

TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997
(AS AMENDED)
TOWN AND COUNTRY PLANNING (DEVELOPMENT MANAGEMENT PROCEDURE)
(SCOTLAND)
REGULATIONS 2013

PLANNING PERMISSION REFUSAL
REFERENCE 14/00781/FULL

To Harmony Energy Limited
c/o A D Craig
6 Clerk Street
Brechin
DD9 6AE

With reference to your application dated 15 September 2014 for planning permission under the above mentioned Acts and Regulations for the following development, viz.:-

Erection Of Wind Turbine Of 36.8M To Hub Height And 48.5M To Blade Tip And Ancillary Development - Re-Application at Field 600M North West Of Balhall Lodge Menmuir Brechin for Harmony Energy Limited

The Angus Council in exercise of their powers under the above mentioned Acts and Regulations hereby **Refuse Planning Permission (Delegated Decision)** for the said development in accordance with the particulars given in the application and plans docqueted as relative hereto in paper or identified as refused on the Public Access portal.

The reasons for the Council's decision are:-

- 1 That the proposal is contrary to Policy ER5(a) of the Angus Local Plan Review (2009) because the site selected would not be capable of absorbing the proposed development to ensure that it fits into the landscape.
- 2 That the proposal is contrary to Policy ER34(b) of the Angus Local Plan Review (2009) because the proposed turbine would result in unacceptable adverse landscape and visual impacts having regard to landscape character, setting within the immediate and wider landscape, and sensitive viewpoints by virtue of its siting in an elevated position.

Amendments:

The application has not been subject of variation.

Dated this **9 April 2015**

Iain Mitchell - Service Manager
Angus Council
Communities
Planning
County Buildings
Market Street
FORFAR
DD8 3LG

MAINS OF BALHALL

MENMUIR

By BRECHIN

ANGUS

DD9 7RW

**ERECTION OF A SINGLE
NORTHWIND 100 WIND TURBINE**

Coordinates – E350832 N764324
Hub Height – 37m
Rotor Diameter – 24m
Tip Height – 49m

ACRAIG
ARCHITECTURAL CONSULTANT
6 CLERK STREET
BRECHIN DD9 6AE

CONTENTS

SECTION 1	Wind Turbine Application Details
SECTION 2	Location Plan, Access Route Plan, Shadow Flicker Plan & Site Layout Plan
SECTION 3	Planning Statement
SECTION 4	ZTV, Viewpoint Plan, Photomontages (existing & proposed), Single Frame View (existing & proposed) & Angus Council Figure 3.4
SECTION 5	Noise Impact Assessment - PDA
SECTION 6	Northern Power 100-24 Class 111/S Specifications
SECTION 7	Northern Power 100-25 Power Curve
SECTION 8	Northern Power 100-24 Acoustic Performance Letter
SECTION 9	AWS True Power – Monthly Speed Distribution
SECTION 10	Turbine Elevations, Structural Loads & Geometry
SECTION 11	Environmental Impact Assessment

SECTION 1

WIND TURBINE APPLICATION DETAILS**ADDRESS:**

Mains of Balhall
Menmuir
By Brechin
DD9 7RW

WIND TURBINE DETAILS

Hub Height	37 m
Rotor Diameter	24 m
Blade Tip Height	49 m
Capacity	100 Kw
Candidate Turbine Type	Northwind 100

LOCATION

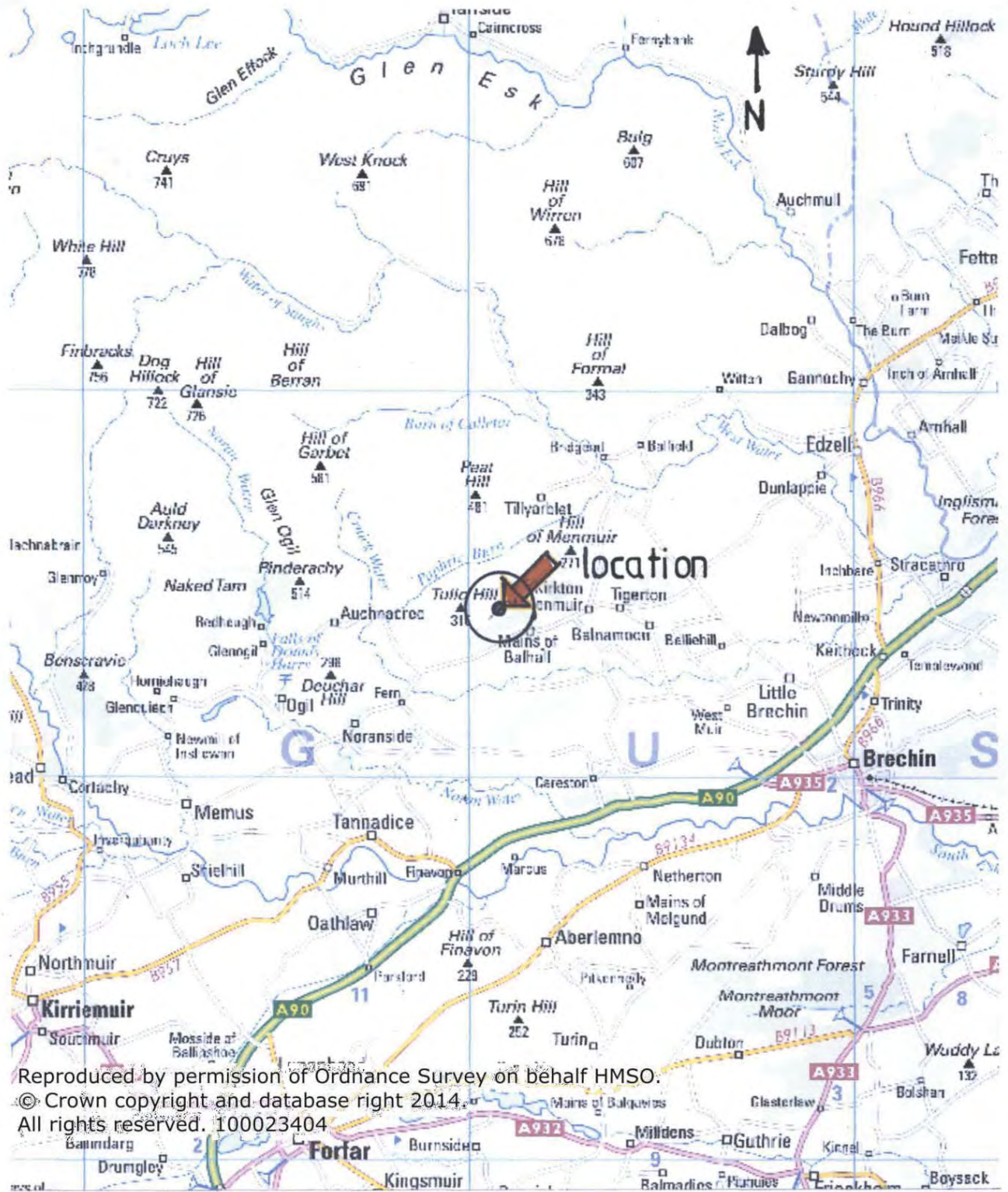
OS X (Eastings)	350832
OS Y (Northings)	764324
Nearest Post Code	DD9 7RR
Lat (WGS84)	N56:46:04 (56.767899)
Long (WGS84)	W2:48:22 (-2.805980)
LR	NO508643
mX	-312360
mY	7677055
Mapcode	GBR WQ.WNBG

SECTION 2

PROPOSED ERECTION OF A SINGLE WIND TURBINE

AC26

at
MAINS OF BALHALL
MENMUIR
BY BRECHIN



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LOCATION PLAN

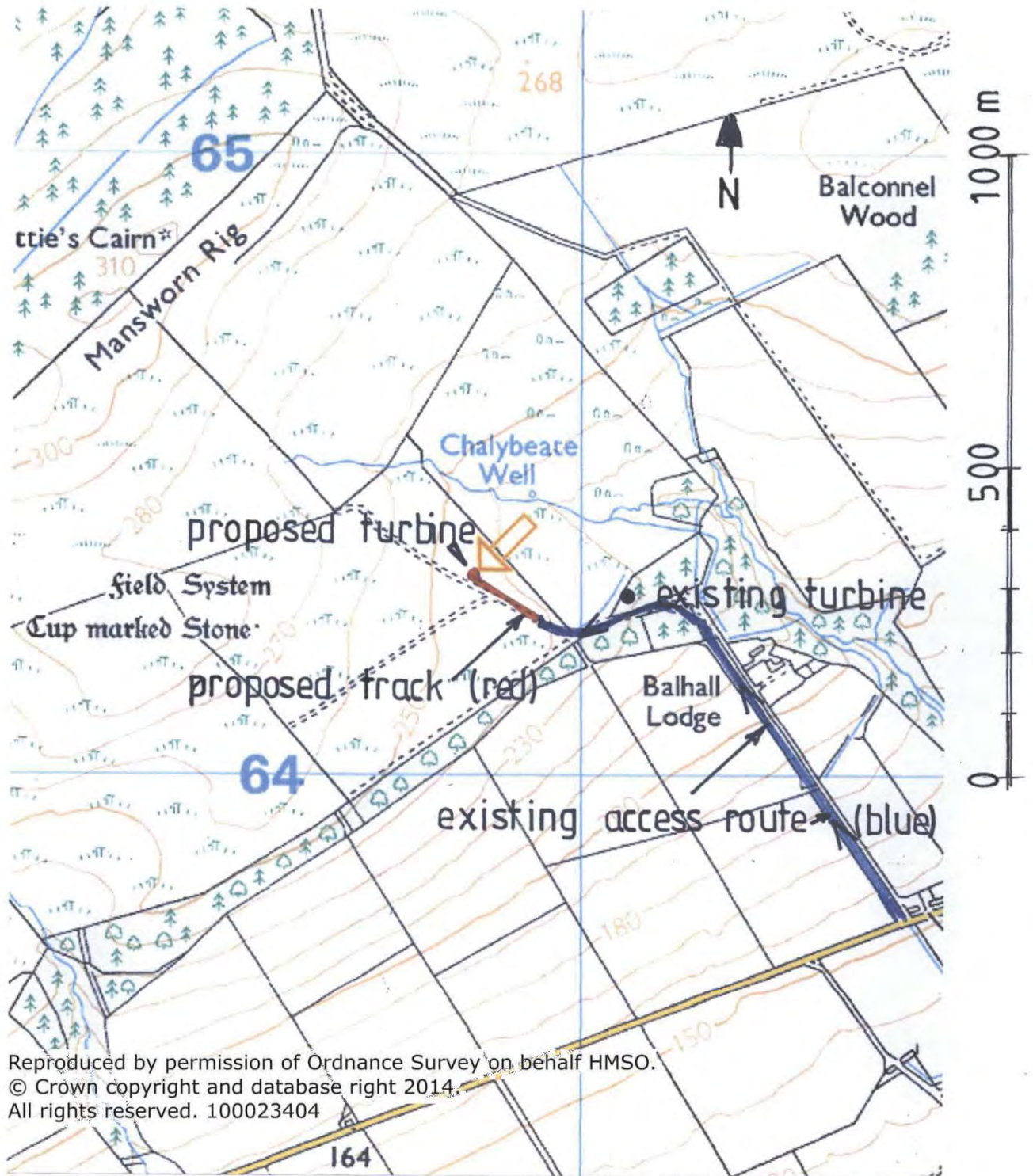
Not to Scale

DRAWING No: 080313REV – 1of 4
 DATE: AUGUST 2014

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 BRECHIN DD9 6AE

PROPOSED ERECTION OF A SINGLE WIND TURBINE
at
MAINS OF BALHALL
MENMUIR
BY BRECHIN

AC26



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ACCESS PLAN

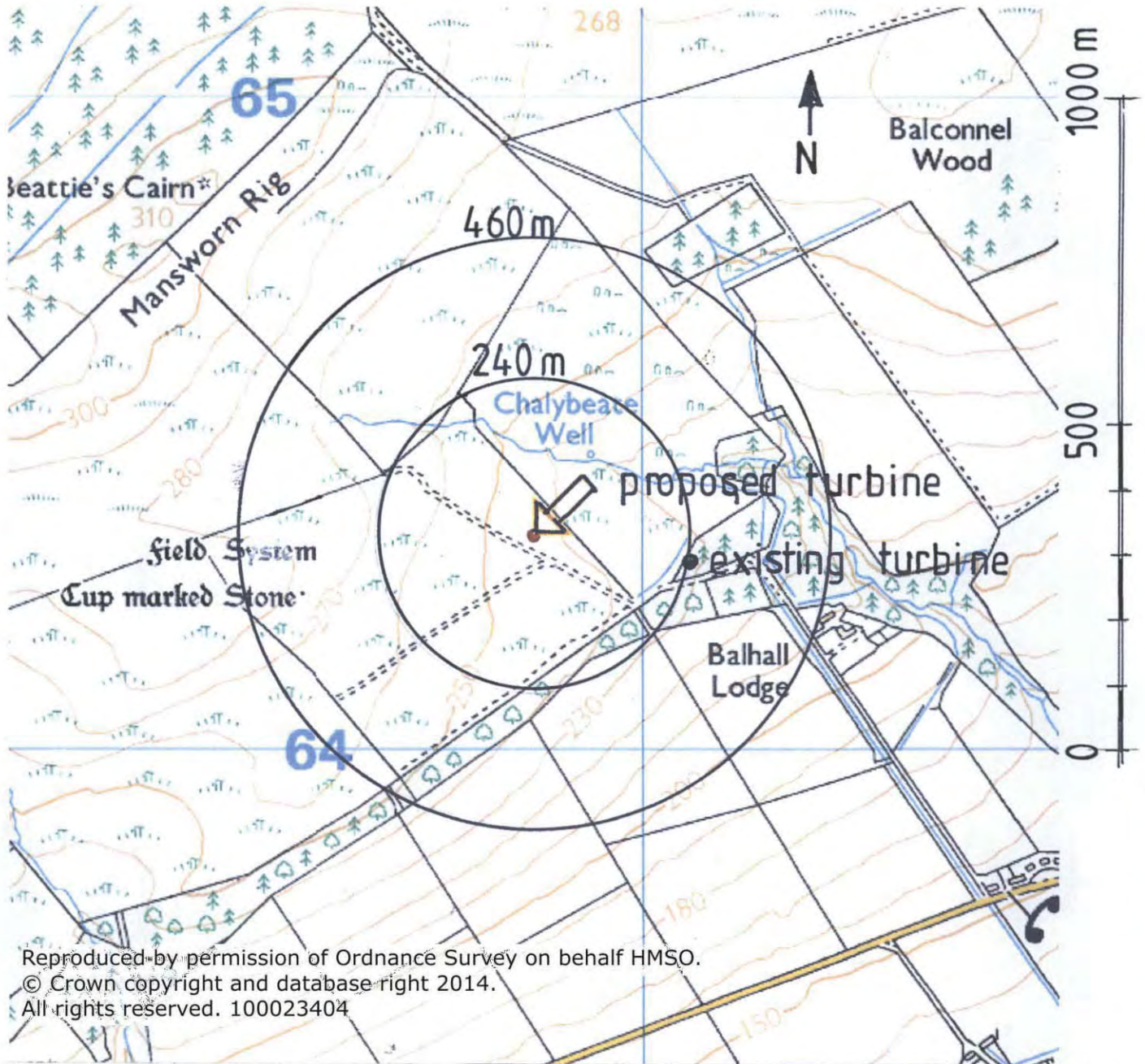
Scale: 1-10000

DRAWING No: 080313REV - 2 of 4
DATE: AUGUST 2014

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PROPOSED ERECTION OF A SINGLE WIND TURBINE
at
MAINS OF BALHALL
MENMUIR
BY BRECHIN

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Extent of Shadow Flicker – 240 m

Distance to nearest property – 460 m

SHADOW FLICKER PLAN

Scale: 1-10000

DRAWING No: 080313REV – 3 of 4

DATE: AUGUST 2014

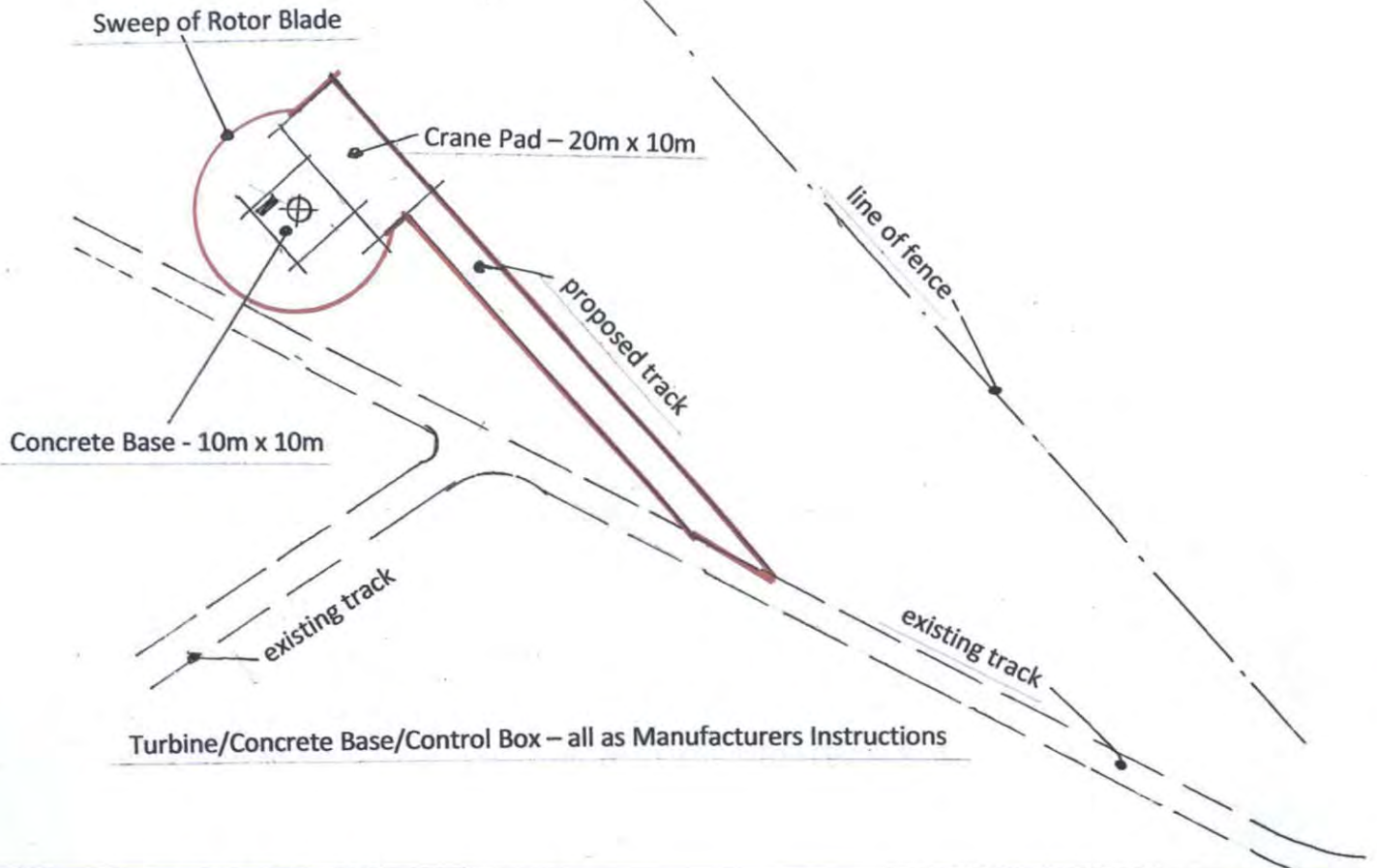
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BRECHIN DD9 6AE

PROPOSED ERECTION OF A SINGLE WIND TURBINE
at
MAINS OF BALHALL
MENMUIR
BY BRECHIN

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TRACK/CRANE SPEC:

Layer of Geotex - turned up at edges
250mm well compacted Type 1 base
Quarry dust

SITE AREA:

453 sq m - Sweep of Rotor
210 sq m - Proposed Track
60 sq m - Crane Pad Projection
0.08 Ha - TOTAL AREA

SITE LAYOUT PLAN

Scale: 1-1000

DRAWING No: 080313REV - 4 of 4
DATE: AUGUST 2014

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BRECHIN DD9 6AE

SECTION 3

PLANNING STATEMENT

FULL PLANNING APPLICATION TO INSTALL

A SINGLE NP 100 WIND TURBINE

ON

FARM LAND

AT

MAINS OF BALHALL

MENMUIR

Planning Statement
Single NP 100 Turbine – Mains of Balhall

Contents

Introduction

1 The Need

- 1.1 Sustainability
- 1.2 Energy Options

2 The Development

- 2.1 The Proposed Development.
- 2.2 The Site Context.
- 2.3 The Wind Turbine.
- 2.4 The Grid Connection.
- 2.5 Site Access and Tracks.

3 Scheme Design

- 3.1 Site Selection.
- 3.2 Site Design.

4 Operation, Construction and Decommissioning.

5 Potential Environmental Impacts

- 5.1 Ecology.
- 5.2 Landscape Designation.
- 5.3 Landscape and Visual Impact.
- 5.4 Heritage Sites.
- 5.5 Noise.
- 5.6 Shadow Flicker.
- 5.7 Hydrology and Flood Risk.
- 5.8 Public Rights of Way.

6 Planning Policy Considerations

- 6.1 Climate Change.
- 6.2 Renewable Energy.
- 6.3 Sustainable Energy.
- 6.4 The National Planning Framework 2.
- 6.5 Scottish Planning Policy.
- 6.6 Installation.
- 6.7 Driver Distraction.
- 6.8 Decommissioning.

7 Conclusion

PLANNING STATEMENT

Single NP 100 Turbine – Mains of Balhall, Menmuir.

INTRODUCTION

This supporting statement has been prepared to accompany an application for planning permission to develop 1 NP 100 Wind Turbine on farm land at Mains of Balhall, Menmuir.

The applicant is Harmony Energy Ltd.

The applicants are looking to provide an opportunity to generate renewable energy on land which is currently Farm land. The generation of renewable energy from an area of farm land can provide a limited but valuable contribution to the outputs of renewable energy and help meet the needs locally and nationally.

This proposal will provide a valuable contribution towards the national target of 100% of Scotland's gross annual electricity consumption to be generated by renewable sources by the year 2020. The outputs of renewable energy will help both nationally and locally.

The proposed turbine has a capacity of 100kW which can achieve a predicted generation of approximately 380MWh per annum.

Planning Statement

Single NP 100 Turbine – Mains of Balhall, Menmuir.

1.1 Sustainability

The application is a sustainable proposal which focuses on the conservation of energy and our natural resources through the use of a renewable source. The proposal is to help reduce CO² emissions and increase the proportion of green energy available while also allowing the farmer an income from rental of the land. The implementation of the turbines will play a small but significant part in contributing to the Government's renewable energy targets with the associated impact upon CO² and global warming. The location of this proposal has been carefully selected to both maximise the available wind resource and have as little intrusion on the surrounding environment as possible.

1.2 Energy Options

Whilst considering the types of renewable energy available, the applicant favoured wind energy for the proposed location due to the following factors:

- The proposal would use a very minimal amount of land, the proposed site being only 0.08 hectares. The generation of the same amount of solar energy would require in excess of 30 acres of valuable land.
- The production of wind energy can function over a 24 hour period.

2 THE DEVELOPMENT

2.1 The Proposed Development

The proposed site is on 0.08 hectares of farm land. The proposed development involves the installation and operation of 1 mid-size wind turbine.

The proposed turbine will have a hub height of 37 metres and a rotor diameter of 24 metres giving a maximum overall height to tip of 49 metres. The turbine has a 'cut in' wind speed of 3.0m/s (7mph) and a 'cut out' wind speed of 25 m/s (56mph) giving a rated wind speed of 14m/s (31mph). At an average wind speed of 6.5m/s the proposed turbine could generate 380MWh per annum. On this basis the CO² reduction of the proposed wind turbine is estimated to be approximately 198.74 tonnes annually (380MW/h x 1000 x 0.523 = 198740 kg CO²). Based on an operational lifespan of 25 years it can be estimated that the wind turbine could offset approximately 4968.5 tonnes of CO² over the proposed lifetime of the development. The proposal also involves the development of an area of hard standing adjacent to the turbine to support the crane during turbine assembly.

2.2 Site Context

The proposed development is located at grid reference Eastings 350832 and Northings 764324. The surrounding landscape is predominantly cultivated arable land. There are no footpaths crossing the site and no residential properties within 450 metres.

2.3 The Wind Turbine

The turbine is of a typical design consisting of a tubular tower with three blades attached to a nacelle which houses the generator and operating equipment. The turbine has a hub height of 37 metres and a rotor diameter of 24 metres giving an overall height of 49 metres. The foundations will be constructed from reinforced concrete.

A temporary crane pad will be constructed adjacent to the turbine location for the installation.

2.4 Grid Connection

The Distribution Network Operator (DNO) responsible for the electrical infrastructure in the area of the site has confirmed that there is potential for a grid connection. The turbine will therefore be connected to the grid.

2.5 Site Access and Tracks

The site is accessed from the unclassified road leading between Kirkton of Menmuir and Fern over approximately 950metres of existing track and a further 65 metres of new track will also be required. It is envisaged that the crane and delivery vehicles will be able to access the site without any need for re-enforcement of the track.

Delivery will be by means of 4 articulated lorries in one day and no need for an escort.

3 SCHEME DESIGN

3.1 Site Selection

The applicant has been aware for some time that due to the excellent wind resource at the site and favourable topography, Mains of Balhall has the potential to accommodate small scale wind power generation.

3.2 Site Design

Turbine layout is based on the mapping of technical and environmental constraints specific to the site and its surrounding area.

Mapping separation distances from residential properties, the footprint of under and over ground infrastructure, ecological interest and other restraints allows a developable area within the site to be identified. The result of this mapping is that an unconstrained area large enough to accommodate one mid sized turbine was identified.

4 OPERATION, CONSTRUCTION AND DECOMMISSIONING

It is envisaged that the construction phase of the proposal will last approximately one month and that the Operational Phase of the proposal will last twenty five years. It is anticipated that the Decommissioning Phase of the proposal would last approximately one month.

5 POTENTIAL ENVIRONMENTAL IMPACTS

This section considers the potential environmental impacts arising from the proposed development.

5.1 Ecology

An ecological report has been prepared and is enclosed. It concludes that there are no habitats of significant nature conservation value in close proximity to the proposed site.

5.2 Landscape Designations

The proposed development does not lie within or adjacent to any designated or protected landscape.

5.3 Landscape and Visual Impact

A ZTV (Zone of Theoretical Visibility) see enclosed, was carried out showing a radius of 15km from the central point of the turbine. This identified areas of countryside where the hub and rotor tips are theoretically visible. The ZTV identified areas which could be impacted upon by the proposed development and enabled a more detailed study of this impact to be carried out by the production of a photomontage. A survey of the site has been carried out at vantage points in accordance with Angus Council for the preparation of photomontages.

No comments were raised by Angus Council relating to the viewpoint locations in previous application Ref: 13/00632/FULL

Locations are pinpointed using Garmin eTrex H personal navigator.

Photographs taken using Canon EOS 60D with 35mm lens – multiplication factor of 1.6.

First photograph at each point taken approximately 180° from the proposed turbine position.

The photomontages enclosed are discussed individually below.

Each viewpoint shows existing view and predicted view at an approximately 50mm focal plane and existing and predicted single frame view at a 70mm focal plane.

Viewpoint 1 – Taken from Aberlemno Hill. This gives a similar view to that of the historic standing stones of Aberlemno. The existing turbine at Balhall Lodge and proposed turbine at Mains of Balhall are in the centre of the photograph located well below the ridge line of the back hills.

Viewpoint 2 – Taken from White Caterthun. From the site of the Roman Fort both the proposed turbine and the existing Balhall Lodge turbine are shown slightly to the right of centre of the photograph. While the turbines are both visible on the wire frame, neither can be seen on the photograph due to plantation.

Viewpoint 3 – Taken from junction at Tigerton / Kirkton of Menmuir. Turbines are more visible on the wire frame rather than the photograph again due to general plantation. The proposed Mains of Balhall turbine sited not significantly higher than the operational Balhall Lodge turbine.

Viewpoint 4 – Taken from Mains of Balhall Farm road end. The photograph shows the proposed Mains of Balhall turbine very clearly in the centre with the existing Balhall Lodge turbine slightly to the right. Although both turbines sit on what appears

to be the ridge of a hill, it is clear from the previous photograph that they are considerably below the ridge line of the back hills.

Viewpoint 5 – Taken from Bogton of Balhall. Although both turbines are visible on the wire frame the proposed turbine which is sited to the left of centre is nearly totally obscured by trees.

Viewpoint 6 – Taken between Coe and Cowford. Proposed turbine is located to the left of the Existing Balhall Lodge turbine and both are very unobtrusive.

Viewpoint 1 is approximately seven kilometres south of the site and is one of the nearest points of historic interest where the site would be visible from.

Viewpoints 2 to 6 provide a comprehensive indication of all areas of visibility in accordance with the ZTV within five kilometres of the turbine site.

There are no relevant viewpoints at places of interest north of the site.

Taking the above into account, the proposal would not have a particularly intrusive or detrimental effect on the surrounding landscape. Furthermore, the potential saving of CO₂ per year would help to contribute towards renewable energy for the region which in turn can help maintain the landscape in the future.

5.4 Heritage Sites (Archaeology, listed buildings and conservation areas)

The site is located approximately 4.5 kilometres south west of the Caterthun Forts and in excess of 7 kilometres to the north of the Standing Stones at Aberlemno. Previous applications in this area have shown that Historic Scotland is unlikely to consider that the proposed turbine will have a significant impact on the Forts or Stones and should not affect the way in which they are appreciated or understood.

5.5 Noise

The site has been selected and located to allow sufficient distance between the turbine and any existing noise sensitive development so that noise will not be a nuisance or a material consideration in deciding the planning application.

Sound Power Warranty Levels have been enclosed within this application. The calculations are from standardised wind speed at ten metre height according to E1C61400-11. The nearest property to the site is Balhall Lodge which is in excess of 450 metres from the proposed turbine and further from the property than the operational Balhall Lodge turbine. Other properties are in excess of 1 kilometre from the proposed site. A belt of trees between both turbines and Balhall Lodge provide an effective sound buffer. See PDA Noise Assessment Report

5.6 Shadow Flicker

There are no properties within ten rotor diameters of the proposed turbine (240m) the distance above which the effect of shadow flicker would not affect a property. The nearest property is Balhall Lodge at approximately 450 metres from the site and as such the development will not create shadow flicker issues. Shadow flicker would also be eliminated by the band of trees previously mentioned.

5.7 Hydrology and Flood Risk

Due to its location in a low flood risk area and the relatively small footprint of the development, the proposed development will have no unacceptable adverse impact on hydrology and flood risk at the site.

5.8 Public Rights of Way

There are no public rights of way which would be affected by this proposal.

6 PLANNING POLICY CONSIDERATIONS

6.1 Climate Change

Changes in climate have seen a rise of approximately 0.74°C on average across the world from 1906 to 2005. In 2007, The Intergovernmental Panel on Climate Change determined that most of the observed increases in global temperatures were due to an observed increase in greenhouse gas concentration. Humans influence global climate by releasing 'greenhouse' gases such as methane and CO² into the atmosphere, the gases absorb energy that is radiating from the Earth's surface warming the atmosphere and increasing the temperature globally.

The impact of this climate change can see communities struggling to cope with the effects of extreme droughts and excessive rainfall causing untold disruption to both man made and natural habitats.

6.2 Renewable Energy

The climate change (Scotland) Bill sets a target of an 80% reduction in emissions by 2050 and an interim target for 2020. Key elements of the strategy for achieving a substantial reduction in emissions are greater energy efficiency, making the most of Scotland's renewable energy potential and encouraging power and heat generation from clean, low carbon sources.

6.3 Sustainable Development

Preventing climate change and securing future energy supplies can also provide investment opportunities and jobs within the renewable energy sector. Small scale developments will help support this important industry.

6.4 The National Planning Framework for Scotland 2

The NPF2 is a document which seeks to outline the Scottish Governments view of what sustainable development means in practice for the planning system. The Scottish Governments commitment to sustainable development is reflected in its policies on matters such as climate change and renewable energy with a development strategy which aims to realise the potential of Scotland's renewable energy resources and facilitate the generation of power and heat from clean, low carbon sources.

6.5 Scottish Planning Policy

Scottish Planning Policy recognises that there is potential for small businesses to invest in ownership of renewable energy projects and states that Planning Authorities should support them in developing such initiatives in an environmentally acceptable way.

6.6 Installation

The installation of the turbine should take approximately four weeks. All excavations, protection, cable laying etc will be carried out in accordance with all relevant health and safety requirements.

6.7 Driver Distraction

Due to the location, scale and siting of the turbine, it is not considered that driver distraction will be a material consideration.

6.8 Decommissioning

Measures will be taken to ensure that dismantling of equipment and restoration of the site are carried out in accordance with health and safety requirements and to protect the safety of the public.

7. Conclusion

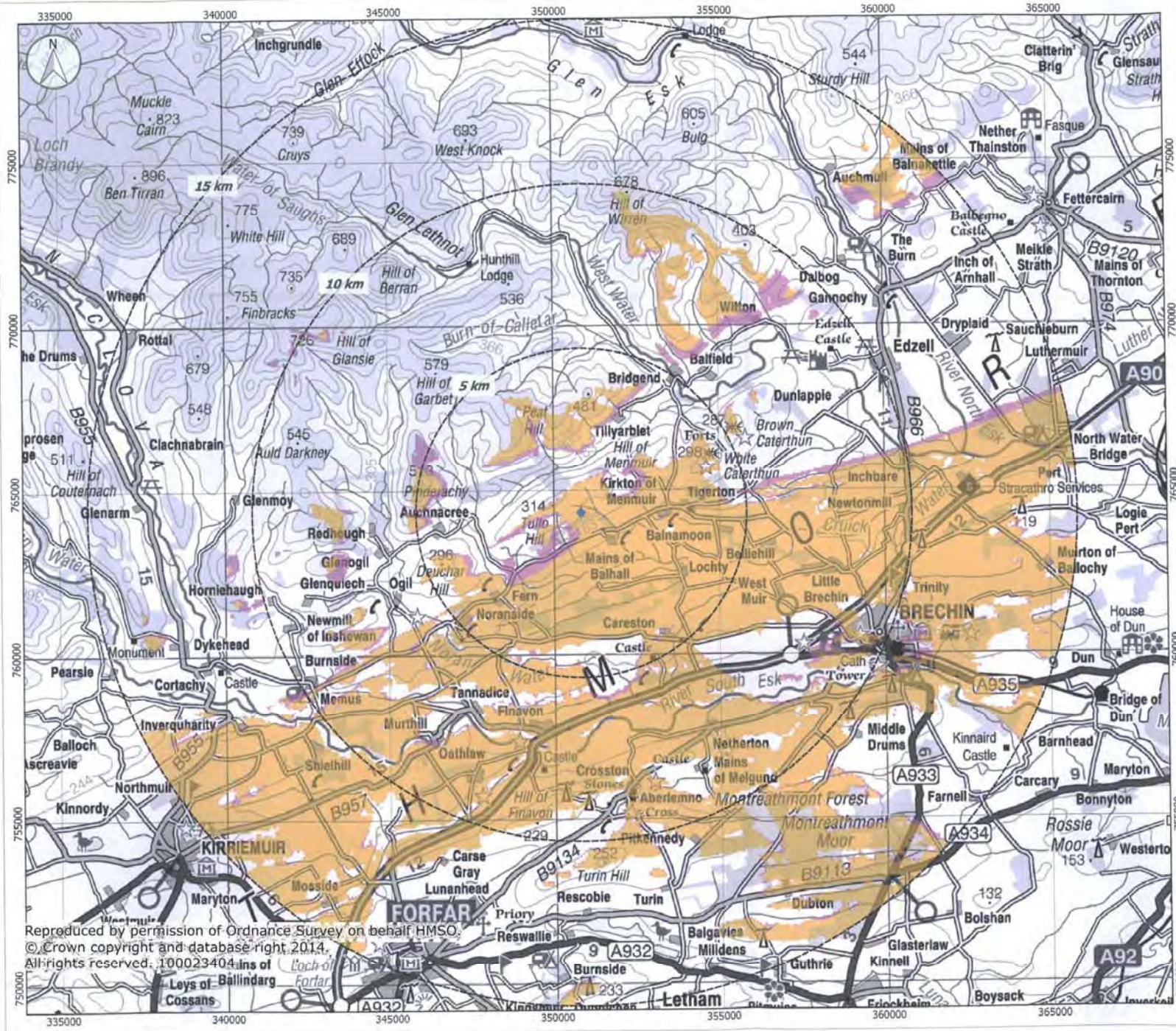
In line with national, regional and local policy, the generation of renewable energy will help contribute to the target for reducing carbon emissions. The proposed turbine is mid sized in scale and sited on farm land at a reasonable distance from any residential dwellings. The proposed turbine is relatively well screened from many vantage points and the design and scale selected will be kept to a minimum intrusion on the landscape.

The application is a sustainable proposal focussed on the conservation of energy through renewable sources.

The site is located within area10 of Broadland Valley Lowland as defined in Angus Council's ER 35 guide giving scope for turbines up to 80metres in height. It is also located within area Tay 5 in the Strategic Landscape Capacity Assessment for Wind Energy in Angus.

The proposed turbine conforms with all requirements contained in the above as well as all Policies contained within the Angus Local Plan and TAYplan Strategic Development Plan

SECTION 4



MAINS OF BALHALL

Zones of Theoretical Visibility

Legend

- ◆ Proposed turbine location
- Turbine distance buffers (5km intervals)

Theoretical visibility:

- Hub visible
- Rotor tip visible

Turbine coordinates:
 350832, 764324

NOTES:
 The ZTV is based on an NP 100 turbine with the following dimensions:

- Hub height: 37m
- Rotor diameter: 24m
- Tip height: 49m

The ZTV was calculated to 15km in accordance with SNH best practice for this height of turbine and accounts for the curvature of the Earth. The ZTV was calculated using the OS 'Terrain 50' dataset (which supersedes the Panorama DTM). Terrain 50 data is 'bare earth' data so this ZTV takes no account of the potential screening effects of trees or buildings.



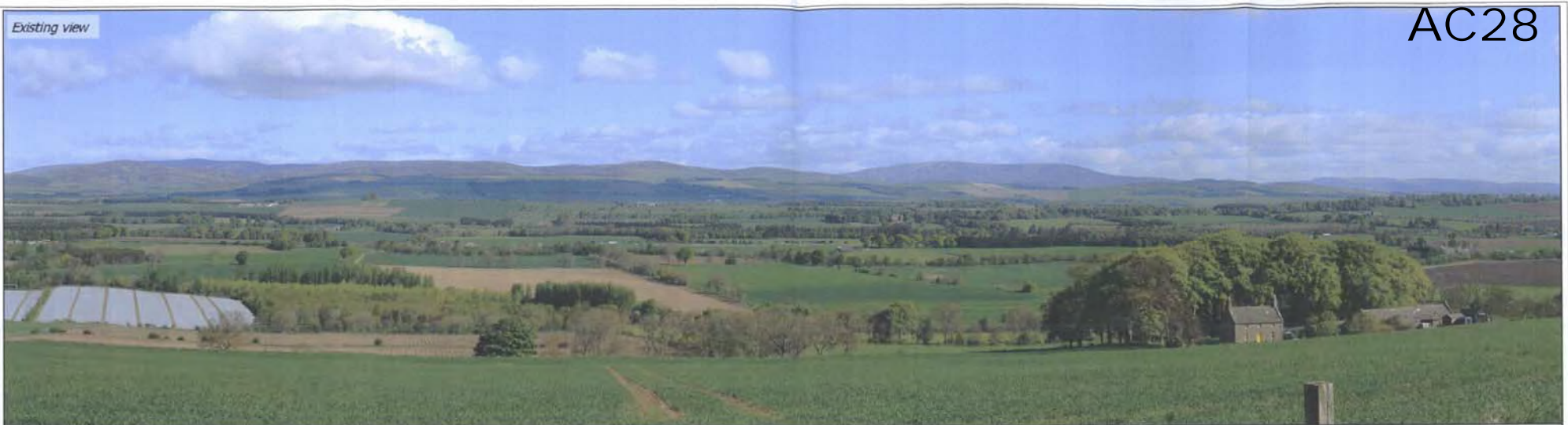
Drawing Ref: mainsOfBalhall_ztv_20140828

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MAPPAGNOSIS
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 GIS analysis, 3D modelling and mapping

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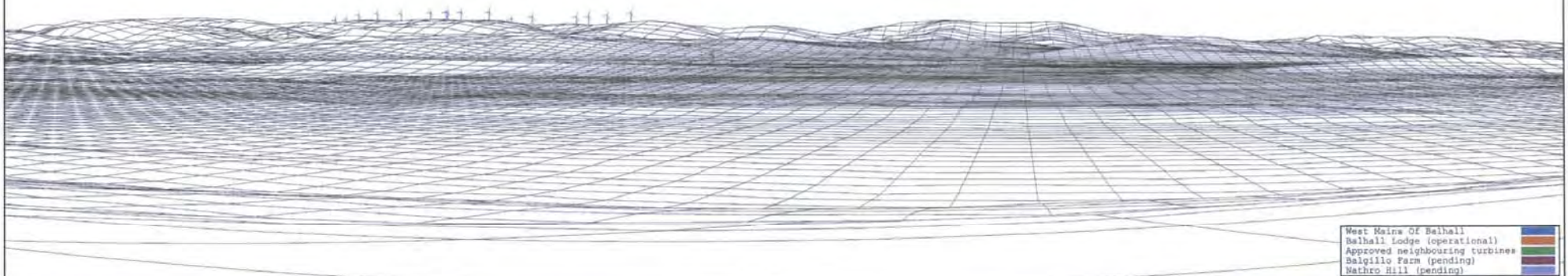
Existing view



Cumulative wireline (including pending applications)

West Mains Of Balhall
Balhall Lodge (operational)

Nathro (pending)



West Mains Of Balhall
Balhall Lodge (operational)
Approved neighbouring turbines
Balgillo Farm (pending)
Nathro Hill (pending)



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Viewpoint Location

Title: Aberlemno Hill
Easting: 353371
Northing: 756793
Height (m AOD): 125

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 348.75°
Viewer height AGL: 2m
Horizontal Field of view: 73°
Pitch angle: 4.3°
Viewing distance @ A3: 31.4cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 1
Distance to nearest turbine (km): 7.95

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
Call: 01463 820000
Email: info@acraig.co.uk

MAINS OF BALHALL
Viewpoint 1
(Existing view & cumulative wireline)

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GIS analysis, 3D modelling and planning



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Viewpoint Location

Title: Aberlemno Hill
Easting: 353371
Northing: 756793
Height (m AOD): 125

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 348.75°
Viewer height AGL: 2m
Horizontal Field of view: 39.6°
Pitch angle: 4.3°
Viewing distance @ A3: 59.8cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm.

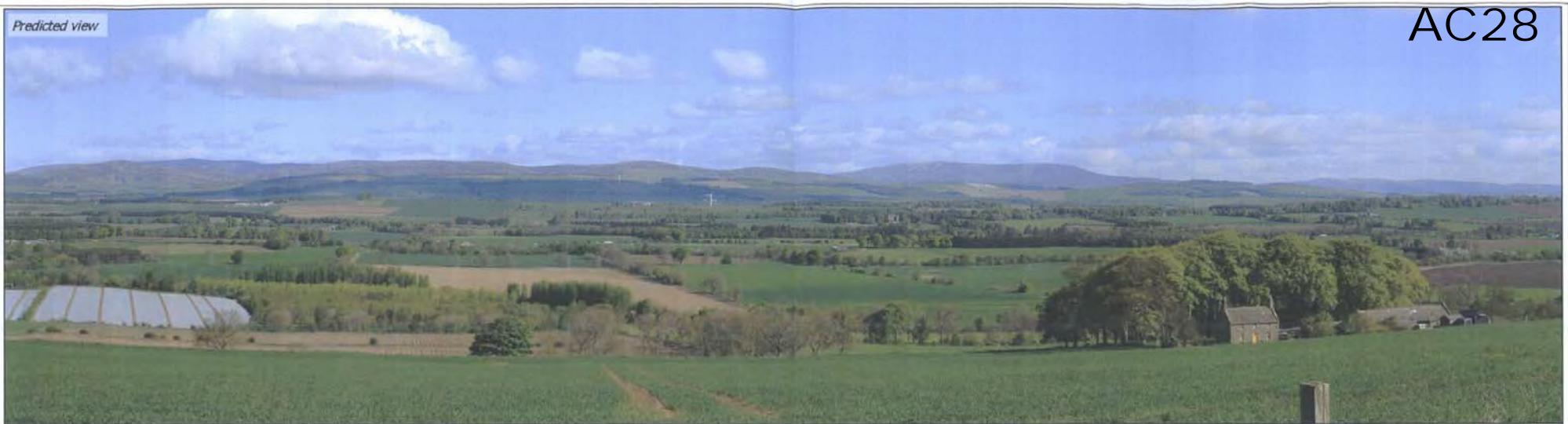


MAINS OF BALHALL

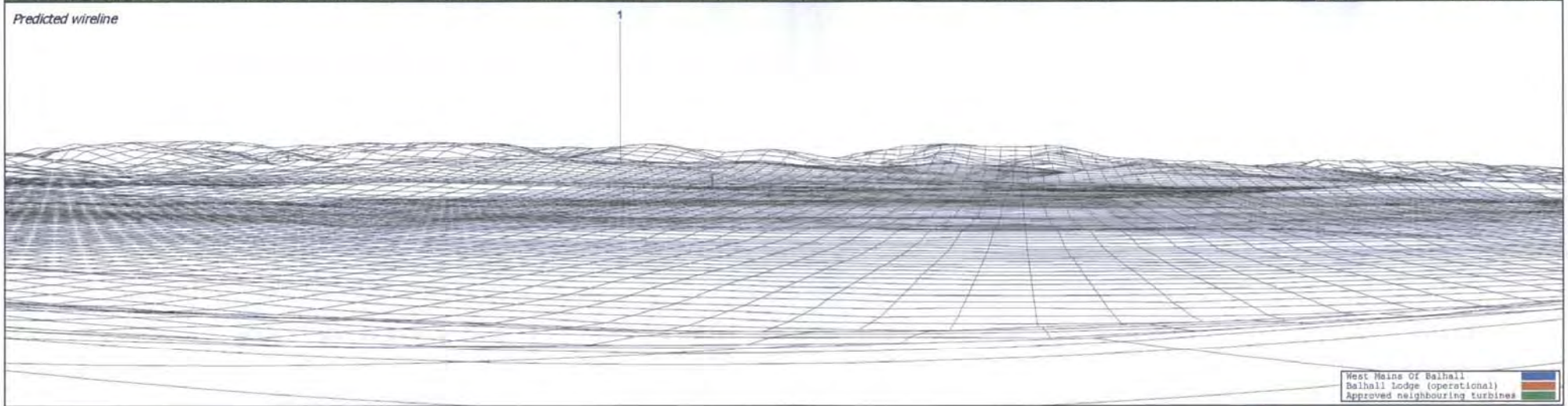
Viewpoint 1
(single frame - existing view)



GIS analysis, 3D modelling and rendering



Predicted wireline



West Mains Of Balhall
Balhall Lodge (operational)
Approved neighbouring turbines



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Viewpoint Location

Title: Aberlemno Hill
Easting: 353371
Northing: 756793
Height (m AOD): 125

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 348.75°
Viewer height AGL: 2m
Horizontal Field of view: 73°
Pitch angle: 4.3°
Viewing distance @ A3: 31.4cm

Photography

Camera: Canon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 1
Distance to nearest turbine (km): 7.95

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
Tel: 01463 854444
www.aCraigArchitectural.com

MAINS OF BALHALL

Viewpoint 1
(predicted view)

MAPPAGNOSIS
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GIS analysis, 3D modelling and mapping

Predicted view



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Viewpoint Location

Title: Aberlemno Hill
 Easting: 363371
 Northing: 756793
 Height (m ACD): 125

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/ Photomontage

Bearing: 348.75°
 Viewer height AGL: 2m
 Horizontal Field of view: 39.6°
 Pitch angle: 4.3°
 Viewing distance @A3: 59.8cm

Photography

Camera: Canon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
 Number of turbine hubs visible: 1
 Distance to nearest turbine (km): 7.95

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm. The curvature of the Earth has been accounted for. The predicted counts of turbine hubs and tips excludes the effect of screening.



MAINS OF BALHALL

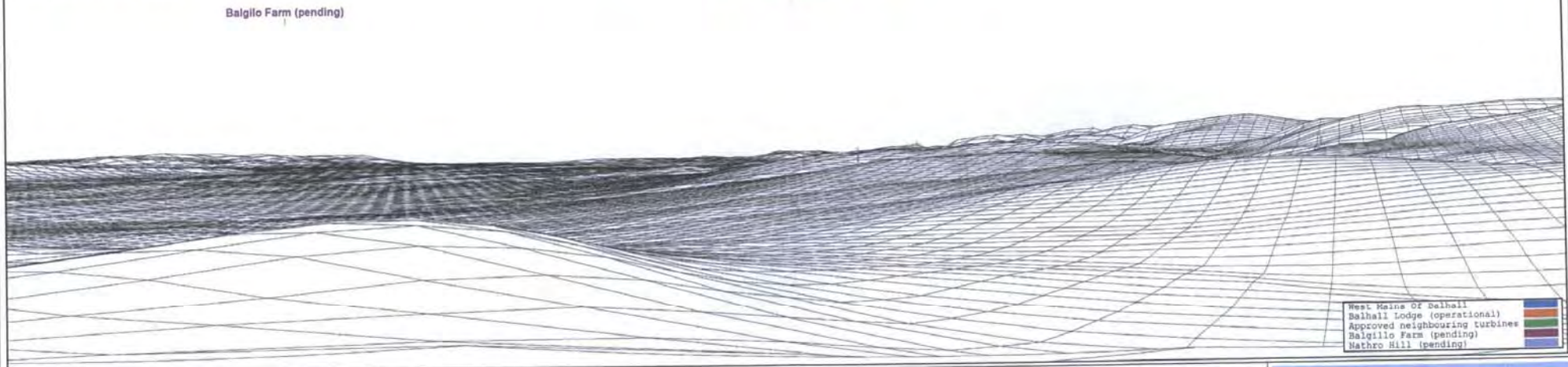
Viewpoint 1
 (single frame - predicted view)



Existing view



Cumulative wireline (including pending applications)



West Mains Of Balhall
Balhall Lodge (operational)

Balgillo Farm (pending)

West Mains of Balhall
Balhall Lodge (operational)
Approved neighbouring turbines
Balgillo Farm (pending)
Mathro Hill (pending)



Viewpoint Location

Title: White Caterthun
Easting: 354696
Northing: 765982
Height (m AOD): 290

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 243.25°
Viewer height AGL: 2m
Horizontal Field of view: 73°
Pitch angle: 4.1°
Viewing distance @ A3: 31.4cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 1
Distance to nearest turbine (km): 4.2

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
Tel: 01753 820000
Web: www.acraig.co.uk

MAINS OF BALHALL
Viewpoint 2
(Existing view & cumulative wireline)

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Existing view



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Viewpoint Location

Title: White Caterthun
 Easting: 354696
 Northing: 765962
 Height (m AOD): 290

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/ Photomontage

Bearing: 243.25°
 Viewer height AGL: 2m
 Horizontal Field of view: 39.6°
 Pitch angle: 4.1°
 Viewing distance @A3: 59.8cm

Photography

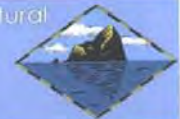
Camera: Cannon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm.

A Craig Architectural

101 - 10100 20100
 0100031673



MAINS OF BALHALL

Viewpoint 2
 (single frame - existing view)

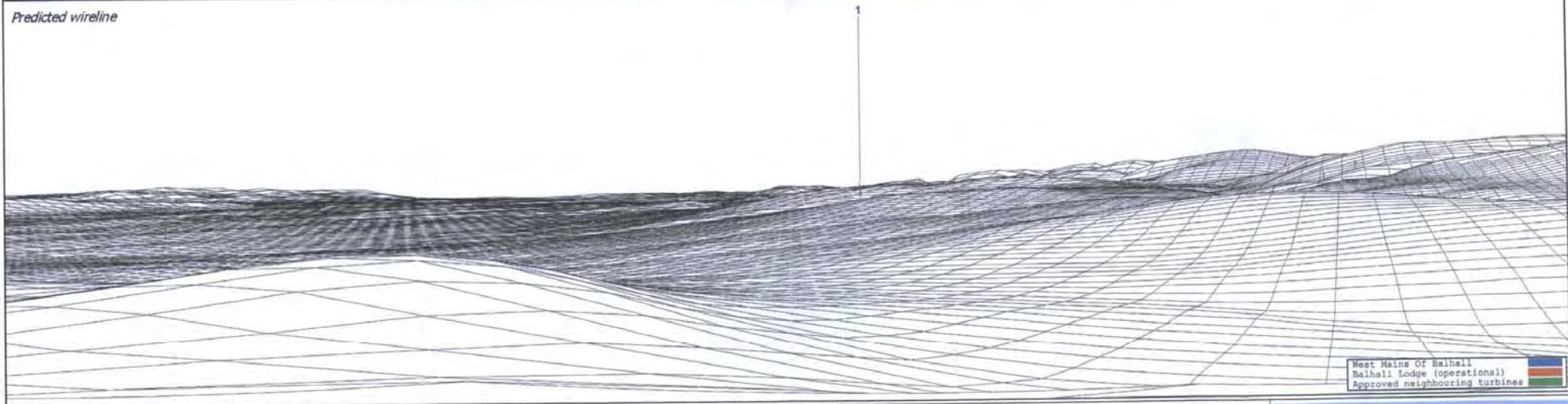
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Predicted view



Predicted wireline



West Mains Of Balhall
Balhall Lodge (operational)
Approved neighbouring turbines



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Viewpoint Location

Title: White Caterthun
Easting: 354696
Northing: 765982
Height (m AOD): 290

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 243.25°
Viewer height AGL: 2m
Horizontal Field of view: 73°
Pitch angle: 4.1°
Viewing distance @ A3: 31.4cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 1
Distance to nearest turbine (km): 4.2

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
Tel: 01842 899900
Web: www.a-craig.com

MAINS OF BALHALL

Viewpoint 2
(predicted view)

MAPPAGNOSIS
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GIS analysis, 3D modelling and training



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Viewpoint Location

Title: White Caterthun
Easting: 354696
Northing: 765982
Height (m AOD): 290

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 243.25°
Viewer height AGL: 2m
Horizontal Field of view: 39.6°
Pitch angle: 4.1°
Viewing distance @ A3: 59.8cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 1
Distance to nearest turbine (km): 4.2

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm. The curvature of the Earth has been accounted for. The predicted counts of turbine hubs and tips excludes the effect of screening.

A Craig Architectural

Ray - 01753 833000
White - 01753 833000



MAINS OF BALHALL

Viewpoint 2
(single frame - predicted view)

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GIS analysis, 3D modelling and mapping

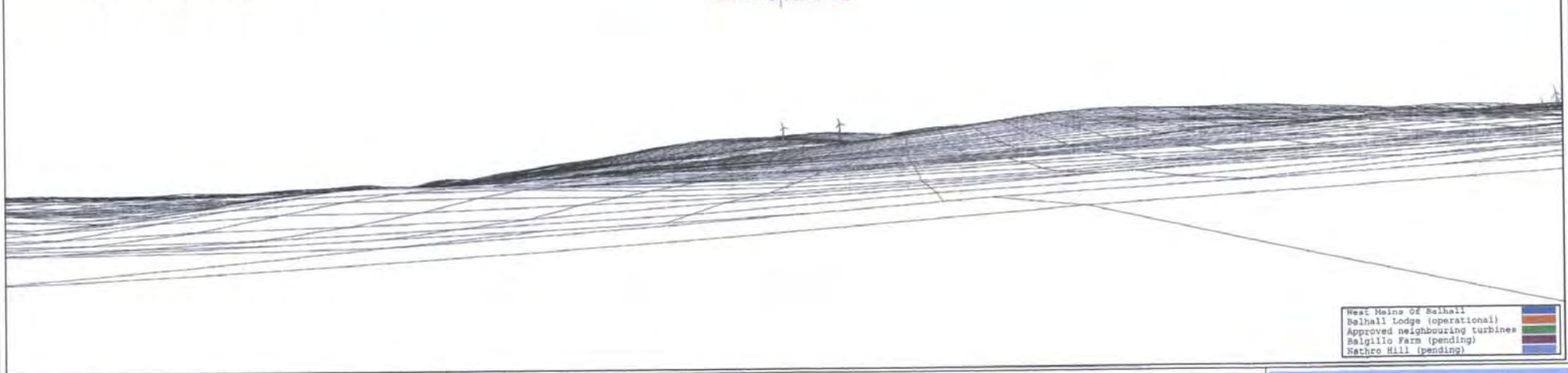


Existing view



Cumulative wireline (including pending applications)

West Mains Of Balhall
Balhall Lodge (operational)



West Mains Of Balhall	
Balhall Lodge (operational)	
Approved neighbouring turbines	
Balgillo Farm (pending)	
Nachro Hill (pending)	



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Viewpoint Location

Title: Tigerton
Easting: 353678
Northing: 764467
Height (m AOD): 122

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 264.5°
Viewer height AGL: 2m
Horizontal Field of view: 73°
Pitch angle: 2.5°
Viewing distance @ A3: 31.4cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 1
Distance to nearest turbine (km): 2.85

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
011 850 0000
www.acraig.co.uk

MAINS OF BALHALL
Viewpoint 3
(Existing view & cumulative wireline)

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GIS analysis, 3D modelling and planning

Existing view



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Viewpoint Location

Title: Tigerton
 Easting: 353678
 Northing: 764467
 Height (m AOD): 122

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/Photomontage

Bearing: 264.5°
 Viewer height AGL: 2m
 Horizontal Field of view: 39.6°
 Pitch angle: 2.5°
 Viewing distance @ A3: 59.8cm

Photography

Camera: Cannon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm.

A Craig Architectural
 Tel: 01843 82434
 Web: 01843 82434

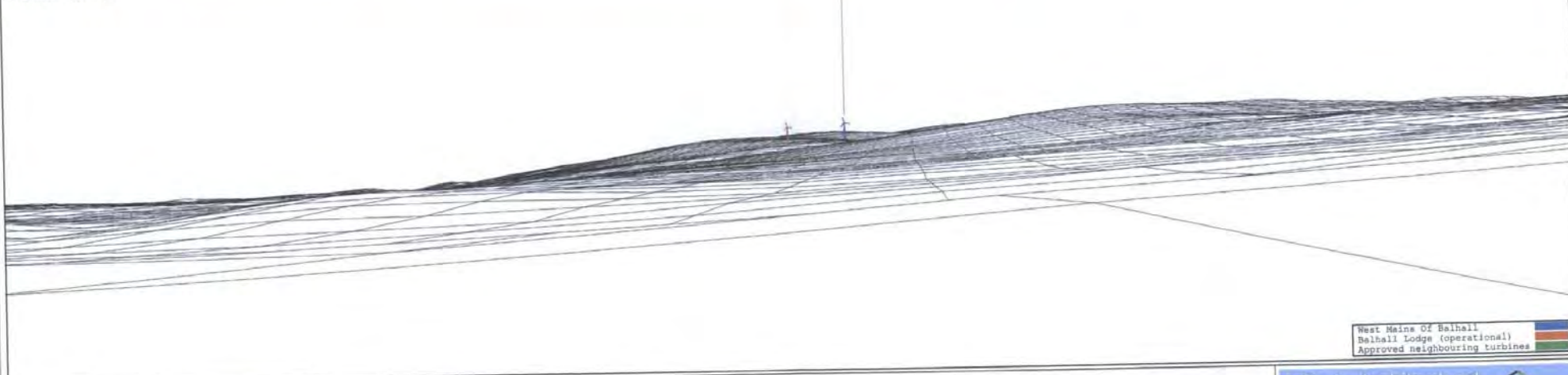
MAINS OF BALHALL
 Viewpoint 3
 (single frame - existing view)

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Predicted view



Predicted wireline



West Mains Of Balhall
Balhall Lodge (operational)
Approved neighbouring turbines



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Viewpoint Location

Title: Tigerton
Easting: 353678
Northing: 764467
Height (m AOD): 122

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 264.5°
Viewer height AGL: 2m
Horizontal Field of view: 73°
Pitch angle: 2.5°
Viewing distance @ A3: 31.4cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 1
Distance to nearest turbine (km): 2.85

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
Tel: 01843 821200
Web: www.a-craig.com

MAINS OF BALHALL

Viewpoint 3
(predicted view)

MAPPAGNOSIS
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GIS analysis, 3D modelling and mapping

Predicted view



Viewpoint Location

Title: Tigerton
 Easting: 353678
 Northing: 764467
 Height (m AOD): 122

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/Photomontage

Bearing: 264.5°
 Viewer height AGL: 2m
 Horizontal Field of view: 39.6°
 Pitch angle: 2.5°
 Viewing distance @ A3: 59.8cm

Photography

Camera: Cannon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
 Number of turbine hubs visible: 1
 Distance to nearest turbine (km): 2.85

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm. The curvature of the Earth has been accounted for. The predicted counts of turbine hubs and tips excludes the effect of screening.

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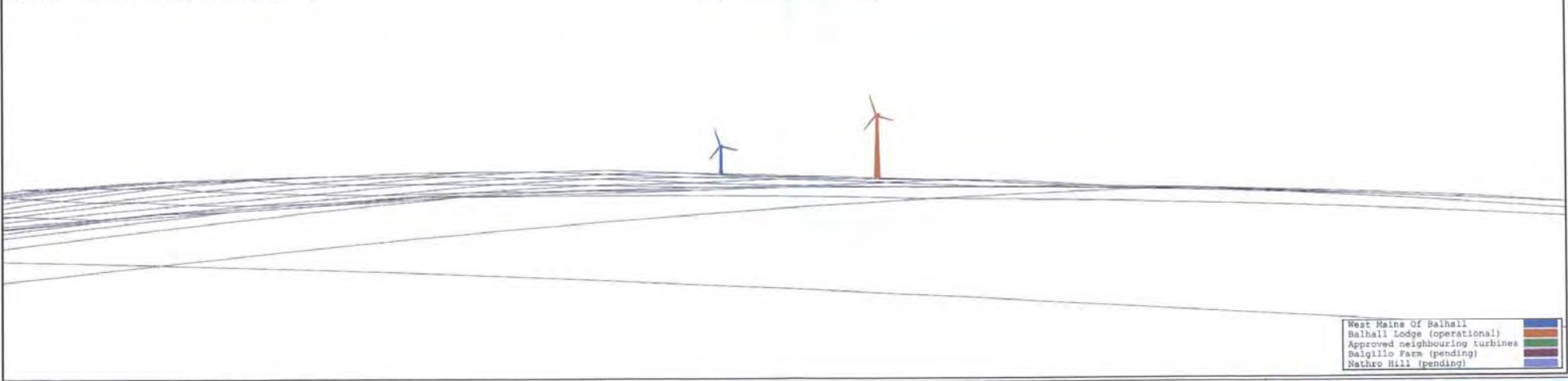
MAINS OF BALHALL
 Viewpoint 3
 (single frame - predicted view)

Existing view



Cumulative wireline (including pending applications)

West Mains Of Balhall Balhall Lodge (operational)



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Viewpoint Location

Title: Mains of Balhall farm road
 Easting: 351372
 Northing: 763708
 Height (m AOD): 155

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/Photomontage

Bearing: 321.8°
 Viewer height AGL: 2m
 Horizontal Field of view: 73°
 Pitch angle: 7.6°
 Viewing distance @ A3: 31.4cm

Photography

Camera: Cannon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
 Number of turbine hubs visible: 1
 Distance to nearest turbine (km): 0.82

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
 101 ...
 www.aCraigArchitectural.co.uk

MAINS OF BALHALL
 Viewpoint 4
 (Existing view & cumulative wireline)

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Existing view



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Viewpoint Location

Title: Mains of Balhall farm road
 Easting: 351372
 Northing: 763708
 Height (m AOD): 155

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/Photomontage

Bearing: 321.8°
 Viewer height AGL: 2m
 Horizontal Field of view: 39.6°
 Pitch angle: 7.6°
 Viewing distance @ A3: 59.8cm

Photography

Camera: Cannon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm.

A Craig Architectural

Tel: 01753 472796
 Mob: 07746 021141

MAINS OF BALHALL

Viewpoint 4
 (single frame - existing view)

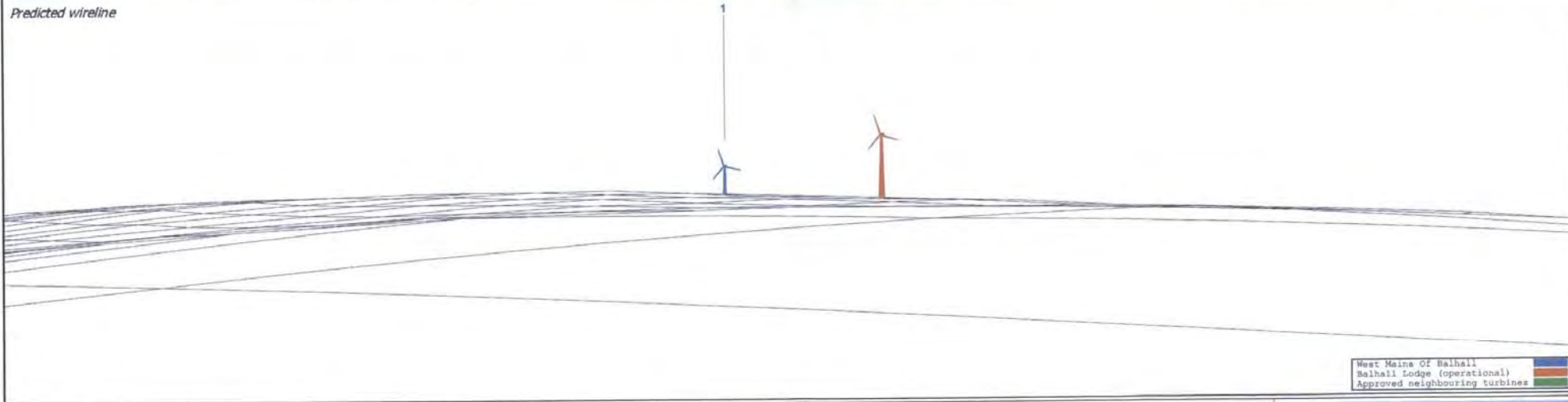
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Predicted view



Predicted wireline



West Mains Of Balhall
Balhall Lodge (operational)
Approved neighbouring turbines



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Viewpoint Location

Title: Mains of Balhall farm road
Easting: 351372
Northing: 763708
Height (m AOD): 155

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 321.8°
Viewer height AGL: 2m
Horizontal Field of view: 73°
Pitch angle: 7.6°
Viewing distance @ A3: 31.4cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 1
Distance to nearest turbine (km): 0.82

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
141 - 142 West Main
Mains of Balhall

MAINS OF BALHALL

Viewpoint 4
(predicted view)

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GIS analysis, 3D modelling and mapping



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Viewpoint Location

Title: Mains of Balhall farm road
Easting: 351372
Northing: 763708
Height (m AOD): 155

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 321.8°
Viewer height AGL: 2m
Horizontal Field of view: 39.6°
Pitch angle: 7.6°
Viewing distance @ A3: 59.8cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 1
Distance to nearest turbine (km): 0.82

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm. The curvature of the Earth has been accounted for. The predicted counts of turbine hubs and tips excludes the effect of screening.

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MAINS OF BALHALL
Viewpoint 4
(single frame - predicted view)

GIS analysis, 3D modelling and mapping

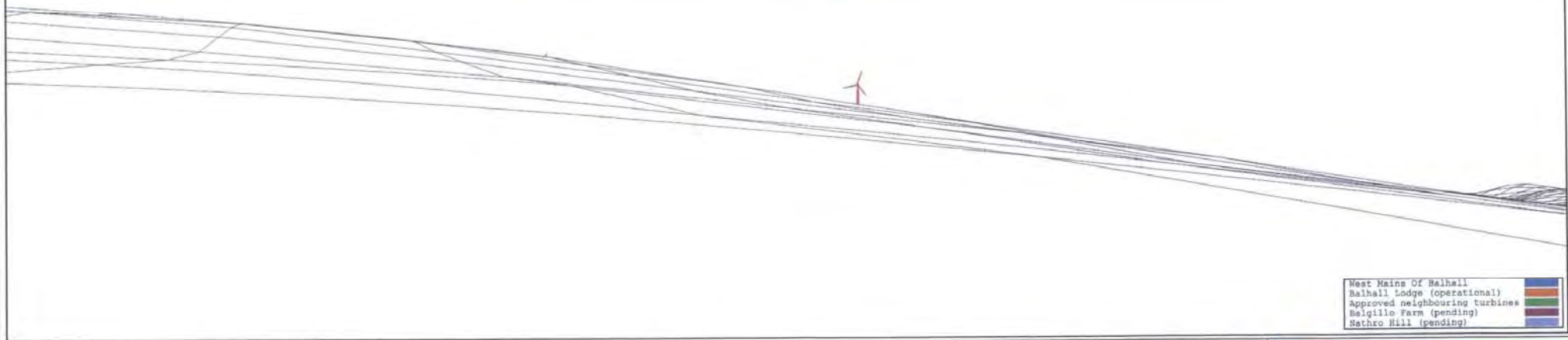
Existing view



Cumulative wireline (including pending applications)

West Mains Of Balhall

Balhall Lodge (operational)



- West Mains Of Balhall
- Balhall Lodge (operational)
- Approved neighbouring turbines
- Balgillo Farm (pending)
- Methro Hill (pending)



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Viewpoint Location

Title: Bogton of Balhall
 Easting: 350648
 Northing: 763425
 Height (m AOD): 165

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/Photomontage

Bearing: 22.9°
 Viewer height AGL: 2m
 Horizontal Field of view: 73°
 Pitch angle: 1.9°
 Viewing distance @ A3: 31.4cm

Photography

Camera: Cannon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
 Number of turbine hubs visible: 0
 Distance to nearest turbine (km): 0.92

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
 Tel: 01753 850000
 Web: www.aCraig.co.uk

MAINS OF BALHALL

Viewpoint 5
 (Existing view & cumulative wireline)

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GIS analysis, 3D modelling and mapping

Existing view



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Viewpoint Location

Title: Bogton of Balhall
 Easting: 350648
 Northing: 763425
 Height (m AOD): 165

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/Photomontage

Bearing: 22.9°
 Viewer height AGL: 2m
 Horizontal Field of view: 39.6°
 Pitch angle: 1.9°
 Viewing distance @ A3: 59.8cm

Photography

Camera: Cannon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm.

A Craig Architectural
 Tel: 01843 822222
 Mob: 07822 222222

MAINS OF BALHALL

Viewpoint 5
 (single frame - existing view)

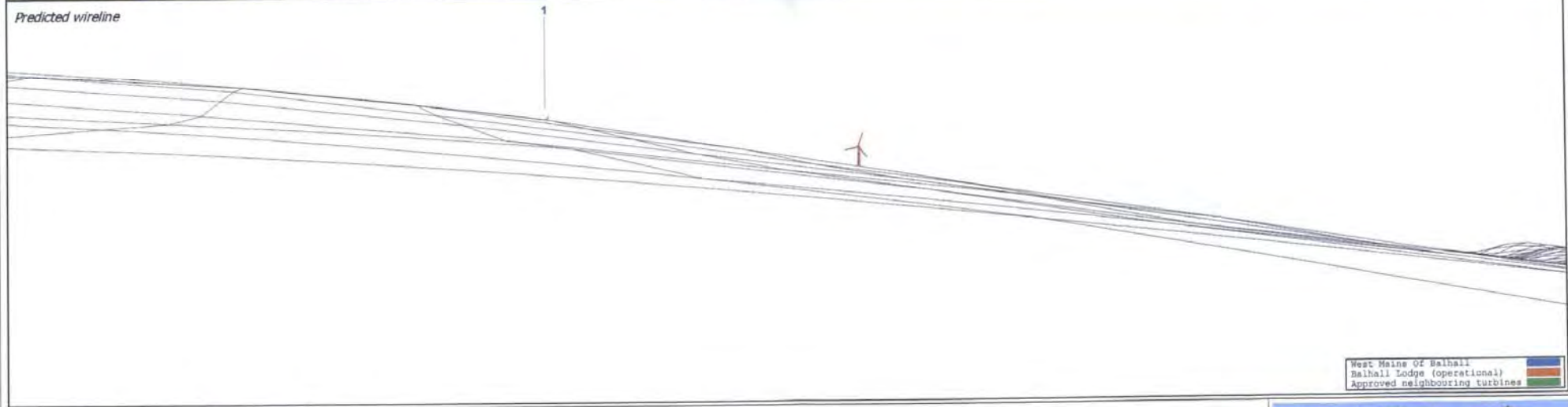
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Predicted view



Predicted wireline



West Mains Of Balhall
Balhall Lodge (operational)
Approved neighbouring turbines



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Viewpoint Location

Title: Bogton of Balhall
Easting: 350648
Northing: 763425
Height (m AOD): 165

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 22.9°
Viewer height AGL: 2m
Horizontal Field of view: 73°
Pitch angle: 1.9°
Viewing distance @ A3: 31.4cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 0
Distance to nearest turbine (km): 0.92

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
www.a-craig-architectural.co.uk
Mains of Balhall

MAINS OF BALHALL

Viewpoint 5
(predicted view)

MAPPAGNOSIS
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Predicted view



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Viewpoint Location

Title: Bogton of Balhall
 Easting: 350648
 Northing: 763425
 Height (m AOD): 165

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/Photomontage

Bearing: 22.9°
 Viewer height AGL: 2m
 Horizontal Field of view: 39.6°
 Pitch angle: 1.9°
 Viewing distance @ A3: 59.8cm

Photography

Camera: Cannon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
 Number of turbine hubs visible: 0
 Distance to nearest turbine (km): 0.92

Notes

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A Craig Architectural
 1st Floor, 100, The
 Mains of Balhall, Balhall


MAINS OF BALHALL
 Viewpoint 5
 (single frame - predicted view)

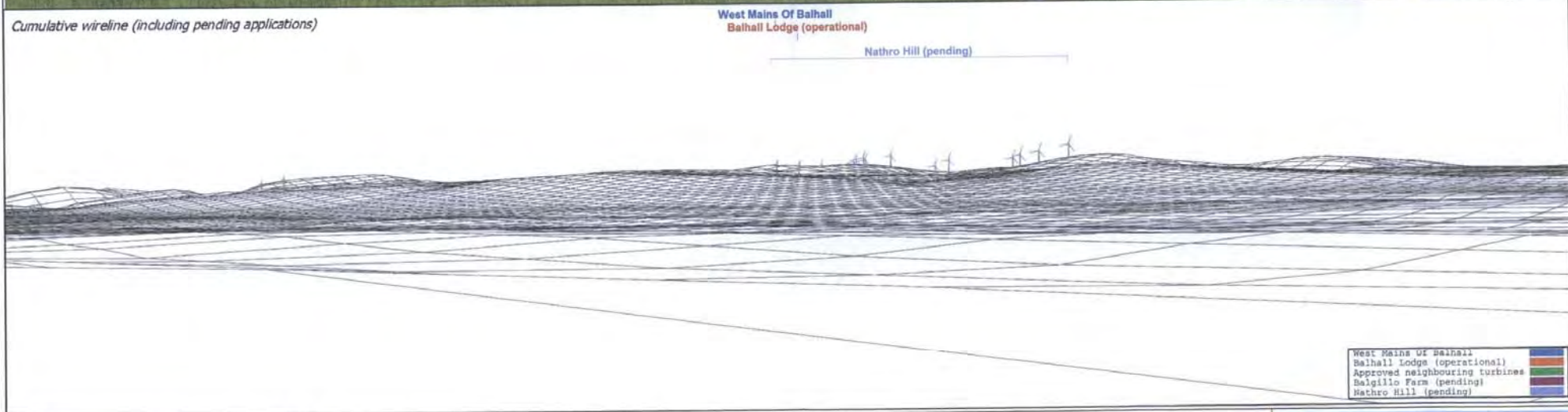
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 GIS analysis, 3D modelling and visualization



Existing view



Cumulative wireline (including pending applications)



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Viewpoint Location
 Title: Between Coe & Cowford
 Easting: 352986
 Northing: 762307
 Height (m AOD): 91

Proposed Turbine Details
 Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/Photomontage
 Bearing: 313.7°
 Viewer height AGL: 2m
 Horizontal Field of view: 73°
 Pitch angle: 2.6°
 Viewing distance @ A3: 31.4cm

Photography
 Camera: Cannon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Predicted Main Site Visibility
 Number of turbine blades visible: 1
 Number of turbine hubs visible: 1
 Distance to nearest turbine (km): 2.95

Notes
 The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
 Tel: 01463 820000
 Web: www.a-craig.co.uk

MAINS OF BALHALL
 Viewpoint 6
 (Existing view & cumulative wireline)

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Viewpoint Location

Title: Between Coe & Cowford
Easting: 352986
Northing: 762307
Height (m AOD): 91

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 313.7°
Viewer height AGL: 2m
Horizontal Field of view: 39.6°
Pitch angle: 2.6°
Viewing distance @ A3: 59.8cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm.

A Craig Architectural

tel: 01852 440294
www.a-craig.co.uk



MAINS OF BALHALL

Viewpoint 6
(single frame - existing view)

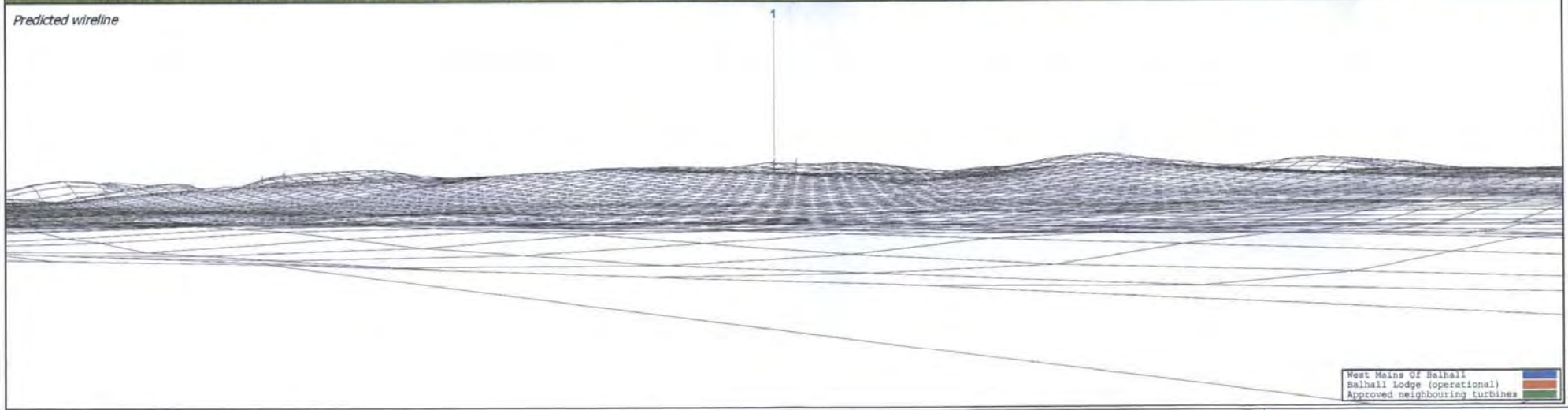
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GIS analysis, 3D modelling and mapping

Predicted view



Predicted wireline



West Mains of Balhall
Balhall Lodge (operational)
Approved neighbouring turbines



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Viewpoint Location

Title: Between Coe & Cowford
Easting: 352986
Northing: 762307
Height (m AOD): 91

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
Hub height: 37m
Rotor Diameter: 24m
Tip Height: 49m

Wireline/Photomontage

Bearing: 313.7°
Viewer height AGL: 2m
Horizontal Field of view: 73°
Pitch angle: 2.6°
Viewing distance @ A3: 31.4cm

Photography

Camera: Cannon EOS 60D
Lens: 35mm
Multiplication factor: 1.6
Equivalent lens: 56mm
Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
Number of turbine hubs visible: 1
Distance to nearest turbine (km): 2.95

Notes

The image has a curved projection and should be viewed with one eye only from the correct viewing distance. The wireframe was generated using Ordnance Survey's Terrain50 Dataset which does not take account of the screening effects of buildings or vegetation. The curvature of the Earth has been accounted for.

A Craig Architectural
Tel: 01463 700000
www.aicraig.co.uk

MAINS OF BALHALL
Viewpoint 6
(predicted view)

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Viewpoint Location

Title: Between Coe & Cowford
 Easting: 352986
 Northing: 762307
 Height (m AOD): 91

Proposed Turbine Details

Make / Model: Northern Power NPS 100-24
 Hub height: 37m
 Rotor Diameter: 24m
 Tip Height: 49m

Wireline/Photomontage

Bearing: 313.7°
 Viewer height AGL: 2m
 Horizontal Field of view: 39.6°
 Pitch angle: 2.6°
 Viewing distance @ A3: 59.8cm

Photography

Camera: Cannon EOS 60D
 Lens: 35mm
 Multiplication factor: 1.6
 Equivalent lens: 56mm
 Date: 26/05/13

Predicted Main Site Visibility

Number of turbine blades visible: 1
 Number of turbine hubs visible: 1
 Distance to nearest turbine (km): 2.95

Notes

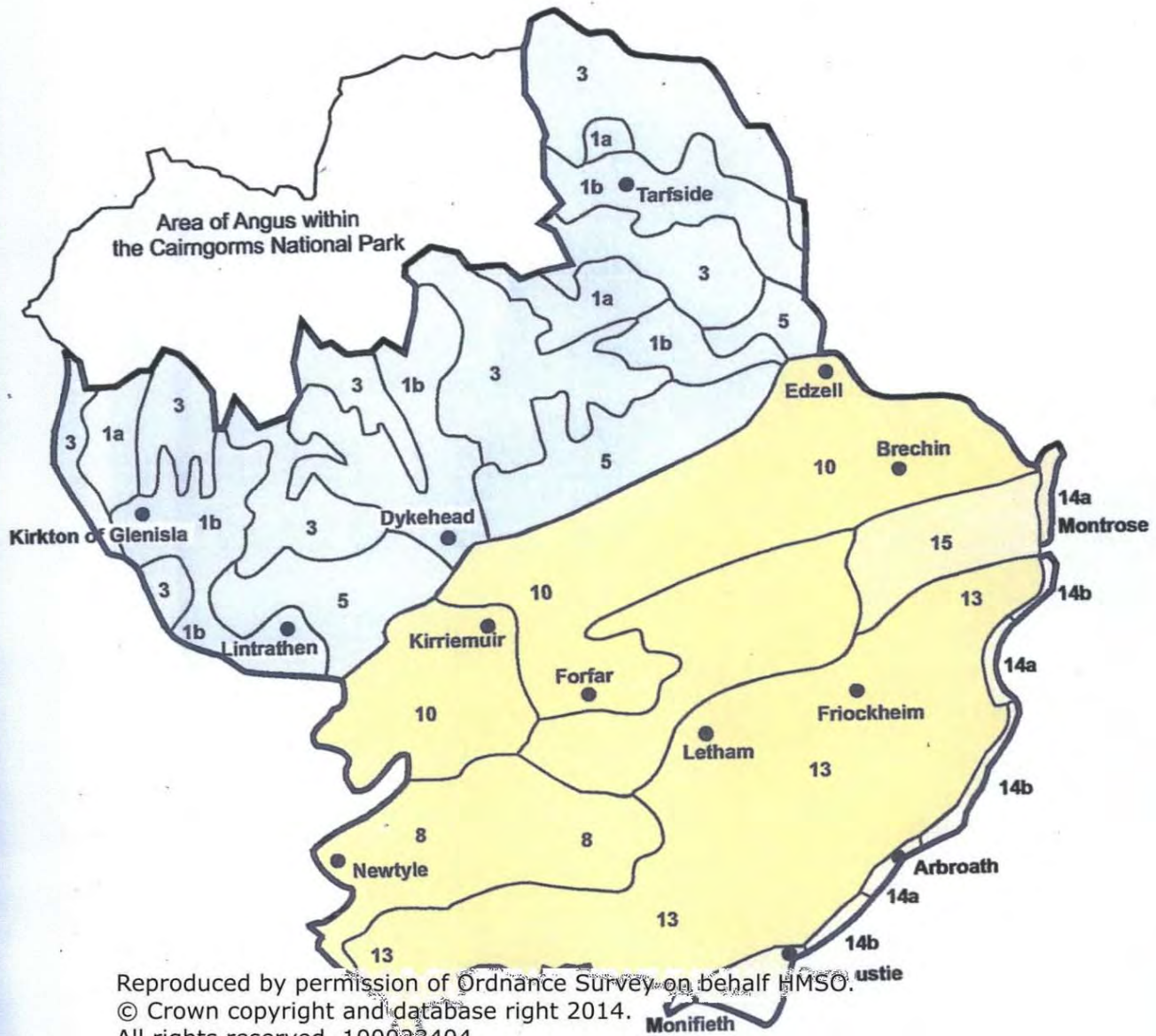
The image has a curved projection and should be viewed with one eye only from the correct viewing distance. This image represents a single frame view using a lens equivalent to 70mm. The curvature of the Earth has been accounted for. The predicted counts of turbine hubs and tips excludes the effect of screening.

A Craig Architectural
 Tel: 01534 831141
 Mobile: 07796 611202

MAINS OF BALHALL
 Viewpoint 6
 (single frame - predicted view)

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Figure 3.4 : Geographic Areas



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1 Highland

2 Lowland and Hills

3 Coast

- TLCA Designation**
- 1a Upper Highland Glens
 - 1b Mid Highland Glens
 - 3 Highland Summits & Plateaux
 - 5 Highland Foothills

- TLCA Designation**
- 8 Igneous Hills
 - 10 Broad Valley Lowland
 - 12 Low Moorland Hills
 - 13 Dipslope Farmland

- TLCA Designation**
- 14a Coast with sand
 - 14b Coast with cliffs
 - 15 Lowland Basin