm Cottages | 12. Windyedge |
| 3. Grange of Conon | 13. The Whin |
| 4. West Grange of Conon | 14. West Cairnconon |
| 5. Crofts Farm | 15. Scotia House |
| 6. Crofts Cottage | 16. Station House |
| 7. Ardanish | 17. School House |
| 8. Coonawarra | |
| 9. Milton of Conon | |
| 10. Bonnycheer | |

● Viewpoints within 2km

- | | |
|----|----------------------------|
| 1. | VP02 - B961 near Newton |
| 2. | VP16 - North of Drumyellow |
| 3. | VP17 - South of Parkconnon |
| 4. | VP18 - Redford |

Client:
Crofts Farm Renewables Ltd

Drawing By:
Green Cat Renewables Ltd

Doc. No.: C0118-183/ Appendix 3

Version: 1.0

Checked by: SS

Approved by: RC

Date: 15/01/2014



Property Name: Muirfield

Reference Number: 1

Grid Reference: 358059, 745056

Distance from Nearest Turbine: 970m

Number of Properties: 1

Property Orientation: South-East

Direction of Turbines: South-West



South-East elevation

Property Description

Muirfield is situated 974m to the north-east of the proposed development. The property is a modern L-shaped bungalow with adjoining garages to the north-east of the main dwelling. The primary views from the property face over the enclosed driveway/garden area to the south-east of the property. The property is bound on all sides by a significant mature hedgerow which limits views from the property grounds over the surrounding landscape. The property is accessed via a short track shared by the nearby farm cottages from the local minor road.

Views from Dwelling

There are no windows on the façade of the dwelling in the direction of the property as such there will be no views of the proposed development from within the property.

Views from Environs

The garden is bound on all sides by a mature coniferous hedge which will offer year round screening in the direction of the proposed development. The access to the property is via a gate to the south-east of the dwelling, in the opposite direction to the turbines. There may be some views when exiting the grounds via the access road, the turbines appearing on the horizon back dropped by the sky. The turbines would occupy a negligible to low extent of the horizontal and vertical view.

Magnitude of Change: Negligible

Level of Effect: Moderate/Minor



North-West elevation



View from garden area



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: Grange of Conon Farm Cot ages

Reference Number: 2

Grid Reference: 358197, 744801

Distance from Nearest Turbine: 960m

Number of Properties: 4

Property Orientation: South-East

Direction of Turbines: West-South-West



Property 1&2 South-East elevation

Property Description

There are four Grange of Conon Farm Cot ages located within the land holding at Grange of Conon Farm, they are set out as two semi detached mini terraces. Cot ages 3&4 are located ~1km to the east of the proposed turbines and would receive no views of the proposed development due to the intervening farm buildings. Number 1&2 cot ages are located 955m to the east of the proposed development. The single storey farm cot ages face in a south-easterly direction with gardens to the north-west of the dwelling. The properties share the same access through the farm.

Views from Dwelling

Due to the orientation of the properties views from the rear windows would be extremely unlikely.

Views from Environs

From the rear gardens there would be open views towards the proposed turbines, the two turbines would be visible on the horizon to the west of the property. The turbines would occupy a negligible extent of the horizontal and vertical view, with the more valued views occurring to the north and east over the open landscapes beyond. The turbines would be viewed back dropped by the sky from this location.

Magnitude of Change: Low

Level of Effect: Moderate



Property 3&4 South elevation



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: Grange of Conon Farm

Reference Number: 3

Grid Reference: 358150, 744618

Distance from Nearest Turbine: 850m

Number of Properties: 1

Property Orientation: South-West

Direction of Turbines: West



South-East elevation

Property Description

Grange of Conon Farm is situated 849m to the east of the proposed turbines. The property is a traditional stone built two storey farm house, which has been extended to the front and rear over time. The main views from the dwelling face out over the garden area to the south/south-west. The property is bound to the south-west and west by a mature coniferous hedgerow about 3m tall. To the north of the property lie a number of large farm outbuildings and sheds which form the working area of the farm. The property is accessed via a short track from the local minor road.

Views from Dwelling

There is a large amount of glazing on the southern façade of the dwelling, raised slightly from the garden; there may be views from this area of the property towards the turbines. The turbines would appear on the horizon, with intervening woodland features providing some screening and reducing the vertical extent of the turbines slightly. The turbines would be a fairly obvious feature although they would be located off the direct views from the dwelling, occupying a low extent of the horizontal view and a medium extent of the vertical view.

Views from Environs

Due to the gradient of the garden views would not be as prominent as they would be from the rear conservatory area of the dwelling, with the hedgerow providing more screening around these areas.

Magnitude of Change: Medium

Level of Effect: Major/Moderate



North-West elevation



View from garden area



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: West Grange of Conon Farm

Reference Number: 4

Grid Reference: 358108, 744064

Distance from Nearest Turbine: 860m

Number of Properties: 1

Property Orientation: South-West

Direction of Turbines: North-West



South-West elevation

Property Description

West Grange of Conon Farm is situated 858m to the south-east of the proposed turbines. The property is a one and a half storey farm house, which has been extended to the front and rear. The main views from the dwelling face out over the garden area to the south/south-west/west. The property is bound around the garden edges by maturing trees and other vegetation. To the north and north-east of the property lie a number of large farm outbuildings and sheds which form the working area of the farm. The property is accessed via a short track from the local minor road.

Views from Dwelling

There are no views predicted from within the dwelling due to the low lying nature of the majority of the property in relation to the surrounding screening features which would limit any potential views.

Views from Environs

There may be some visibility from the southern edges of the garden where it would be possible to view the turbines beyond the surrounding vegetation. Where views do occur the turbines would appear on the horizon, viewed against the sky. The intervening landscape would screen the lower tower sections reducing the vertical extents of the proposed development while the turbines appear well balanced occupying a low extent of the horizontal view.

Magnitude of Change: Low

Level of Effect: Moderate



View from garden area



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: Crof s Farm

Reference Number: 5

Grid Reference: 357212, 743798

Distance from Nearest Turbine: 630m

Number of Properties: 1

Property Orientation: South

Direction of Turbines: North



North elevation

Property Description

Crof s Farm house is situated 627m to the south of the proposed development. The property is a traditional two storey whitewashed farm house. The main views from the property face to the south overlooking the garden and towards the coast from this location. The property is incorporated as part of the working Crof s Farm and significant outbuildings are located to the north of the dwelling. The front of the property overlooks the internal farm courtyard between the outbuildings and the main dwelling. The property is accessed via a short track from the local minor road.

Views from Dwelling

There are no views predicted from the dwelling, the built features to the north would completely screen any views of the turbines.

Views from Environs

The garden area is located to the south of the dwelling the property itself would screen any potential views from this location.

Magnitude of Change: Negligible

Level of Effect: Moderate/Minor



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: Crof s Bungalow

Reference Number: 6

Grid Reference: 357039, 743870

Distance from Nearest Turbine: 620m

Number of Properties: 1

Property Orientation: South

Direction of Turbines: North-North-East



South elevation

Property Description

This property is situated 615m to the south of the proposed turbines. The dwelling is a modern L-shaped bungalow built in a traditional style. The main views from the property face to the south from the glazed conservatory to the rear of the building. There is a small internal courtyard between the garage and the northern façade of the dwelling. The property is set back from the local road which also serves as access and is bound to the north by a small stone wall, while maturing vegetation bounds the garden to the rear.

Views from Dwelling

Views are not predicted to be significant from the property. There are two small windows on the northern façade which overlook the driveway. There may be some views possible from these towards one of the turbines while the other would be screened by the intervening garage building.

Views from Environs

The garden area is located to the south of the dwelling the property itself would screen any potential views from this location.

Magnitude of Change: Low

Level of Effect: Moderate



North elevation



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: Ardalanish and Coonawara

Reference Number: 7&8

Grid Reference: 357030, 743768

Distance from Nearest Turbine: 710m

Number of Properties: 2

Property Orientation: South

Direction of Turbines: North-North-East



Coonawara North elevation

Property Description

These properties are located further south on the same access road as Crof's bungalow to the north ~711m to the south of the proposed turbines. Both properties are single storey traditional built farm cottages that have been extended over time. The main views from each property face to the south, with outbuildings located directly to the north of each house containing the garages. The garden areas to the south of each property are bound by a maturing hedgerow. Access is via a short track from the local minor road.

Views from Dwelling

Views are not predicted from within the dwellings with the intervening features combining to limit any potential views of the turbines.

Views from Environs

The garden areas are located to the south of the dwellings. The properties themselves would screen any potential views from this location. There may be some oblique views from the driveway areas to the north of each property where the turbines would be visible on the horizon.

Magnitude of Change: Low

Level of Effect: Moderate



Approximate boundary of domestic curtilage and line of sight from dwelling



Ardalanish North elevation



View North looking towards site

Property Name: Milton of Conon

Reference Number: 9

Grid Reference: 357009, 743541

Distance from Nearest Turbine: 930m

Number of Properties: 3

Property Orientation: South

Direction of Turbines: North-North-East



Property 1 North-East elevation

Property Description

This cluster of properties is made up of the original Milton of Conon dwelling and two new properties which sit to the north and east of the original dwelling. The properties are accessed via a short driveway from the local minor road. The original dwelling is a traditional two storey farmhouse, which has been extended over time. The new build property to the north is a modern bungalow, while the third property is a modern one and a half storey detached dwelling. Each property is set within its own grounds with a small garden area predominantly to the south of each property.

Views from Dwelling

Views are not predicted from within the dwellings the intervening features combining to limit any potential views of the turbines.

Views from Environs

The garden areas of properties 2 & 3 are located to the south of the dwellings. The properties themselves would screen any potential views from this location.

Magnitude of Change: Negligible

Level of Effect: Moderate/Minor



Approximate boundary of domestic curtilage and line of sight from dwelling



Property 2 North-East elevation



Property 3 North-East elevation

Property Name: Bonnycheer

Reference Number: 10

Grid Reference: 356601, 744024

Distance from Nearest Turbine: 790m

Number of Properties: 1

Property Orientation: South

Direction of Turbines: North-East



North elevation

Property Description

The property is situated ~793m to the south-west of the proposed turbines. The dwelling is a single storey traditional farm cottage. The main views from the property face to the south over the open fields. There are windows on the northern façade overlooking the driveway. The property is bounded to north by a band of mature coniferous shelterbelt. The property is set back from the local minor road which also serves as access to the property.

Views from Dwelling

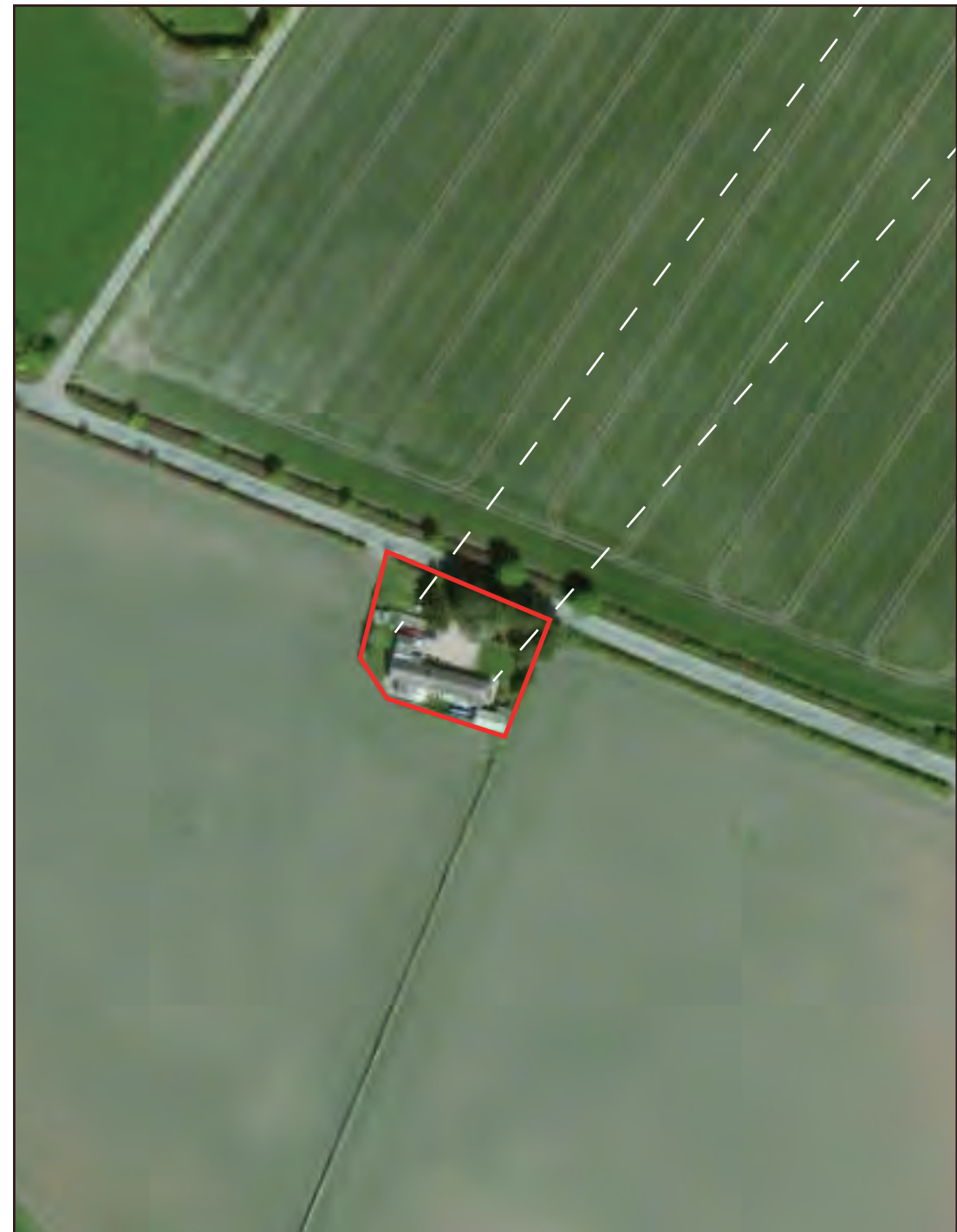
Views are not predicted from within the dwelling with the intervening features combining to limit any potential views of the turbines.

Views from Environs

The garden area is located to the south of the dwelling, so potential views would be restricted by the property itself. From the front, views are heavily screened by a shelterbelt which provides a buffer between the property and the local road. Views may occur on the approach to the property, where oblique views would be possible for a short time. The turbines would be viewed against the sky, with the shelterbelts which surround the site providing a great deal of screening, limiting potential views.

Magnitude of Change: Low

Level of Effect: Moderate



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: Laverockhall

Reference Number: 11

Grid Reference: 356434, 744140

Distance from Nearest Turbine: 730m

Number of Properties: 1

Property Orientation: South

Direction of Turbines: North-East



East elevation

Property Description

The property is situated ~862m to the south-west of the proposed turbines. The dwelling is a traditional built two storey farmhouse. The primary viewing direction is to the south, overlooking the garden area in the same direction. To the north-east of the main property there are a number of significant farm outbuildings, located on the opposite side of the internal courtyard that the northern façade windows overlook. The property is bound by a row of mature hedging which wraps the southern boundary, while the east and west boundaries are marked by clusters of mature trees.

Views from Dwelling

The intervening built features would screen any potential views from within the dwelling.

Views from Environs

The majority of the garden area would remain screened from potential views by the intervening property and other screening features such as the outbuildings. There may be some potential views from the eastern edges of the garden during the winter months when leaf cover is less. From these areas the turbines would be viewed on the horizon, back dropped by the sky. The turbines would occupy a moderate extent of the horizontal and vertical view from this area of the garden.

Magnitude of Change: Low

Level of Effect: Moderate



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: Windyedge

Reference Number: 12

Grid Reference: 356597, 745042

Distance from Nearest Turbine: 770m

Number of Properties: 1

Property Orientation: South

Direction of Turbines: South-East



South elevation

Property Description

The property is situated -767m to the north-west of the proposed turbines. The dwelling is a traditional stone built one storey cottage. The main views from the property face to the south, overlooking the garden area which sits on this side of the property. To the east of the main dwelling there is a large wooden outbuilding, as well as a static caravan which is located on the eastern boundary of the garden. The property is set back from the B961 which runs to the west and serves as access.

Views from Dwelling

There are no windows on the eastern façade of the dwelling; as such there would be no views of the proposed turbines from within the house.

Views from Environs

Views would occur from the garden areas to the south of the main property. The turbines would appear on the horizon, viewed completely against the sky. There are some features located at the property boundary which would screen the views of the turbines, including the caravan and outbuildings, reducing the visible extents of the turbine. The primary views from the garden area face to the south, away from the proposed development over the more open landscape in this direction.

Magnitude of Change: Low

Level of Effect: Moderate



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: The Whin

Reference Number: 13

Grid Reference: 356542, 745223

Distance from Nearest Turbine: 930m

Number of Properties: 1

Property Orientation: South

Direction of Turbines: South-East



East elevation

Property Description

The property is situated ~930m to the north-west of the proposed turbines. The dwelling is a traditional stone built one storey cottage. The main views from the property face to the south, overlooking the garden area which sits on this side of the property. The property is bound by a significant, mature hedgerow which encloses the garden and also cuts the property off from the nearby B961 which passes to the east of the house.

Views from Dwelling

There are no direct views predicted from within the property with the main windows facing out to the south. There are two windows on the eastern façade of the property which overlook the road and may experience some views of the proposed turbines. From this location the turbines would appear one in front of the other and would be partially screened by the intervening landscape, limiting the vertical extents of the development. The turbines would occupy a low extent of both the horizontal and vertical view.

Views from Environs

Similar to the views from the eastern side of the property, the views where they occur within the garden area would see the turbines viewed together, occupying a negligible extent of the wider view. The hedgerow would provide some screening from within the garden, with views only expected to occur from the western side of the garden, where it is possible to look over the landscape beyond the hedging.

Magnitude of Change: Low

Level of Effect: Moderate



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: West Cairnconon

Reference Number: 14

Grid Reference: 356755, 745244

Distance from Nearest Turbine: 810m

Number of Properties: 1

Property Orientation: South

Direction of Turbines: South-East



South elevation

Property Description

The property is situated ~814m to the north-west of the proposed turbines. The dwelling is a modern build L-shaped bungalow. The primary views from the property overlook the significant garden area, located on the southern side of the dwelling. The property is bound around the edges of the garden by maturing clusters of trees and other vegetation. The property is accessed via a short track which runs from the nearby B961.

Views from Dwelling

There are no views predicted from within the property, the intervening vegetation, including the significant shelterbelt near the site would completely screen any views from within the property.

Views from Environs

Views from the garden area are also predicted to be screened, with intervening woodland limiting potential views. There may be some views when travelling the access road. These would be oblique to the road user and occur for ~150m, with the turbines viewed on the horizon, before disappearing behind the tree line.

Magnitude of Change: Negligible

Level of Effect: Moderate/Minor



View from garden looking towards site



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: Scot a House

Reference Number: 15

Grid Reference: 357041, 745133

Distance from Nearest Turbine: 600m

Number of Properties: 1

Property Orientation: South

Direction of Turbines: South-South-East



South elevation

Property Description

The property is situated ~595m to the north-north-west of the proposed turbines. The property is a modern build T-shaped one and a half storey dwelling with a detached garage to the east of the main house. The primary views from the dwelling occur to the north, with open views possible over the nearby Strathmore Valley. To the south of the property the neighbouring woodland limits and encloses the view. The property shares an access track with the neighbouring property at West Cairnconon.

Views from Dwelling

The nearby woodland would screen any potential views of the proposed development from within the dwelling.

Views from Environs

The neighbouring woodland would screen views from the garden area to the south of the house, with the primary views occurring on the northern side of the house, over the open landscape. Similar to West Cairnconon, there may be some views from the access road, however, these would be oblique and are likely to occur for ~150m.

Magnitude of Change: Negligible

Level of Effect: Moderate/Minor



View from garden looking towards site



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: Stat on House

Reference Number: 16

Grid Reference: 356390, 744416

Distance from Nearest Turbine: 810m

Number of Properties: 1

Property Orientation: South

Direction of Turbines: East-North-East



South elevation

Property Description

The property is situated ~811m to the west-south-west of the proposed turbines. The property is a traditional bungalow. The primary views from the dwelling occur on the southern and western façades, overlooking the large garden area which wraps around the south and western areas of the property. The property boundary is marked by a stone wall, while a line of mature hedgerow runs between the property and the nearby B961.

Views from Dwelling

There are no views predicted to occur from within the dwelling. The hedge which screens the property from views of the nearby road would provide significant screening to the east in the direction of the proposed development.

Views from Environs

There would be some views predicted from within the garden area, looking eastwards towards the proposed turbines. These would be extremely limited by a band of mature shelterbelt woodland which runs along the ridge in the field adjacent to the neighbouring B961. The shelterbelt would provide significant screening of both turbines, with only the blade of one turbine visible over the tree line. In wintering months when the foliage is thinner there may be more of the turbines visible, however, the dense make up of the woodland would still offer a significant amount of screening.

Magnitude of Change: Low

Level of Effect: Moderate



Approximate boundary of domestic curtilage and line of sight from dwelling

Property Name: School House

Reference Number: 17

Grid Reference: 356378, 744450

Distance from Nearest Turbine: 820m

Number of Properties: 1

Property Orientation: South

Direction of Turbines: East

Property Description

The property is situated ~818m to the west of the proposed turbines. The property is a traditional stone built two storey dwelling set back from the B961, neighbouring the Carmyllie Primary School. The property is bound on all sides by a band of mature trees which enclose the dwelling and the surrounding garden area to the south and west.

Views from Dwelling

The surrounding band of shelterbelt woodland, combined with the nearby shelterbelt woodland to the east would completely screen any potential views of the proposed development.

Views from Environs

There are no views predicted from the main garden areas to the south and west of the property, the woodland screening at the property edge would limit potential views, while the intervening shelterbelt in the adjacent field further limits views to the blade of one turbine. It is unlikely even during wintering months that there will be significant views of the development from the areas surrounding this property.

Magnitude of Change: Negligible

Level of Effect: Moderate/Minor



Approximate boundary of domestic curtilage and line of sight from dwelling