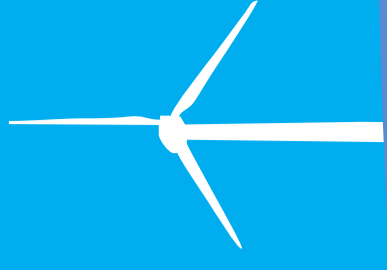


# Frawnney Wind Farm

## Environmental Statement - Volume 3 - Figures

June 2014



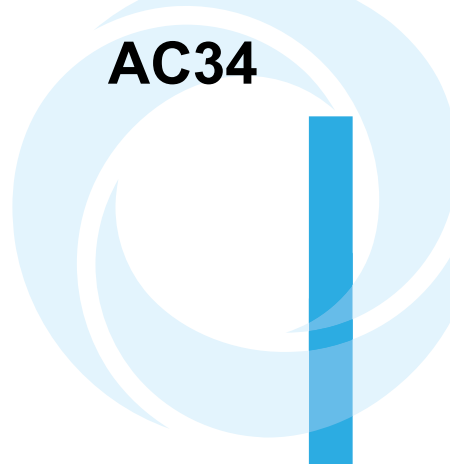
**Polar Energy  
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	1-2	Application Site Boundary
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<b>11 Transport and Access</b>	11-1	Potential transport route
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# Frawney Wind Farm Polar Energy (Finlarg) Ltd

Figure 1 1  
Site Location

Key  Site boundary

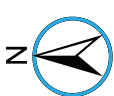


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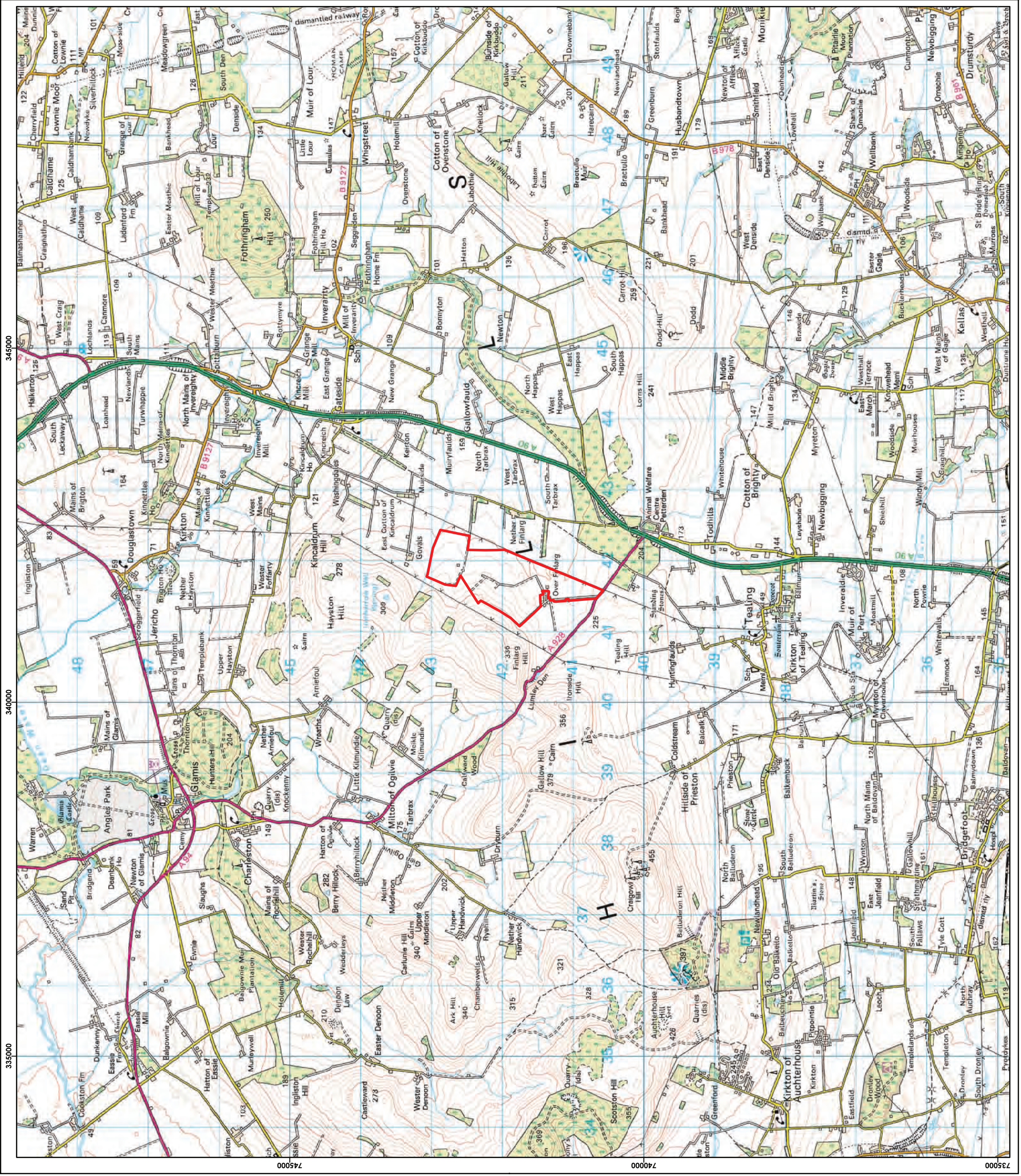
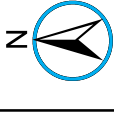
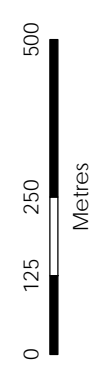


Figure 1-2  
Application Site Boundary

Key  
[Red outline] Site boundary



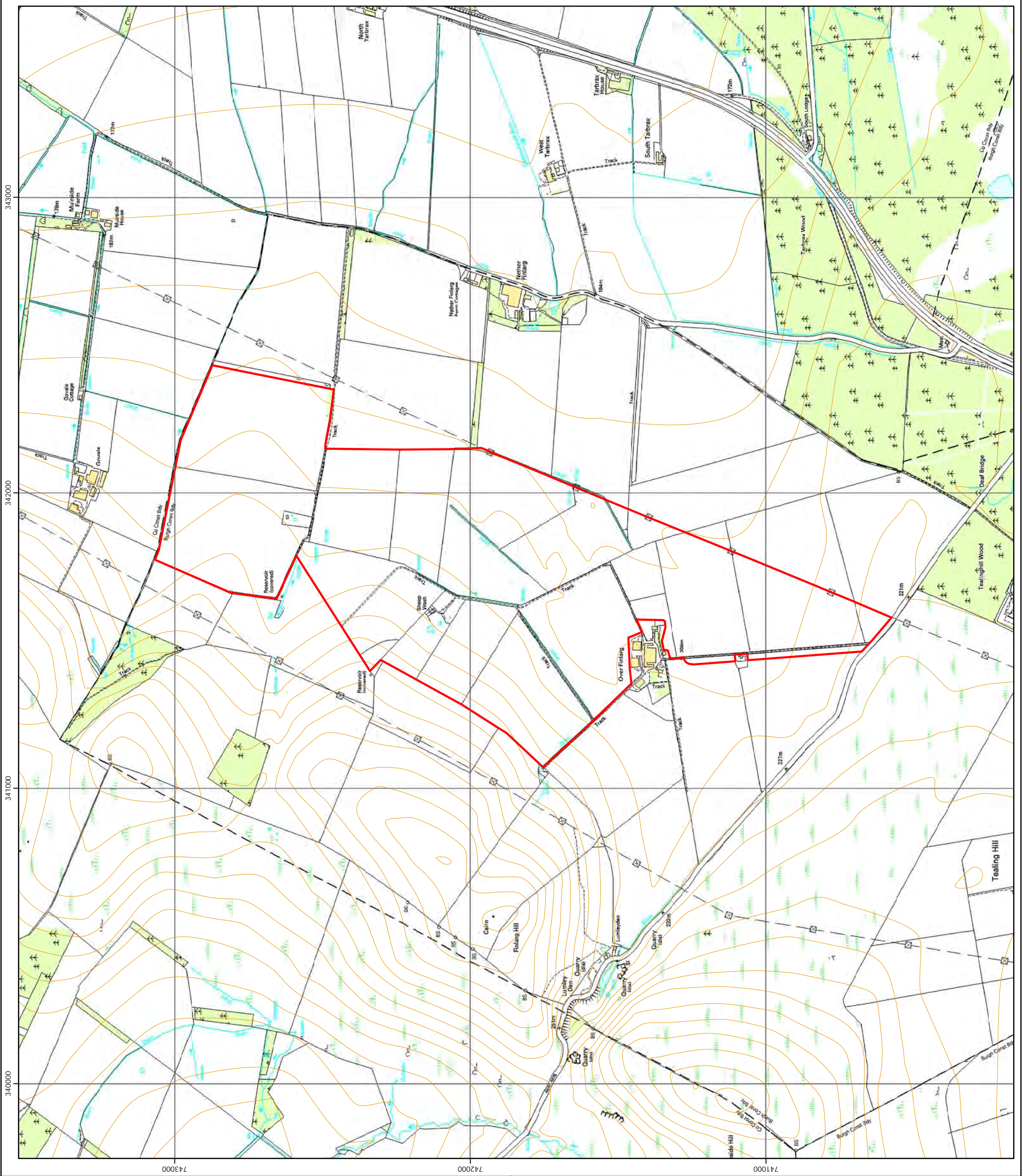
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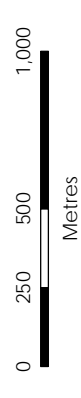
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Figure 3-1  
Site Design Iterations A

Key

- Site boundary
- Turbine location



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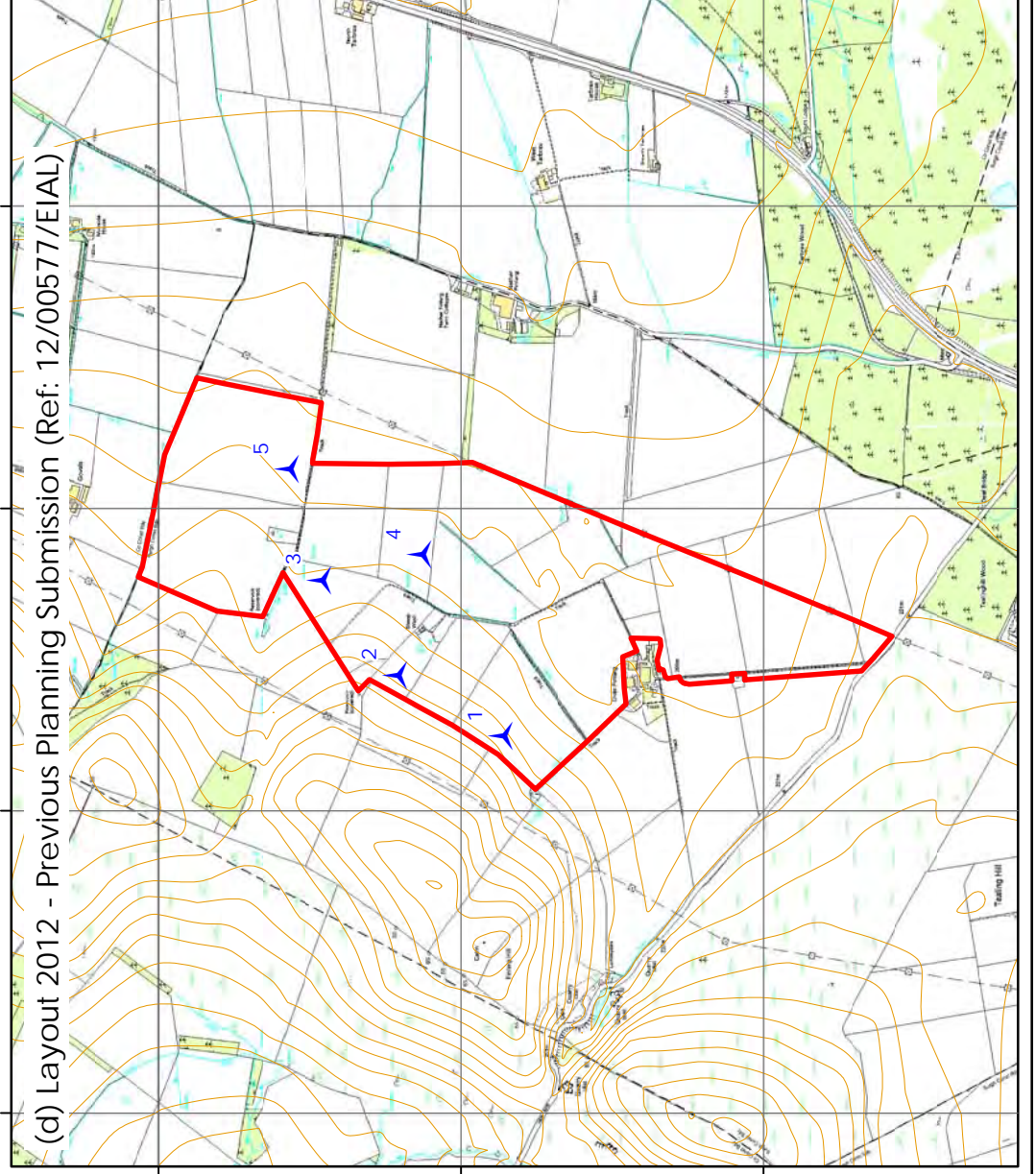
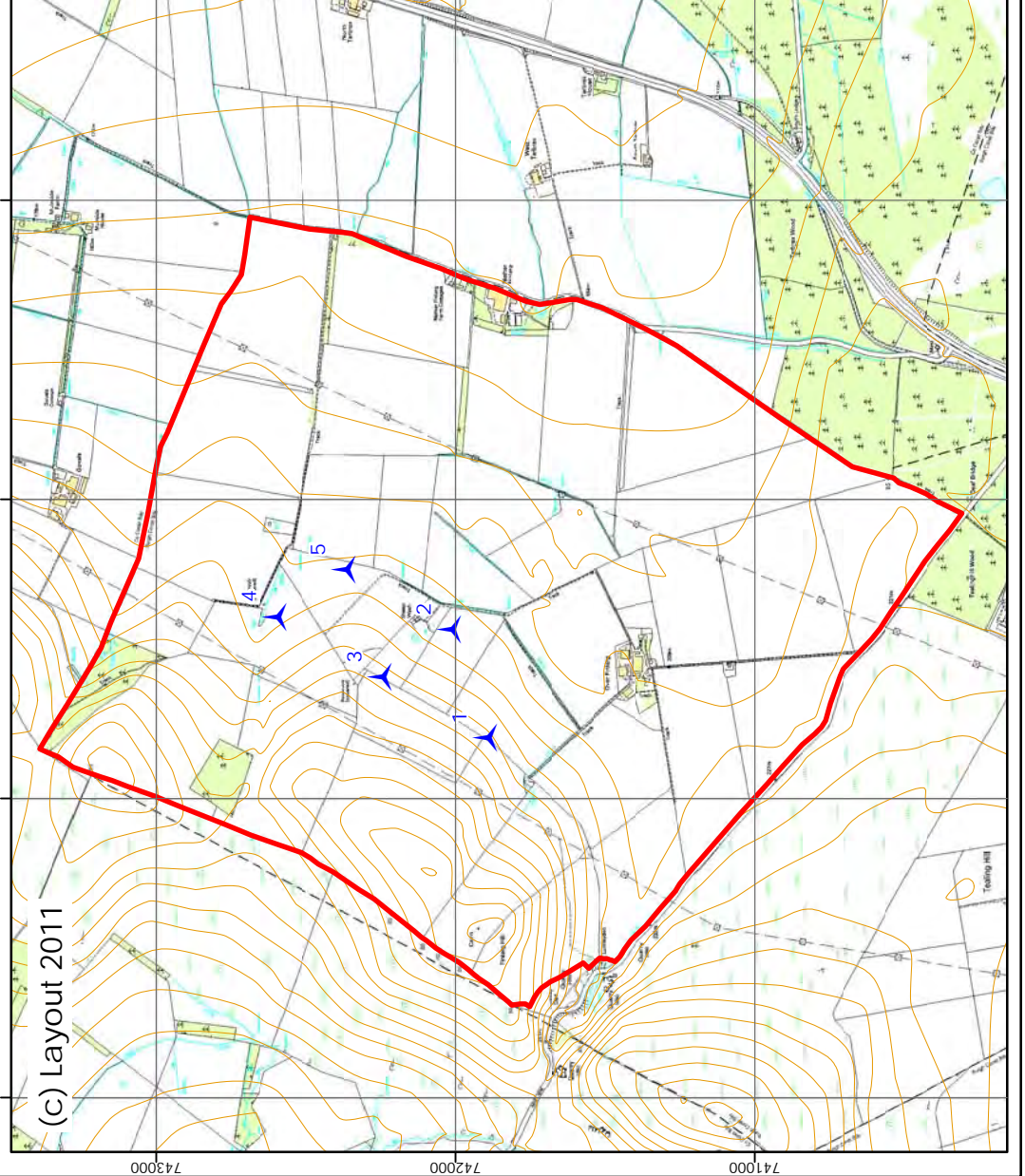
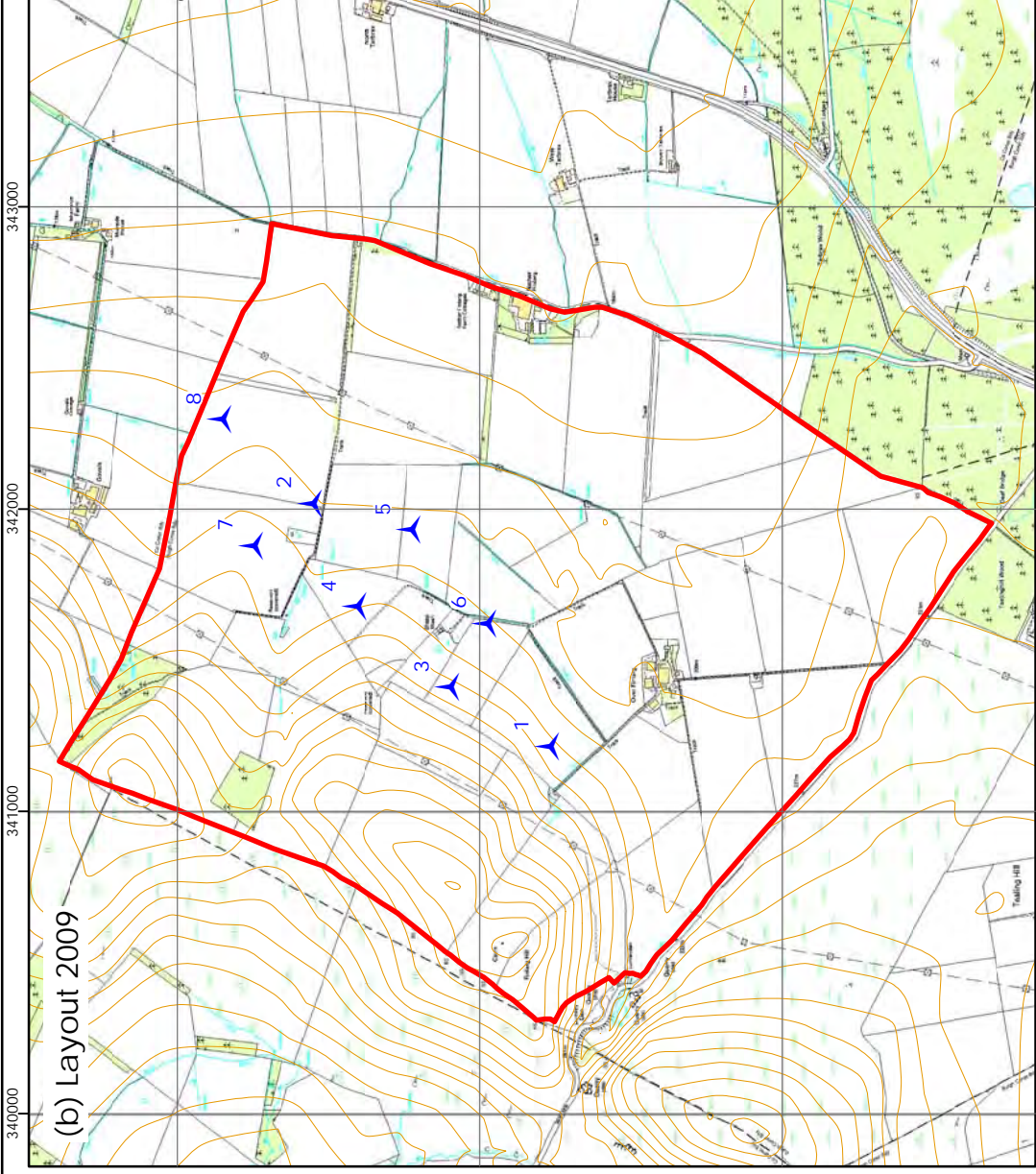
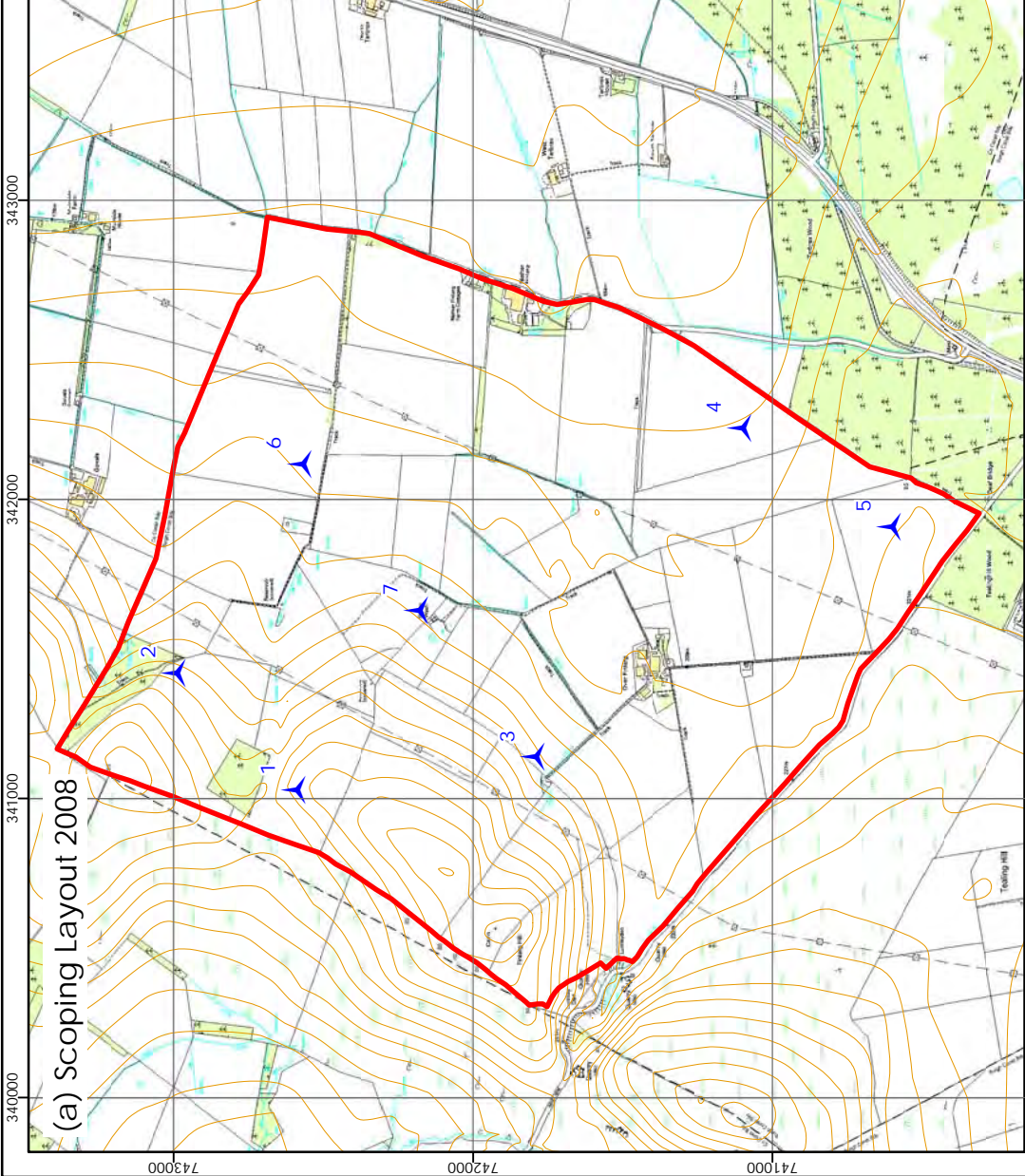


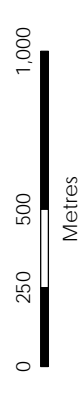
Figure 3-1  
Site Design Iterations B

Key

- Site boundary
- Turbine location



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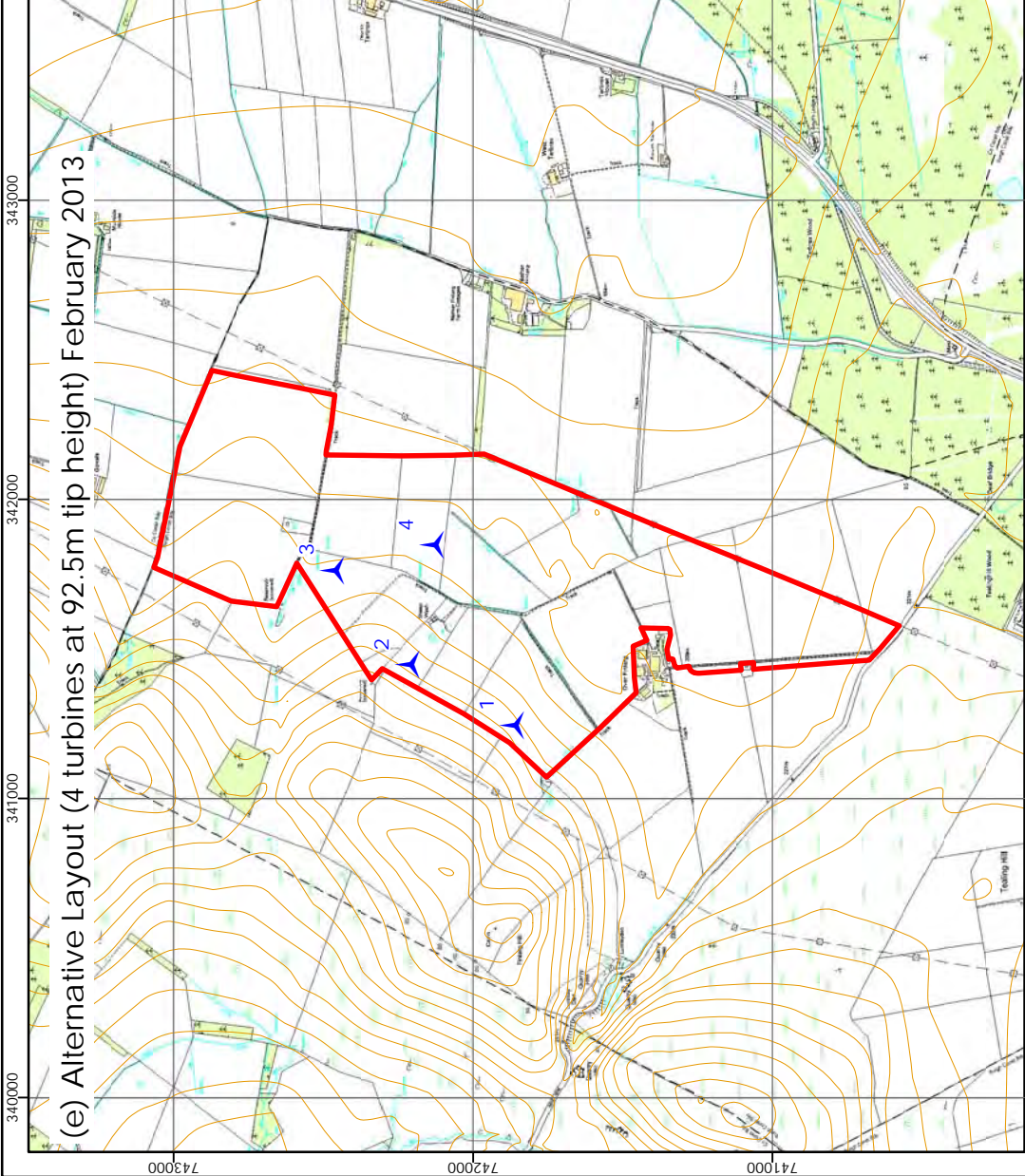
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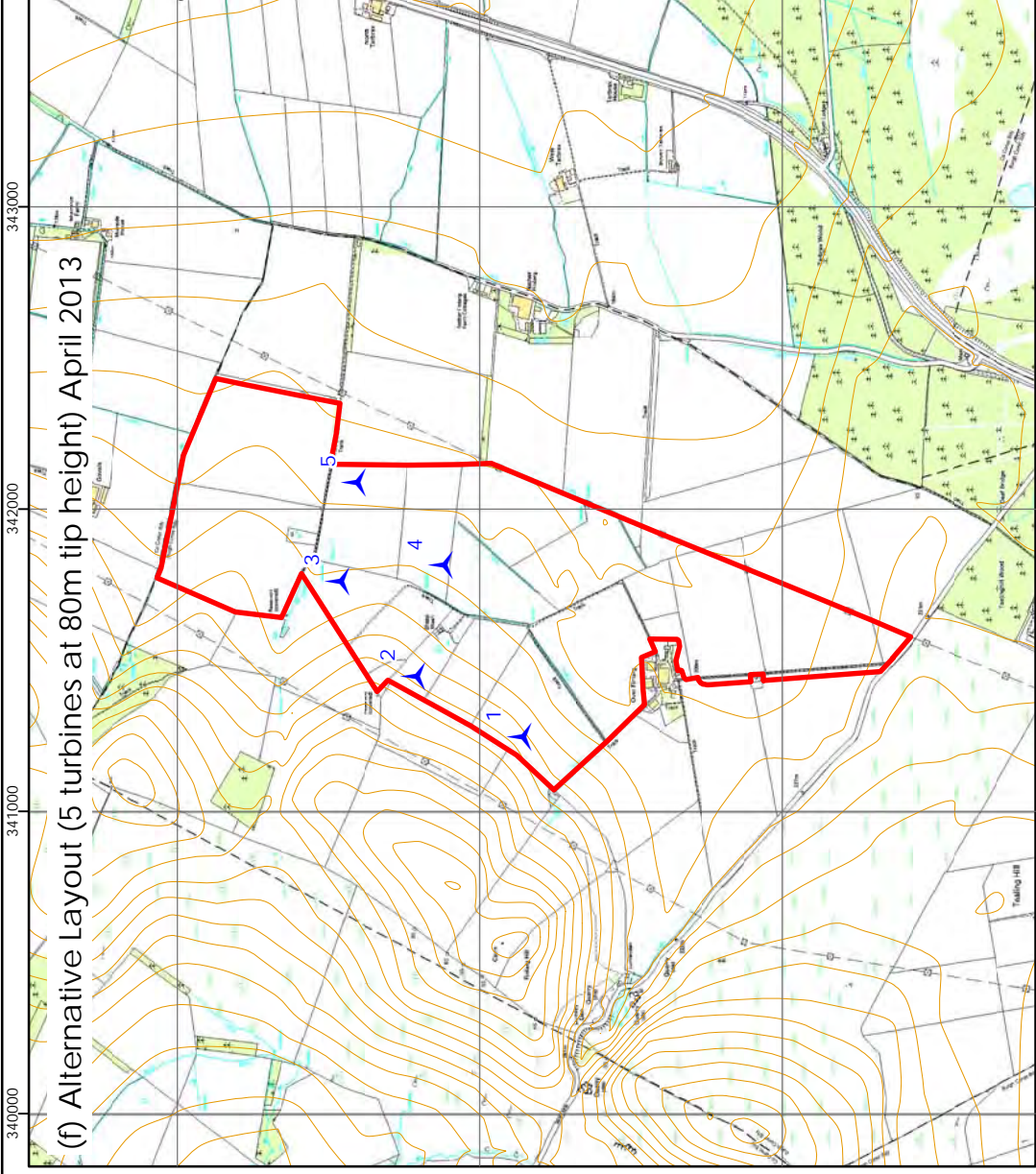
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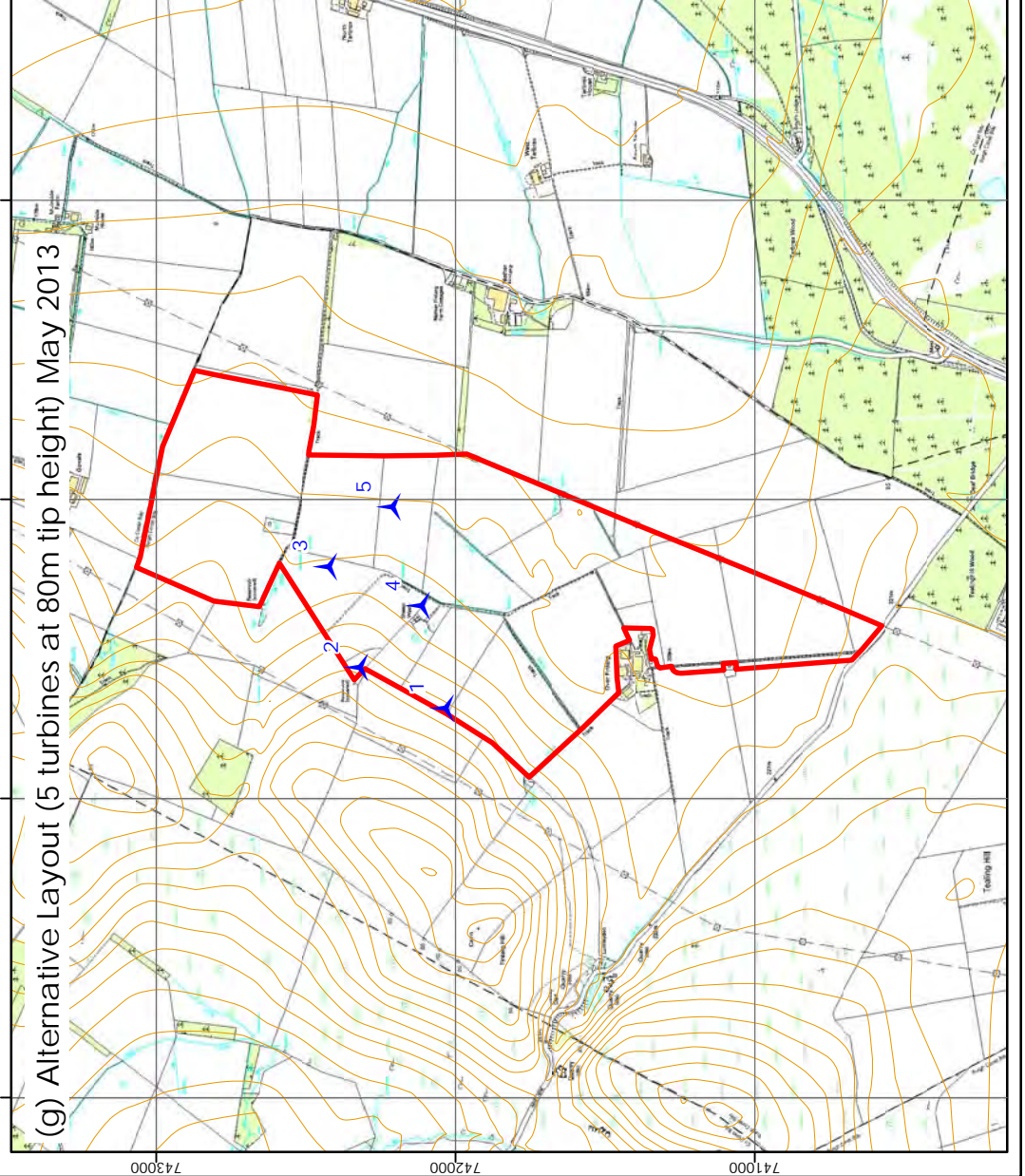
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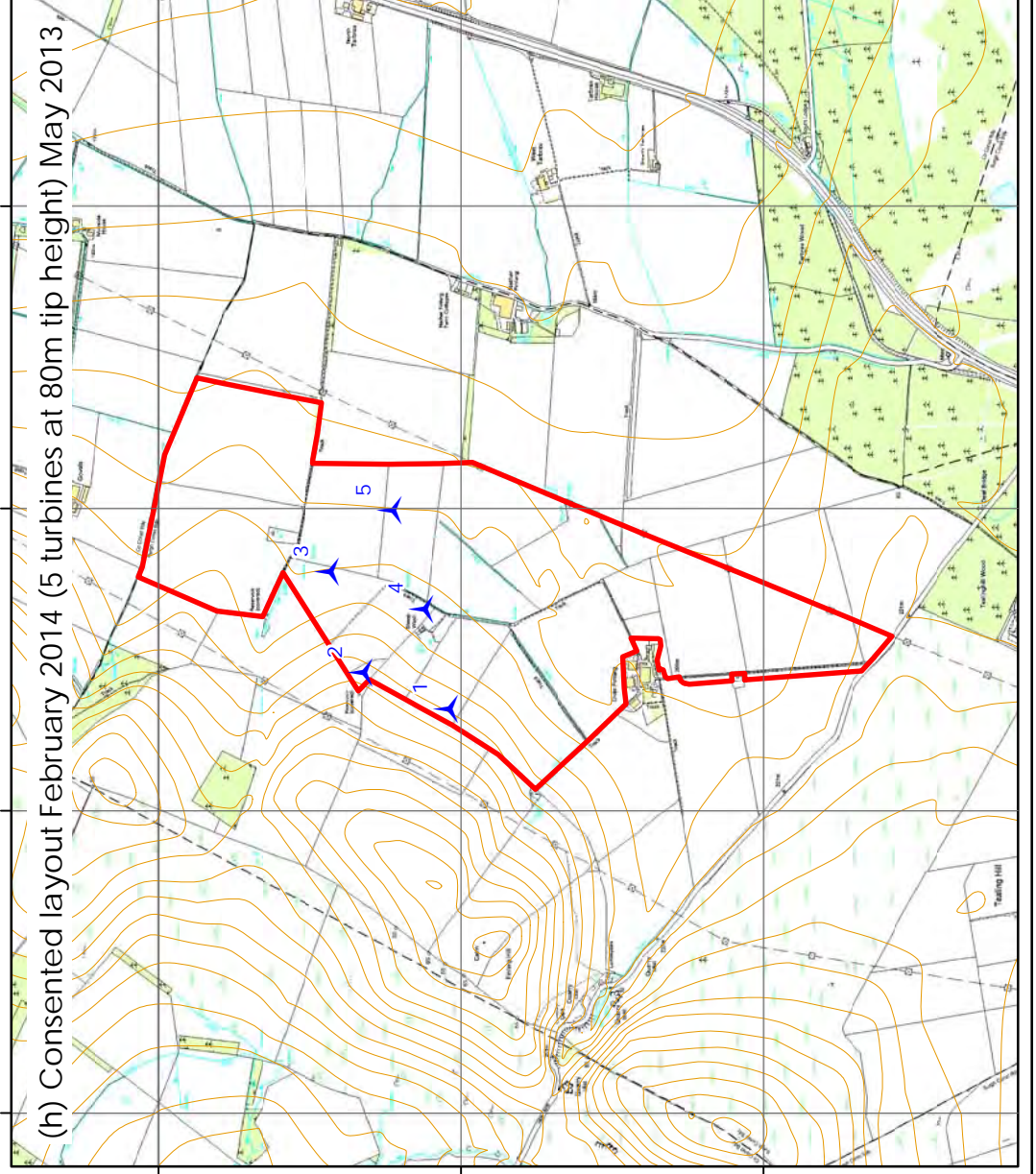
(e) Alternative Layout (4 turbines at 92.5m tip height) February 2013



(f) Alternative Layout (5 turbines at 80m tip height) April 2013



(g) Alternative Layout (5 turbines at 80m tip height) May 2013



(h) Consented layout February 2014 (5 turbines at 80m tip height) May 2013

Figure 3-2  
Site Layout

**Key**

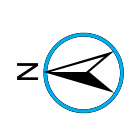
Site boundary

Turbine locations:

- 1 - 341337, 742050
- 2 - 341457, 742332
- 3 - 341790, 742444
- 4 - 341668, 742131

Site infrastructure

- Turbine foundation
- Temporary construction compound
- Control building and substation
- Crane hardstanding
- New access track
- Upgraded access track
- Permanent met mast



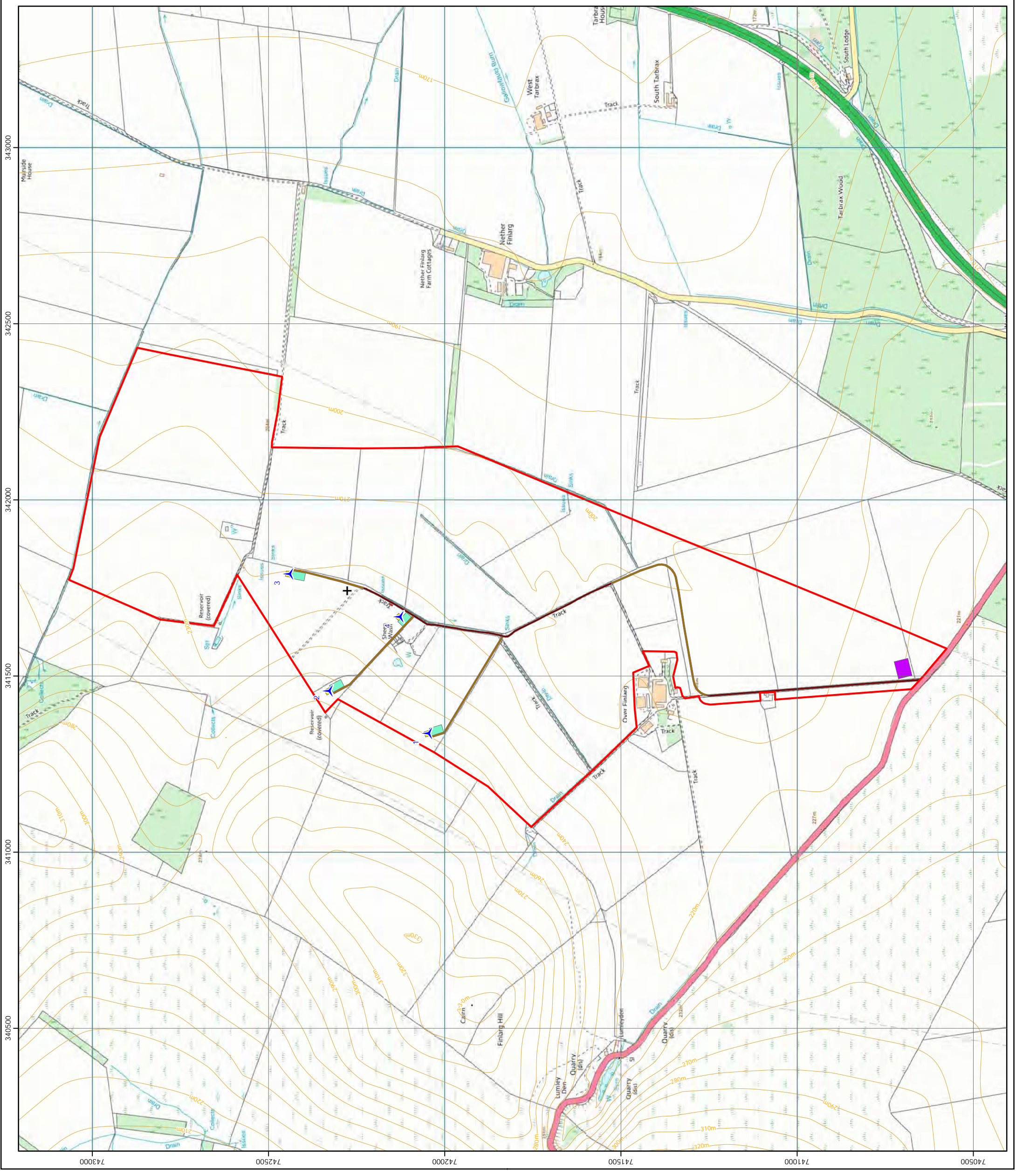
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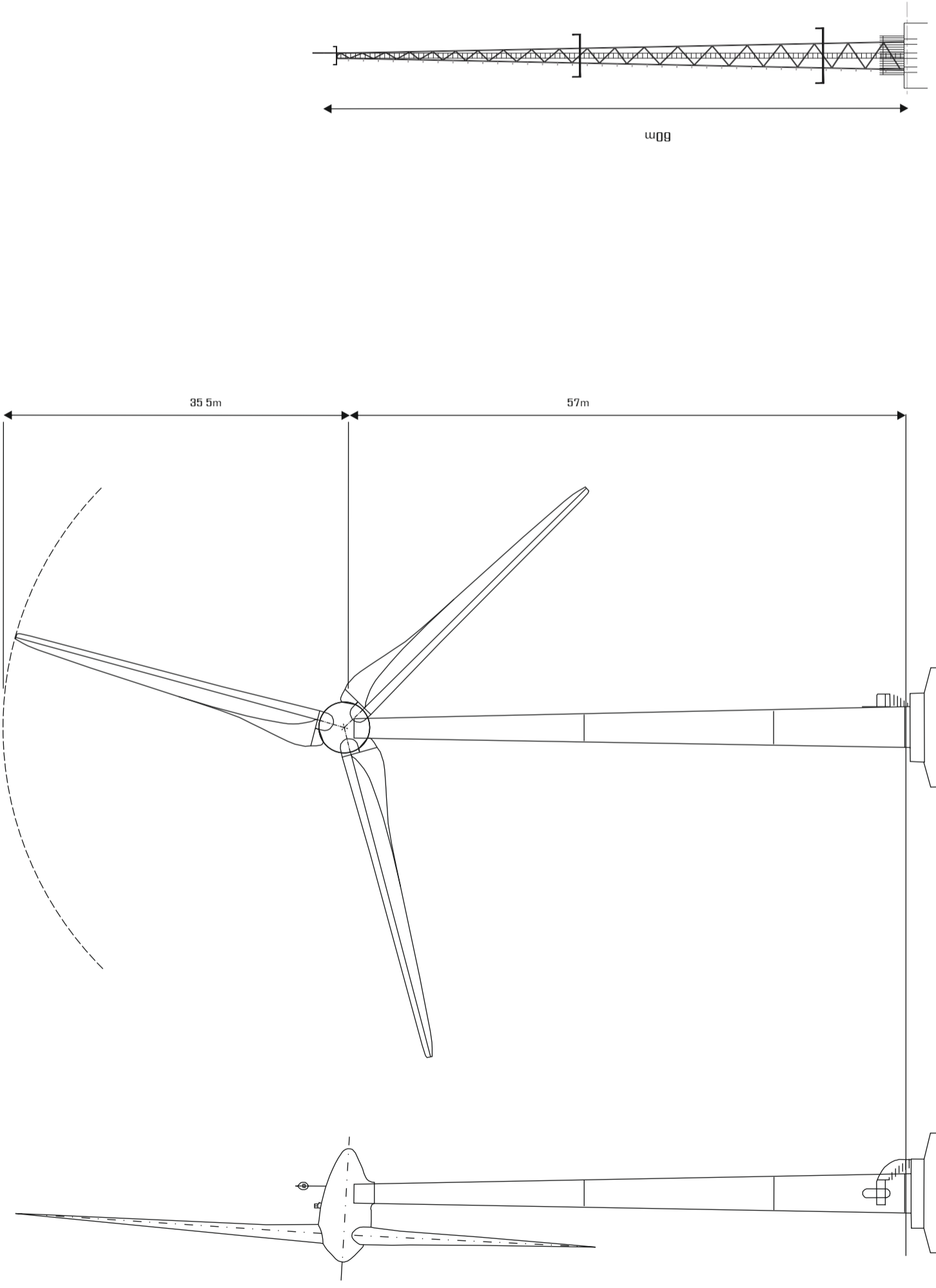


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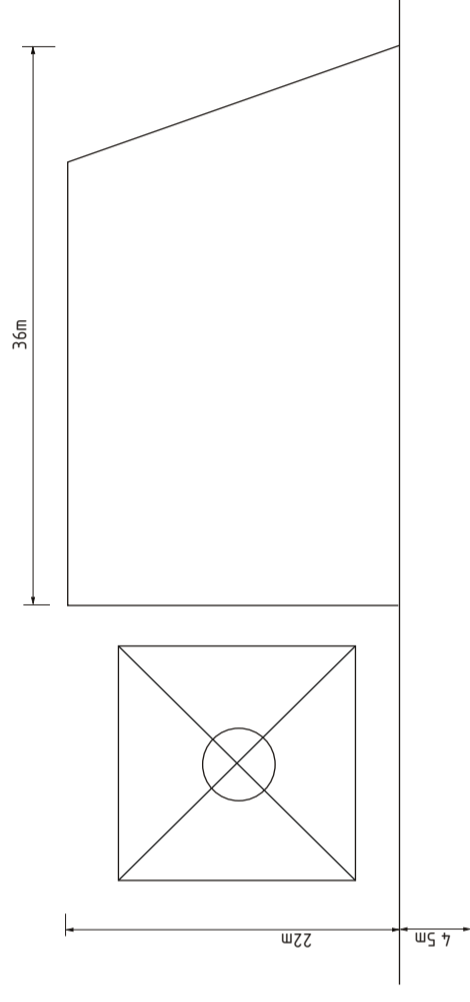




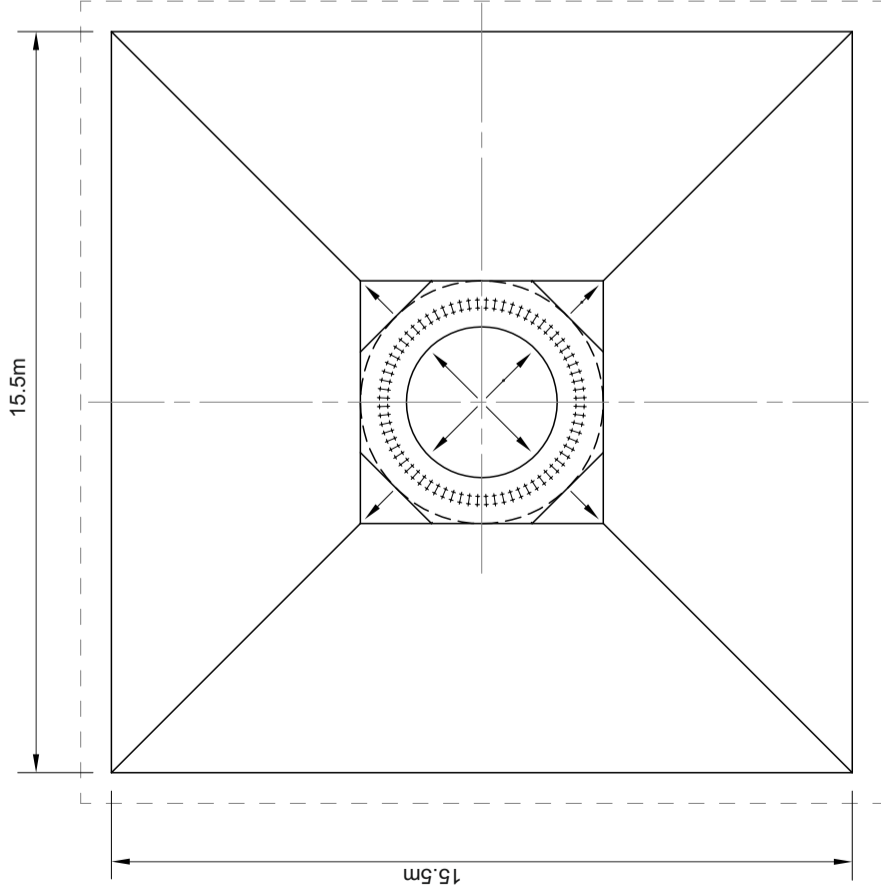


Typical Meteorological Mast  
Approximate Scale - 1:500

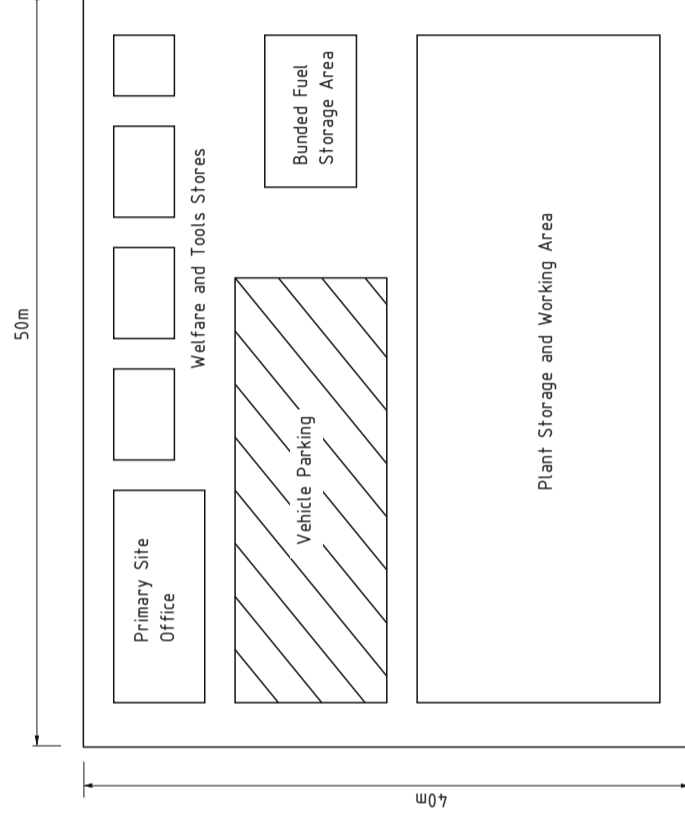
Typical Wind Turbine  
Approximate Scale - 1:500



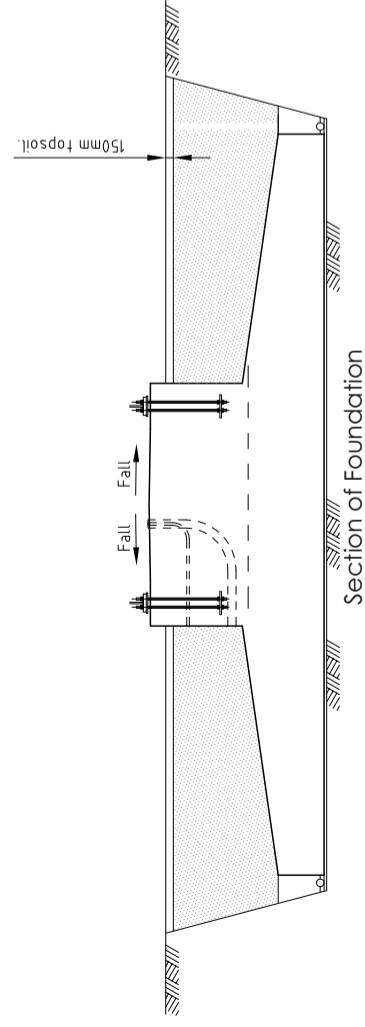
Typical Installation Area  
Approximate Scale - 1:500



Plan of Foundation



Typical Construction Compound Area  
Approximate Scale - 1:500



Typical Gravity Base Turbine Foundation  
Approximate Scale - 1:160

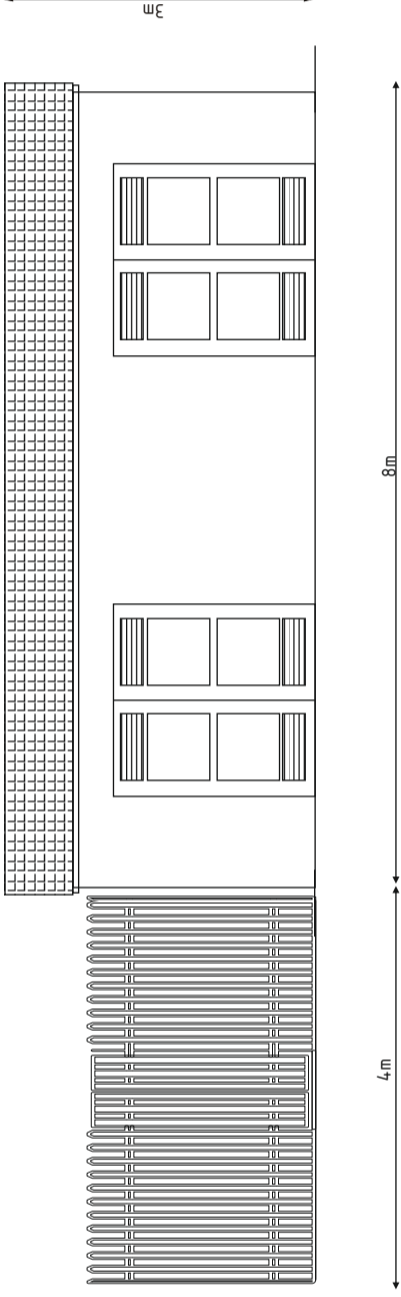
Section of Foundation

Frawney Wind Farm

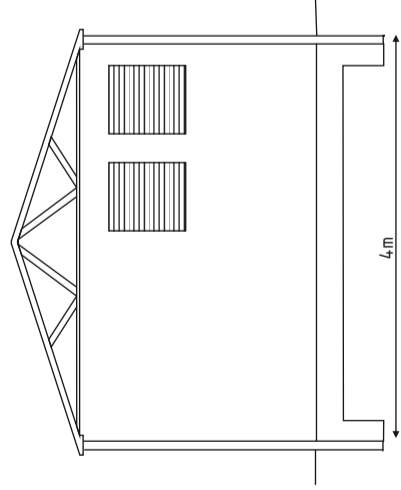
**Polar Energy  
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Figure 3-5  
Typical Control Building /  
Substation

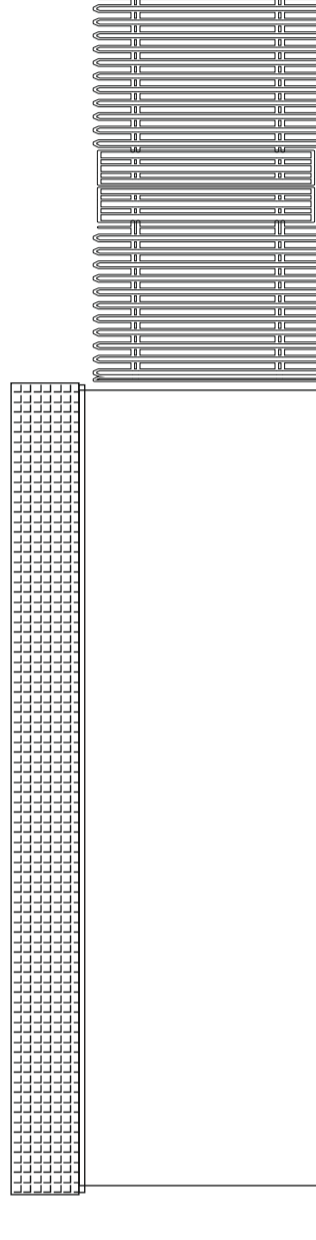
Suggested materials: slate roof and  
rendered walls (of a colour to be agreed  
with the local planning authority)



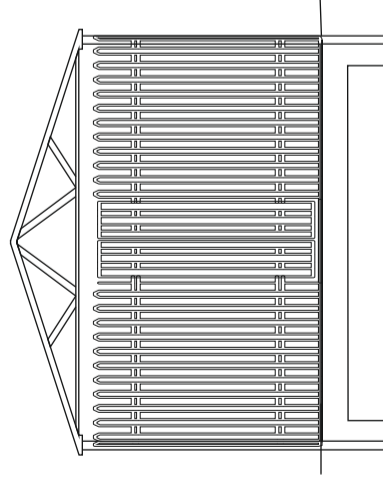
northwest view



southwest view



southeast view



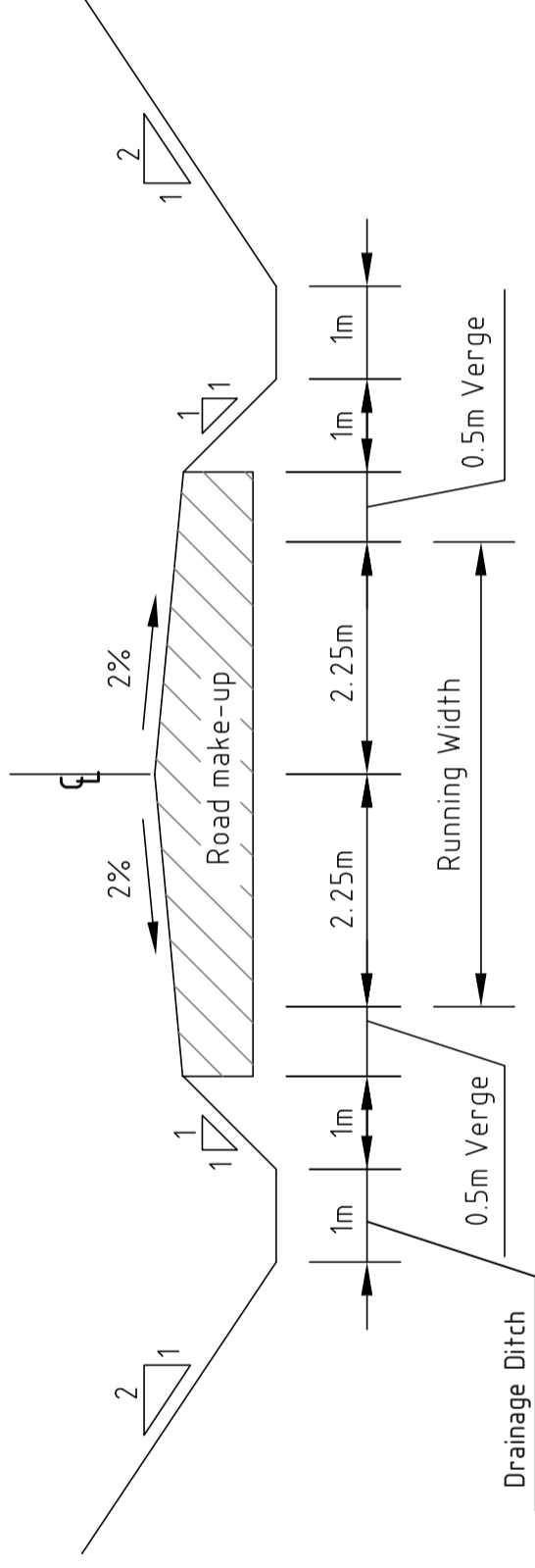
northeast view

Approximate scale at A3 : 1:75

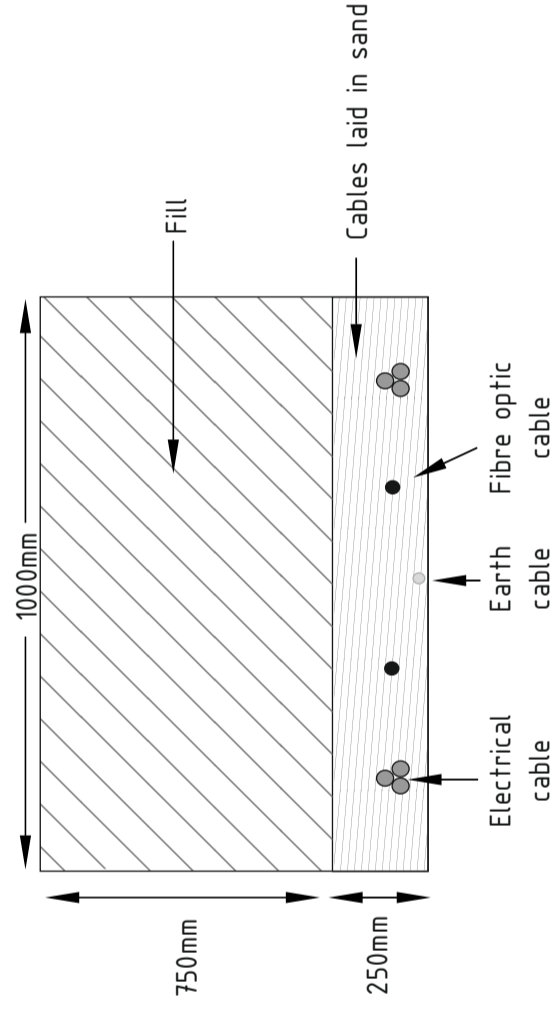
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Typical Cut Track



Typical Cable Trench

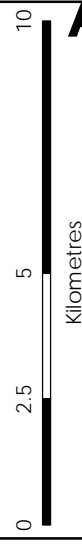
# Frawney Wind Farm

## Polar Energy (Finlarg) Ltd

Figure 3-7  
Angus Development Constraints

### Key

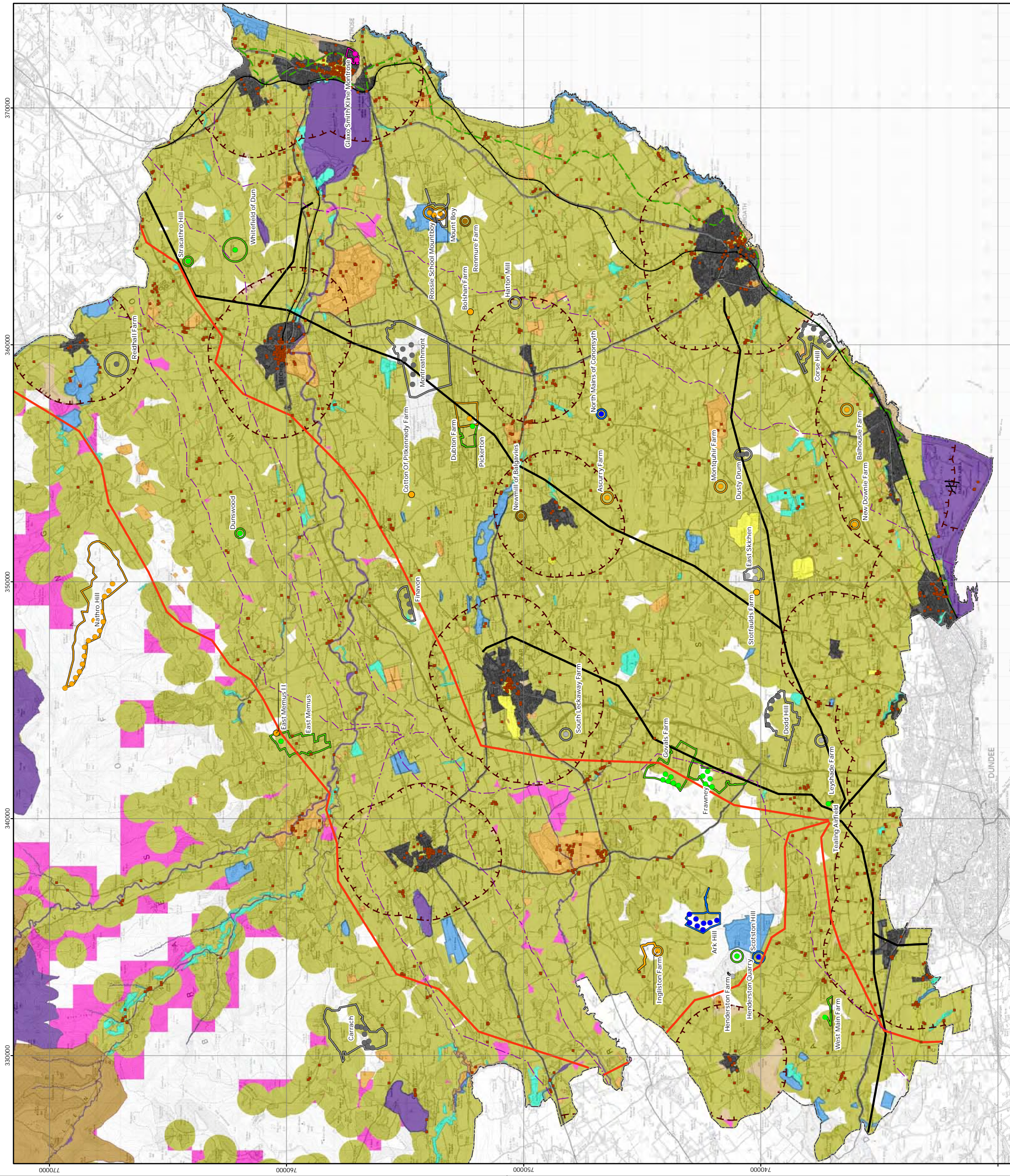
- Historic Scotland Listed Buildings
  - Main road
  - Railway line
  - Gas pipeline
  - 132 kV transmission line
  - 275 kV transmission line
  - Sustrans cycle route
  - Cumulative Wind Farms
  - Wind farm in planning
  - Wind farm at appeal
  - Refused wind farm, may be appealed
  - Refused wind farm
  - Approved wind farm
  - Operational wind farm
  - Constraint
- International ecological designation:
- SPA, SAC or Ramsar
  - National Park
  - National landscape designation: Scheduled Monument, Battlefield, GDL
  - National ecological designation: SSSI, NNR or RSPB reserve
  - Local ecological designation: LNR, AWI Antiquity 1; 2a, 3
  - Local landscape designation: Country Park, Conservation Area
  - General Register
  - Of Scotland Settlements
  - 2km settlement buffer
  - 650m building buffer (contains no information on building use)
  - NOABL wind speed < 7 m/s



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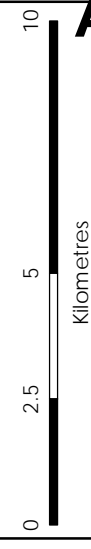
# Frawney Wind Farm

## Polar Energy (Finlarg) Ltd

Figure 3-7  
Angus Development Constraints

### Key

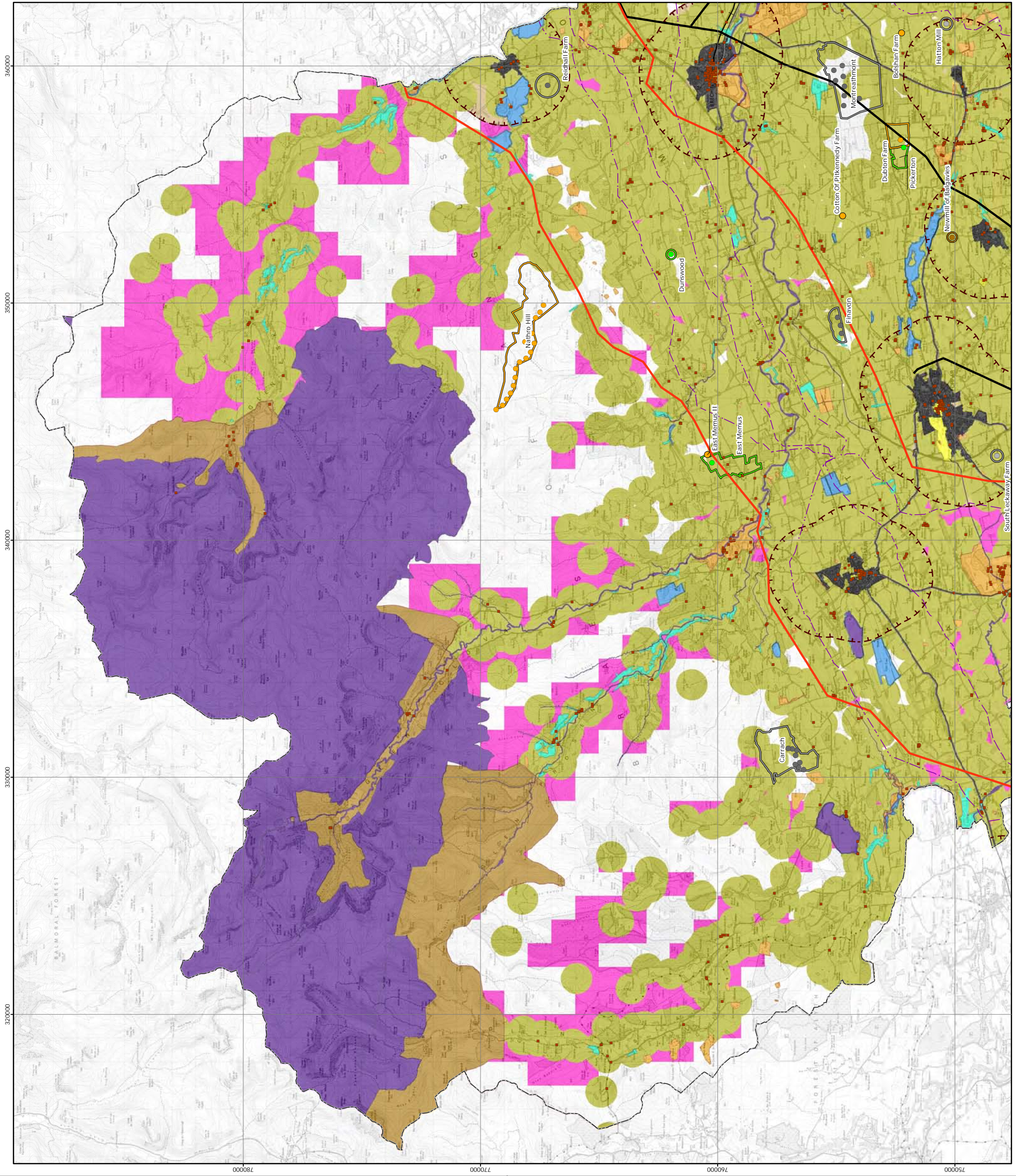
- Historic Scotland Listed Buildings
  - Main road
  - Railway line
  - Gas pipeline
  - 132 kV transmission line
  - 275 kV transmission line
  - Sustrans cycle route
  - Cumulative Wind Farms
  - Wind farm in planning
  - Wind farm at appeal
  - Refused wind farm, may be appealed
  - Refused wind farm
  - Approved wind farm
  - Operational wind farm
  - Constraint
- 
- International ecological designation:
    - SPA, SAC or Ramsar
    - National Park
    - National landscape designation:
      - Scheduled Monument, Battlefield, GDL
    - National ecological designation:
      - SSSI, NNR or RSPB reserve
    - Local ecological designation:
      - LN, AWI Antiquity 1; 2a, 3
    - Local landscape designation:
      - Country Park, Conservation Area
    - General Register
      - Of Scotland Settlements
    - 2km settlement buffer
    - 650m building buffer (contains no information on building use)
    - NOABL wind speed < 7 m/s



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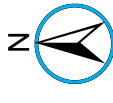
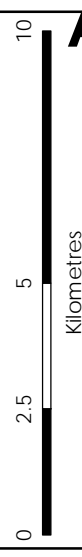


# Frawney Wind Farm

## Polar Energy (Finlarg) Ltd

Figure 3-8  
Angus Development Overview

- Wind farm in planning
- Wind farm at appeal
- Refused wind farm, may be appealed
- Refused wind farm
- Approved wind farm
- Operational wind farm
- The Caterthun hillforts
- Highland and Coast
- Geographical Areas
- Leuchars radar visibility at 100m
- Constraint
- No constraint



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Figure 3-9  
Design Constraints

**Key**

-  Site Boundary
-  Turbine location
-  EMI Link
-  Dwelling
-  Electricity Transmission Line
-  Watercourse
-  National Grid Gas Pipes
-  Settlement/building
- Constraint buffers**
-  20m from 1:10k watercourses
-  40m site boundary oversail
-  50m buffer from watercourse or culvert
-  100m from gas pipe line
-  100m from roads
-  100m from fixed communications link
-  100m buffer from spring or borehole
-  157m from electricity transmission line
-  250m buffer from spring or borehole
-  400m from financially involved dwellings
-  700m from uninvolved dwellings



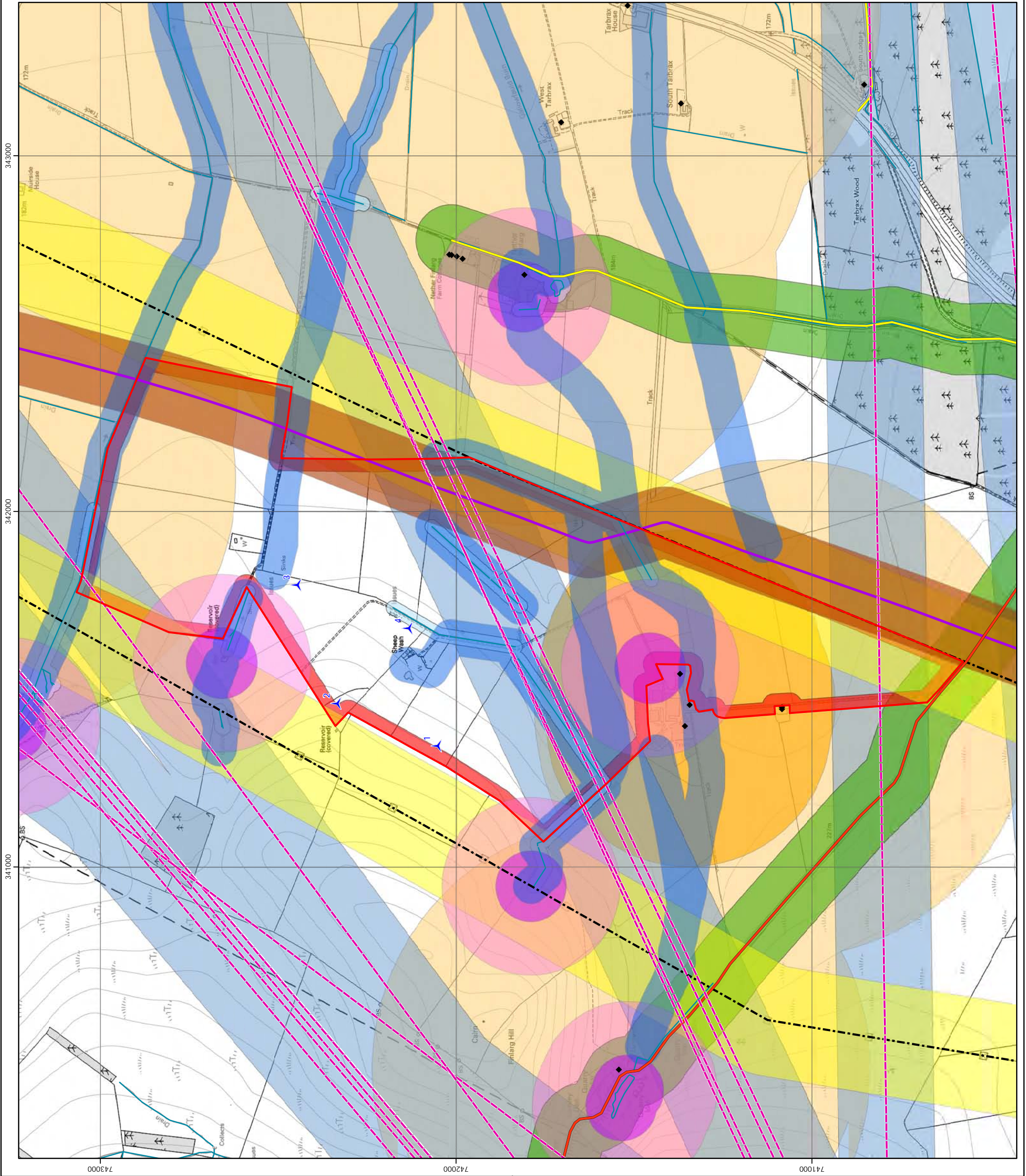
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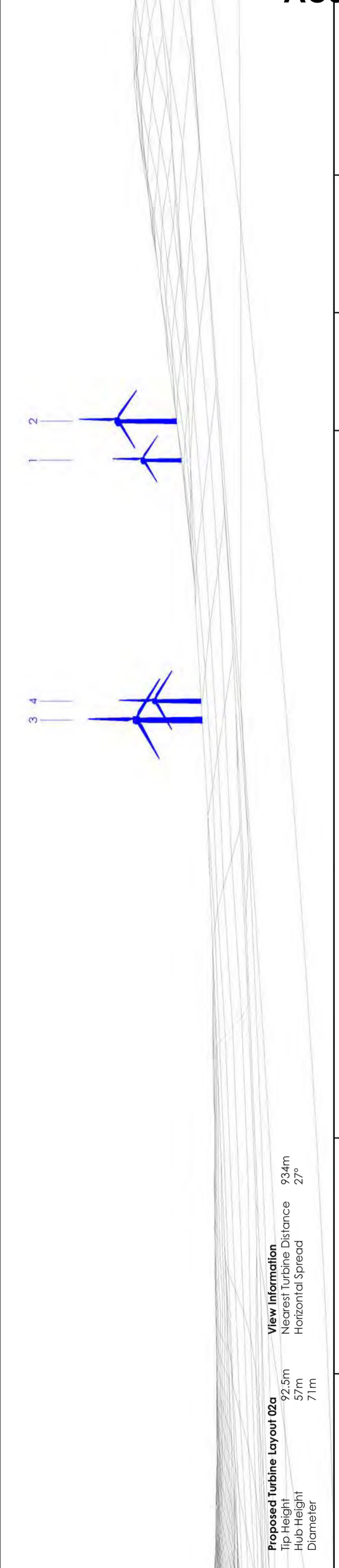
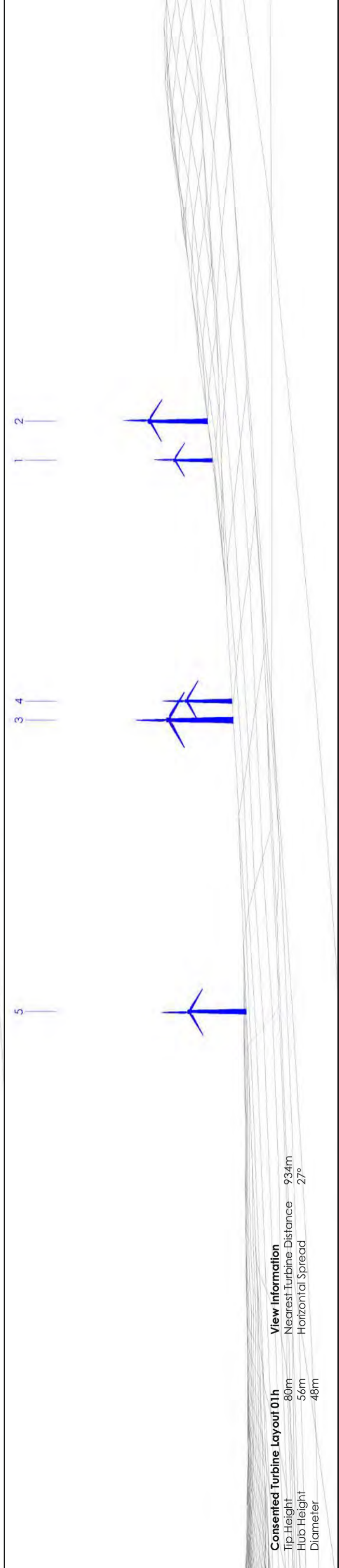
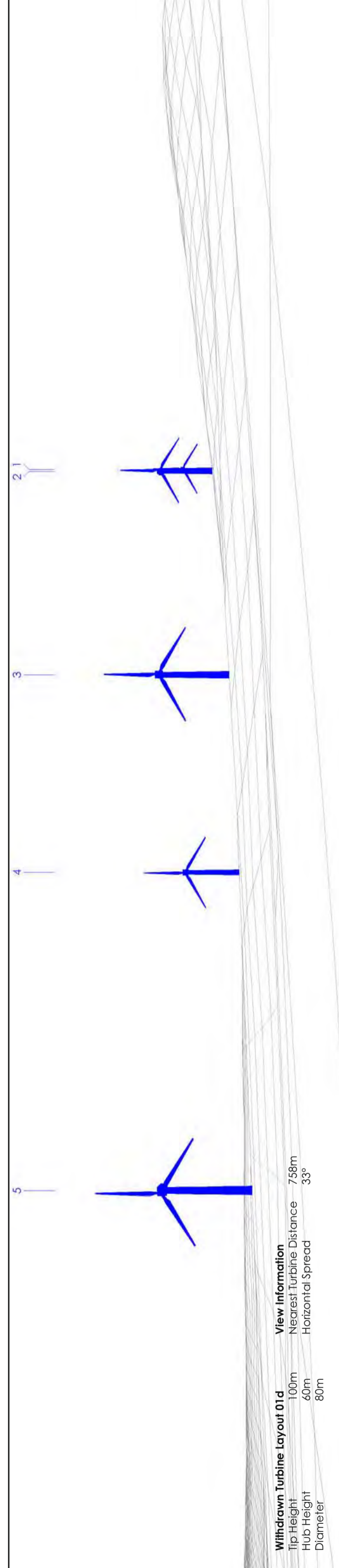
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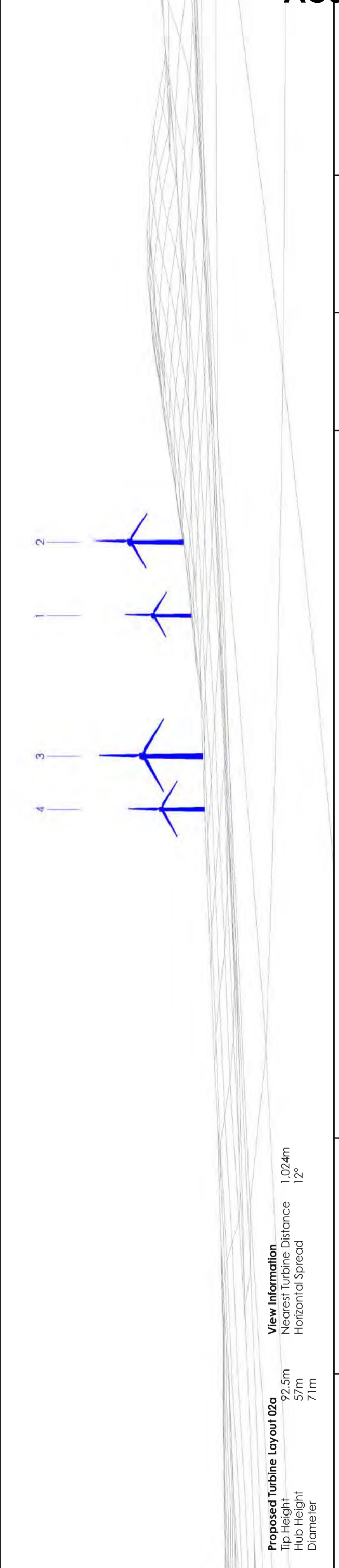
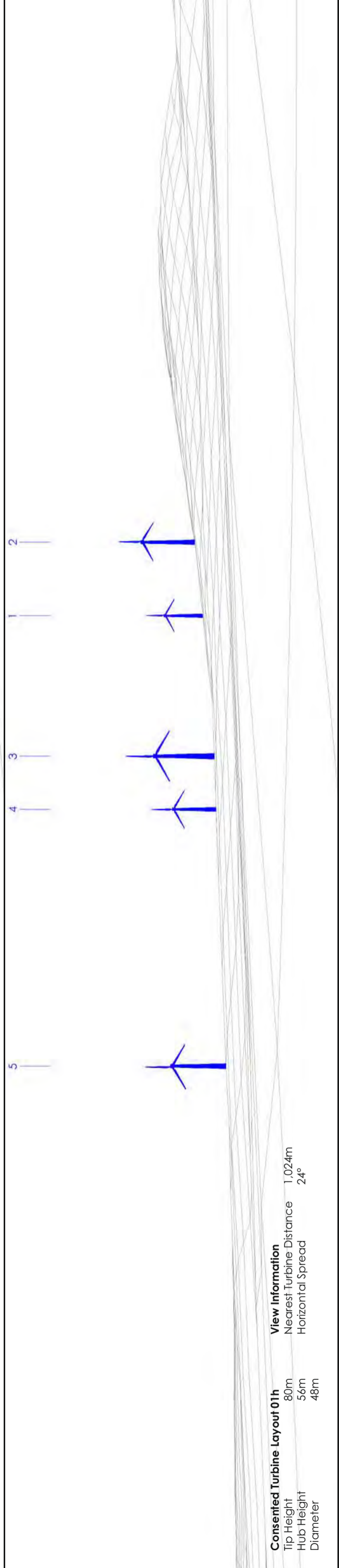
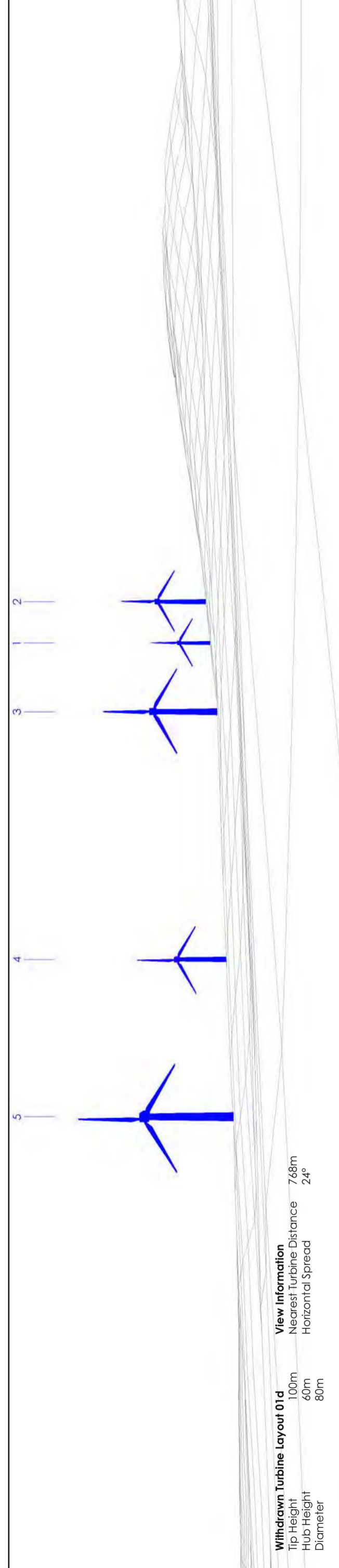
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<p><b>Frawney Wind Farm</b></p>	<p><b>Polar Energy (Finlarg) Ltd</b></p>	<p><b>Residential Viewpoint - 6 Govals Farm</b>                  Grid Reference E342078, N743332                  Elevation 218m AOD                  Height Above Ground 2m</p>	<p><b>Viewing Information</b>                  Approximate Viewing Distance 315mm @ A3                  Horizontal Included Angle 73°</p>			<p>Drawn by TP                  Checked by TH                  Approved by TG</p> <p>TL 01d/h/02a                  25/03/2014                  4603 WF C043a</p>
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**Figure 3-10a Wireframe Design Iterations**

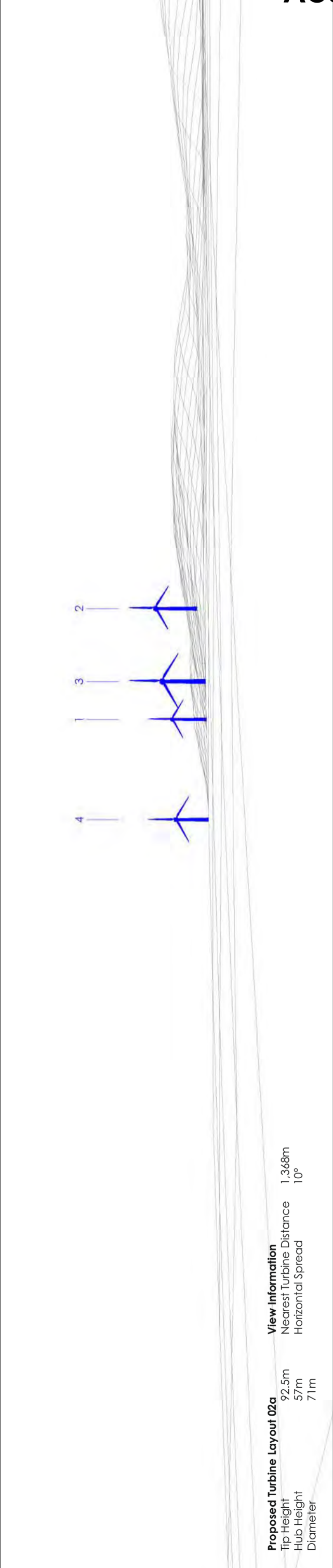
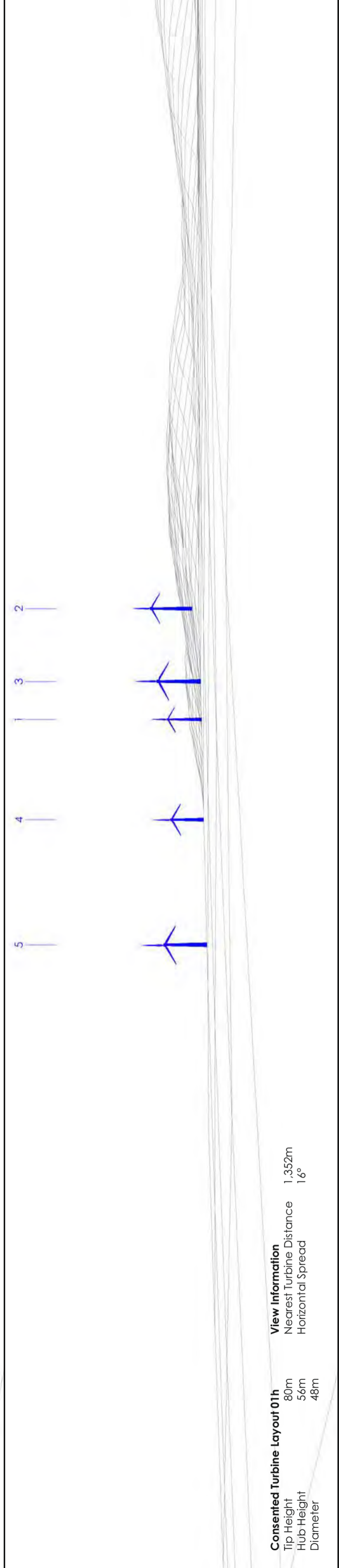
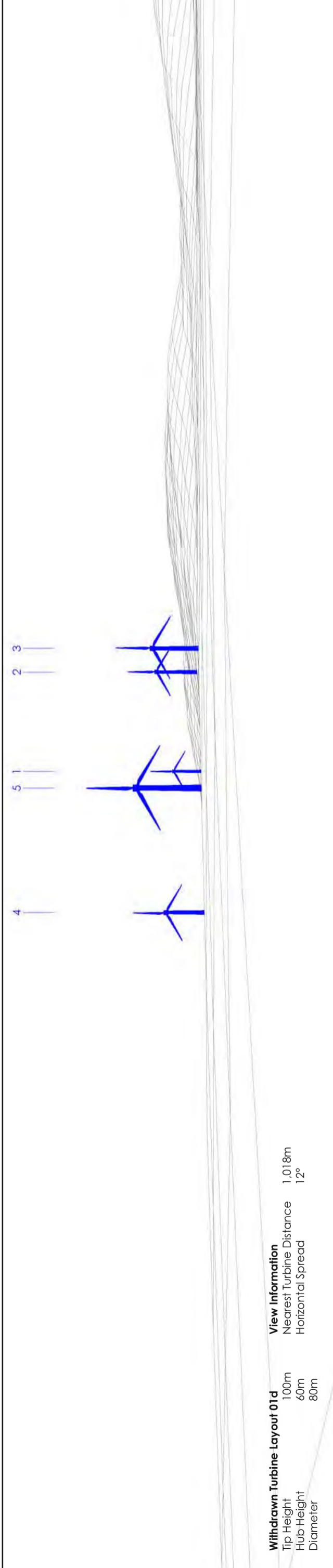
Curvature of the Earth has been allowed for. This image can only be accurately assessed from the correct Viewing Distance. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation



<p><b>Frawney Wind Farm</b></p>	<p><b>Polar Energy (Finlarg) Ltd</b></p>	<p><b>Residential Viewpoint - 7 Govals Cottage</b>                  Grid Reference E342322, N74319                  Elevation 206m AOD                  Height Above Ground 2m</p>	<p><b>Viewing Information</b>                  Approximate Viewing Distance 31.5mm @ A3                  Horizontal Included Angle 73°</p>			<p>Drawn by TP                  Checked by TH                  Approved by TG</p> <p>TL 01d/h/02a                  25/03/2014                  4603 WF C043a</p>
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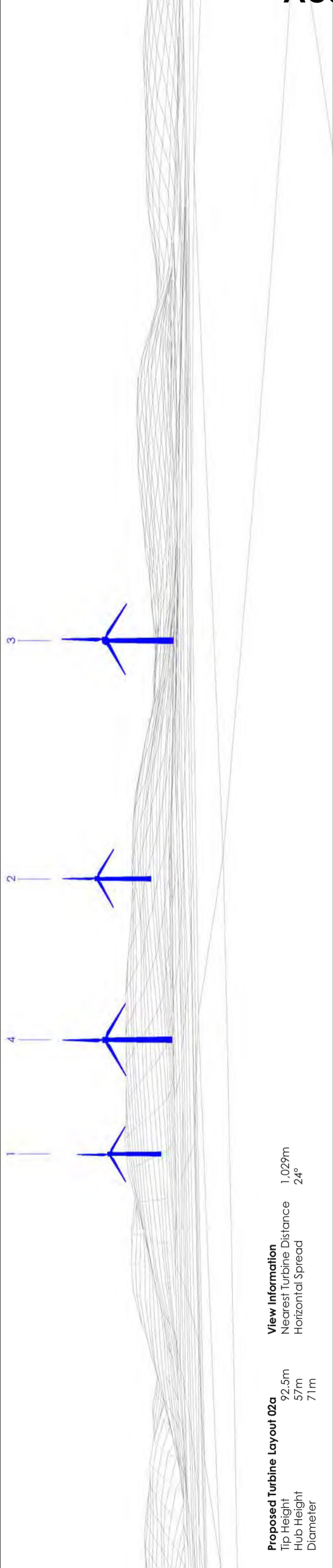
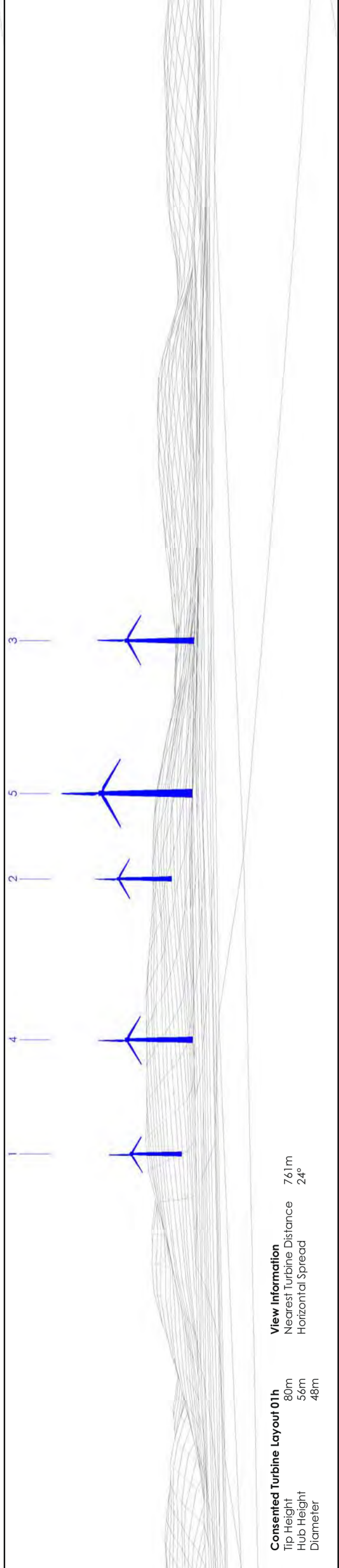
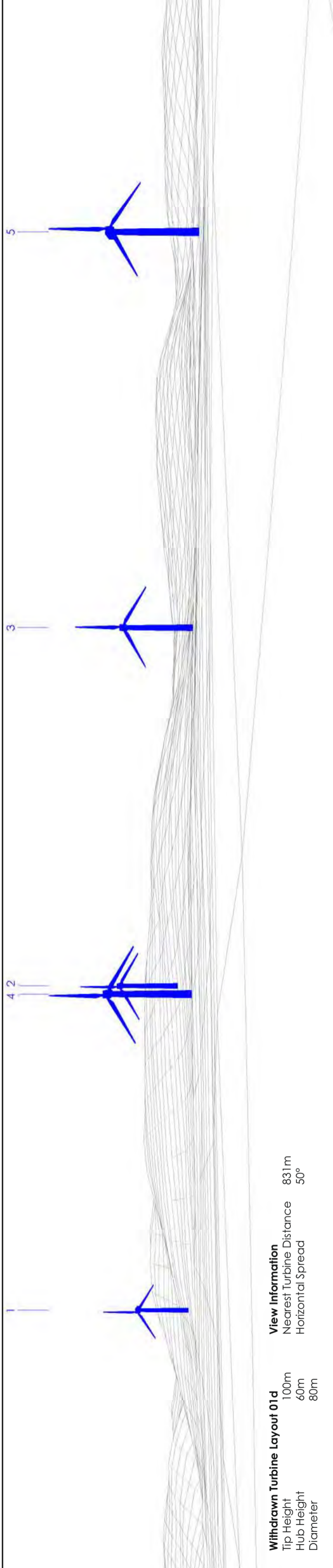
**Figure 3-10b Wireframe Design Iterations**

Curvature of the Earth has been allowed for. This image can only be accurately assessed from the correct Viewing Distance. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation



<p><b>Frawney Wind Farm</b></p>	<p><b>Polar Energy (Finlarg) Ltd</b></p>	<p><b>Residential Viewpoint - 8 Muirside Cottage</b>                  Grid Reference E342907, N743233                  Elevation 180m AOD                  Height Above Ground 2m</p>	<p><b>Viewing Information</b>                  Approximate Viewing Distance 315mm @ A3                  Horizontal Included Angle 73°</p>			<p>Drawn by TP TL 01d/h/02a                  Checked by TH 25/03/2014                  Approved by TG 4603 WF C043a</p>
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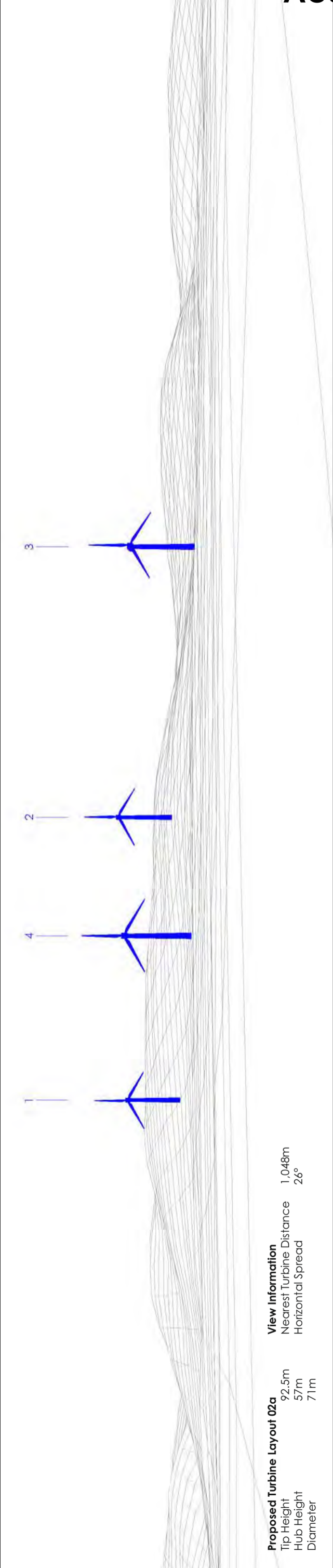
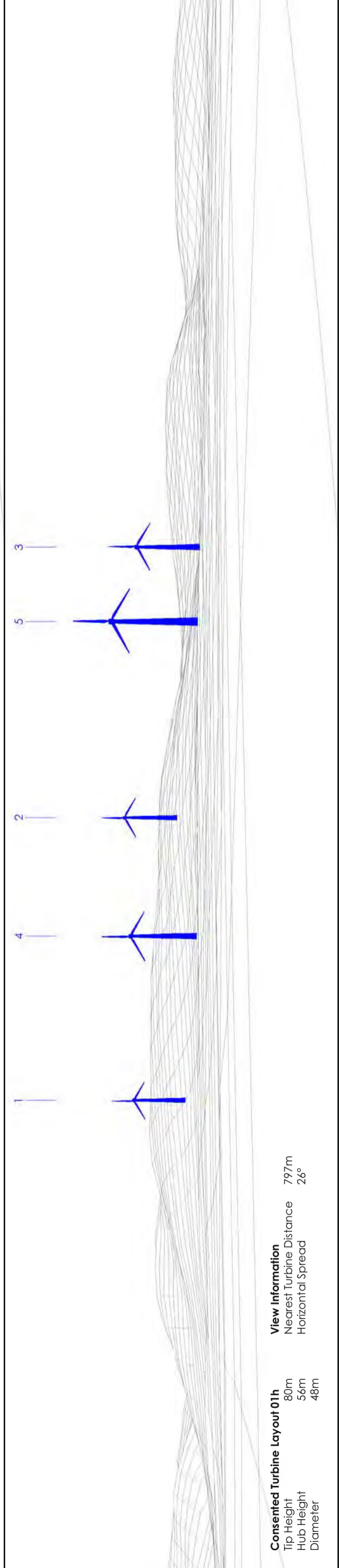
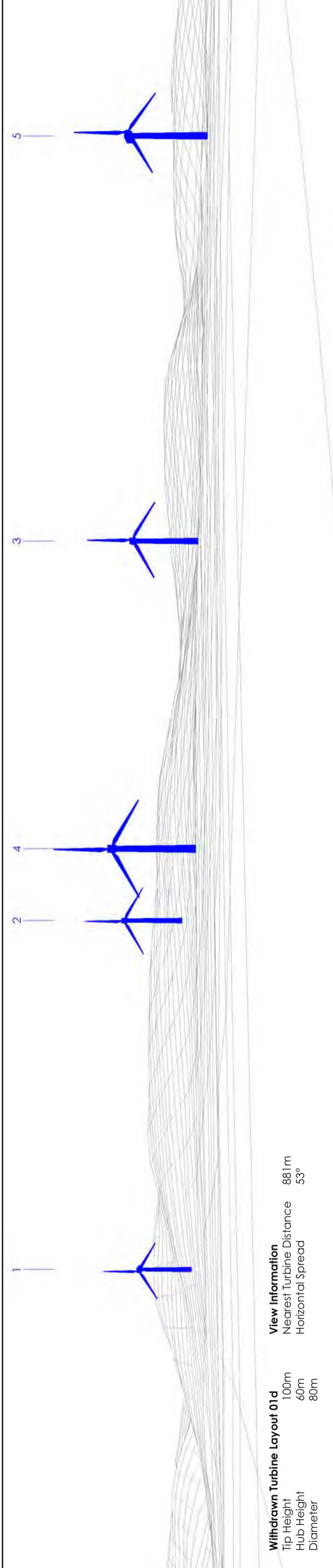
**Figure 3-10c Wireframe Design Iterations**  
 Curvature of the Earth has been allowed for. This image can only be accurately assessed from the correct Viewing Distance. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation





<p><b>Frawney Wind Farm</b></p>	<p><b>Polar Energy (Finlarg) Ltd</b></p>	<p><b>Residential Viewpoint - 11 Neither Finlarg Cottages</b>                  Grid Reference E342710, N741982                  Elevation 182m AOD                  Height Above Ground 2m</p> <p><b>Viewing Information</b>                  Approximate Viewing Distance 315mm @ A3                  Horizontal Included Angle 73°</p>		<p>Drawn by TP                  Checked by TH                  Approved by TG</p> <p>TL 01d/h/02a                  25/03/2014                  4603 WF C043a</p>
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**Figure 3-10d Wireframe Design Iterations**

Curvature of the Earth has been allowed for. This image can only be accurately assessed from the correct Viewing Distance. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation



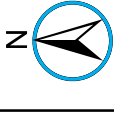
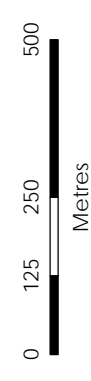
<p><b>Frawney Wind Farm</b></p>	<p><b>Polar Energy (Finlarg) Ltd</b></p>	<p><b>Residential Viewpoint - 12 Neith Finlarg Farm</b>                  Grid Reference E342665, N741808                  Elevation 181m AOD                  Height Above Ground 2m</p>	<p><b>Viewing Information</b>                  Approximate Viewing Distance 315mm @ A3                  Horizontal Included Angle 73°</p>			<p>Drawn by TP                  Checked by TH                  Approved by TG</p> <p>TL 01d/h/02a                  25/03/2014                  4603 WF C043a</p>
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**Figure 3-10f Wireframe Design Iterations**  
 Curvature of the Earth has been allowed for. This image can only be accurately assessed from the correct Viewing Distance. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation

Figure 5-1  
Baseline Noise  
Monitoring Locations

- Key**
- Site boundary
  - ⚓ Turbine location
  - Temporary 10m met mast location
  - ◆ Noise sensitive receptor (NSR) - assessment location
- Noise monitoring locations**
- M01 - Over Finlarg (Old farmhouse)
  - M02 - Lumleyden
  - M03 - Nether Finlarg
  - M04 - Govals Cottage

Operational noise level limits for groups of NSRs are derived from the representative monitoring locations as shown through colour coding



Scale @ A3:  
1:12,000

**AC34**



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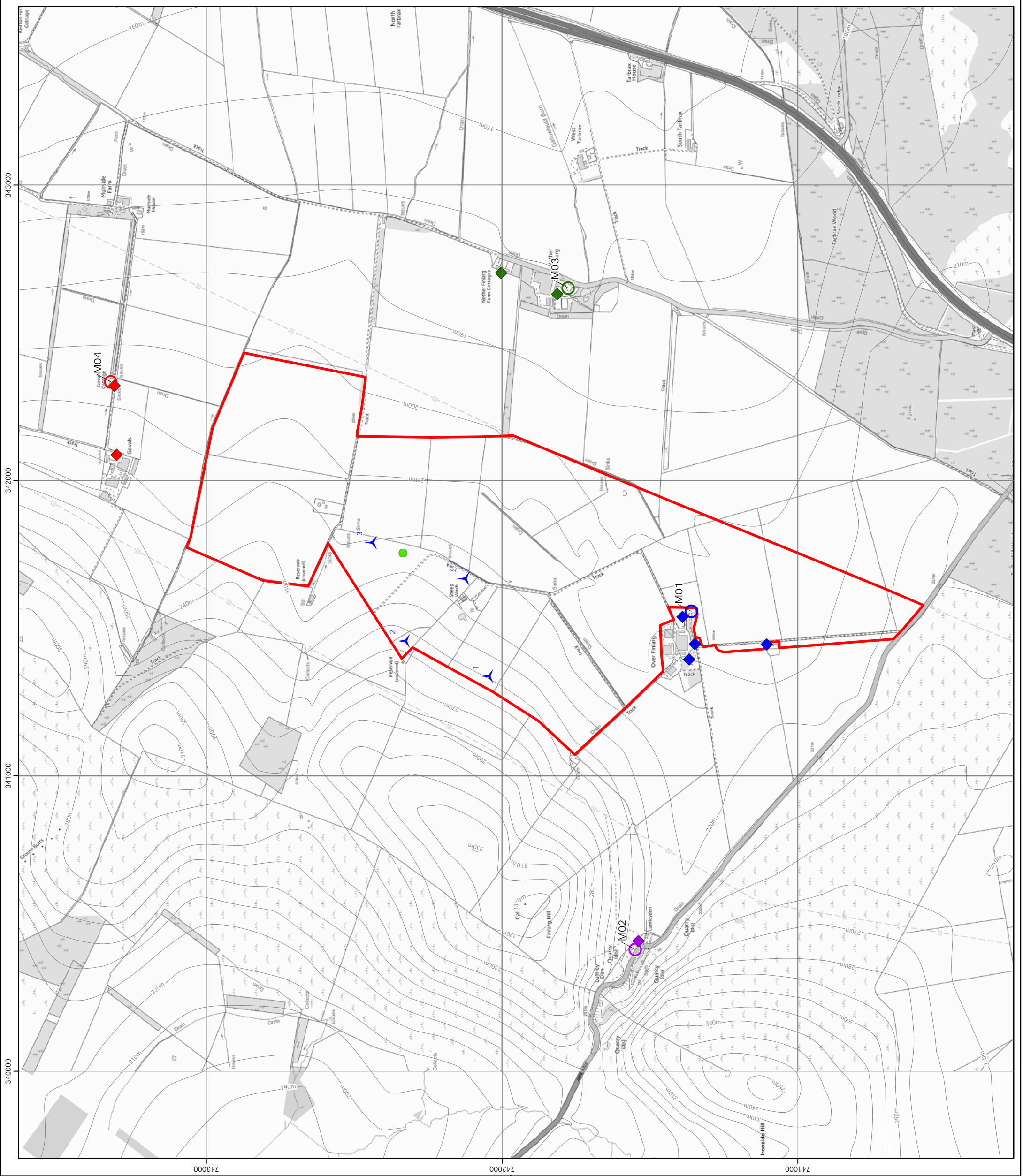


Figure 5-2  
Construction Noise Assessment  
BS5228-1:2009

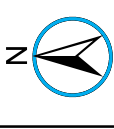
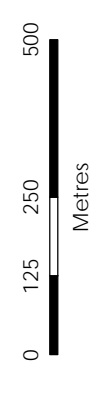
**Key**

- Site boundary
- Temporary construction compound
- Crane hardstanding
- New access track
- Upgraded access track
- Noise sensitive receptor (NSR) - assessment location
- Construction noise source points
- Modelled mobile plant haulage route
- Noise contours modelled at 4m height

**Noise limits**

- Below BS5228:2009 weekend/evening noise limits
- Below BS5228:2009 daytime noise limits
- Above assumed noise level limits

All noise levels recorded as LAeq(10 hours) dB



Scale @ A3:  
1:12,000

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29/05/2014 TL02a Checked by: TH Approved by: JS  
4603/NM/063C

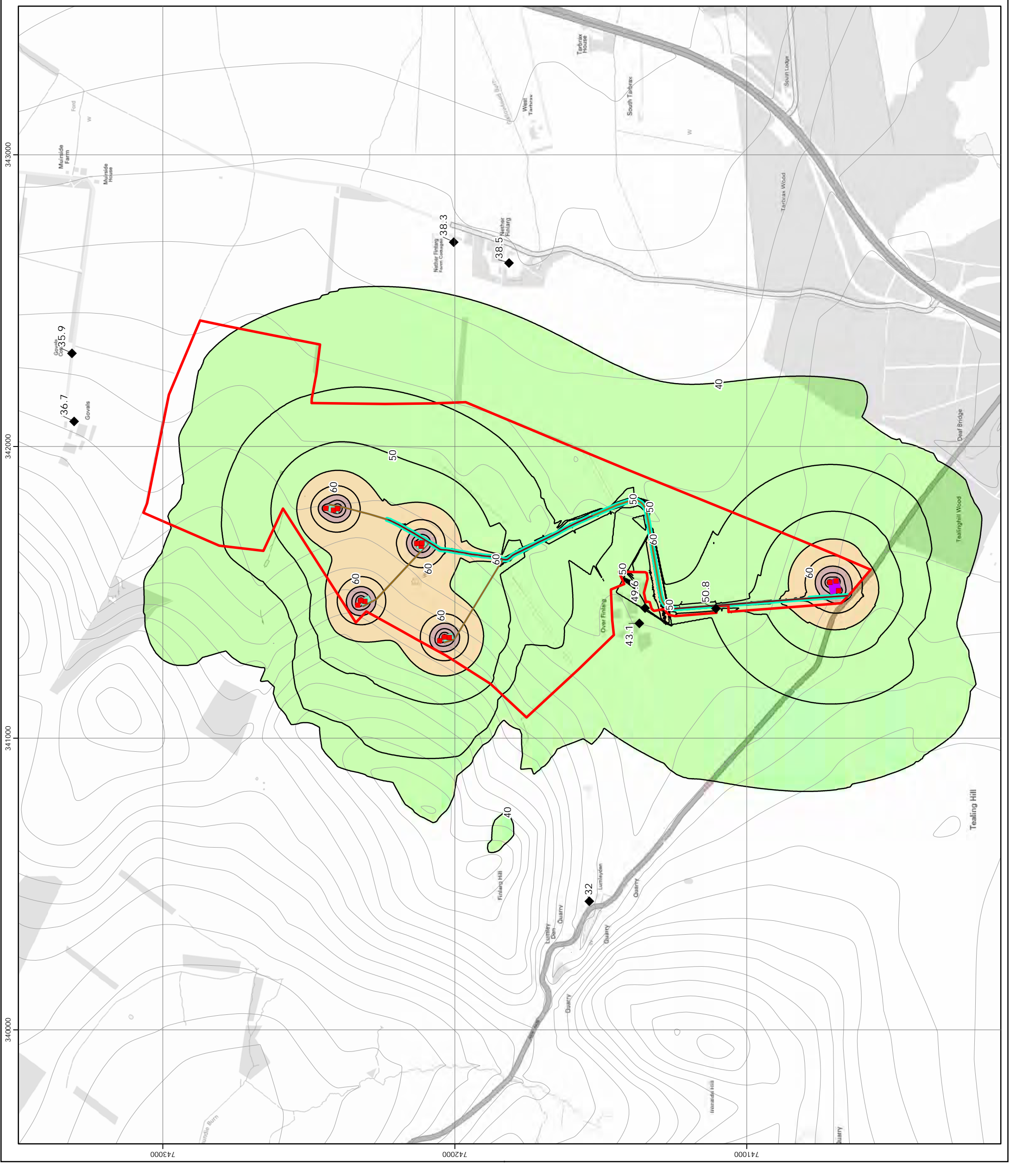




Figure 5-3  
Operational Noise Assessment  
(ETSU-R-97)

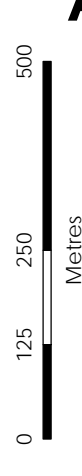
**Key**

- Site boundary
- ✈ Turbine location
- ◆ Noise sensitive receptor (NSR) labelled with night-time noise level

Noise levels modelled at 4m height using a 9m/s standardised wind speed at 10m height

- Night-time noise level
- 35 - 40 dBA
- 40 - 50 dBA
- Above 50 dBA
- Day-time noise level

Noise levels at Lumleyden appear higher on this figure than would occur in reality as the figure does not take account of the restricted line of site from the receptor to the turbines.

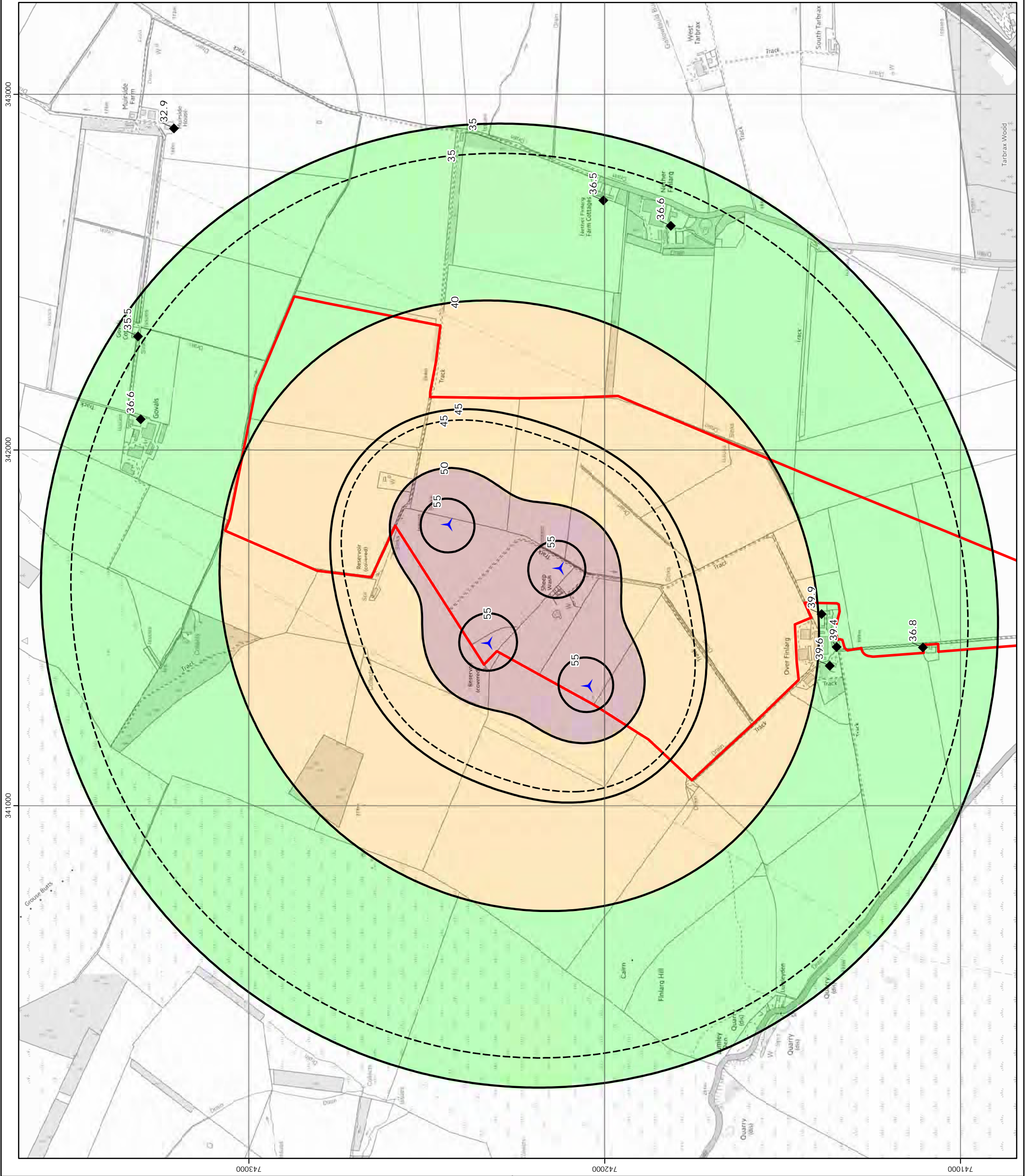


Scale @ A3:  
1:10,000

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3440000  
3430000  
3420000  
3410000  
3400000

# Frawney Wind Farm

## Polar Energy (Finlary) Ltd

Figure 5-4  
Cumulative Operational Noise Assessment (ETSU-R-97)

**Key**

- Site boundary
- ✈ Turbine location
- Govals Farm turbine
- Nether Finlary turbine
- ◆ Noise sensitive receptor (NSR) labelled with night-time noise level

Noise contours modelled at 4m height using a 9m/s standardised wind speed at maximum noise levels

- Night-time noise level
- 35 - 40 dbA
- 40 - 50 dbA
- Above 50 dbA
- Day-time noise level

ndB LA90(10mins) – Cumulative noise immission level of Frawney and Govals Farm wind turbines

ndB LA90(10mins) – Cumulative noise immission level of Frawney, Govals Farm and Nether Finlary wind turbines.

All noise levels reported as dB LA90(10mins) at a receptor height of 4m.

Nether Finlary turbines LA90 = LAeq;  
Frawney and Govals Farm turbines LA90 = LAeq + 2dB.

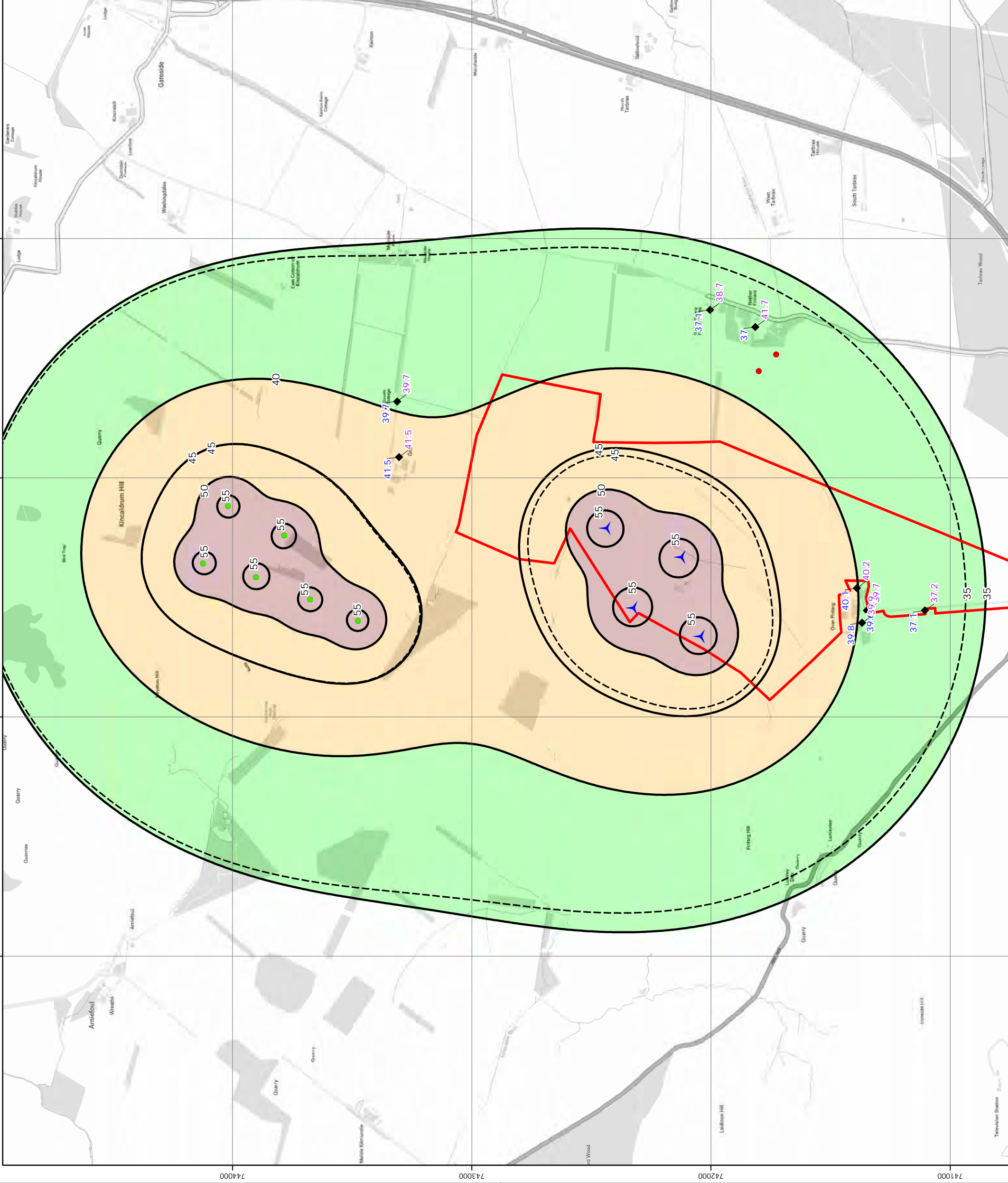


0 200 400 800  
Metres

Scale @ A3:  
1:15,000

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28/05/2014 TL02a 4603/NM/065d  
Drawn by: TH Checked by: TH Approved by: JS

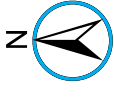
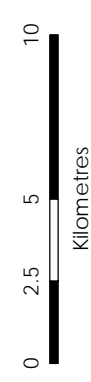
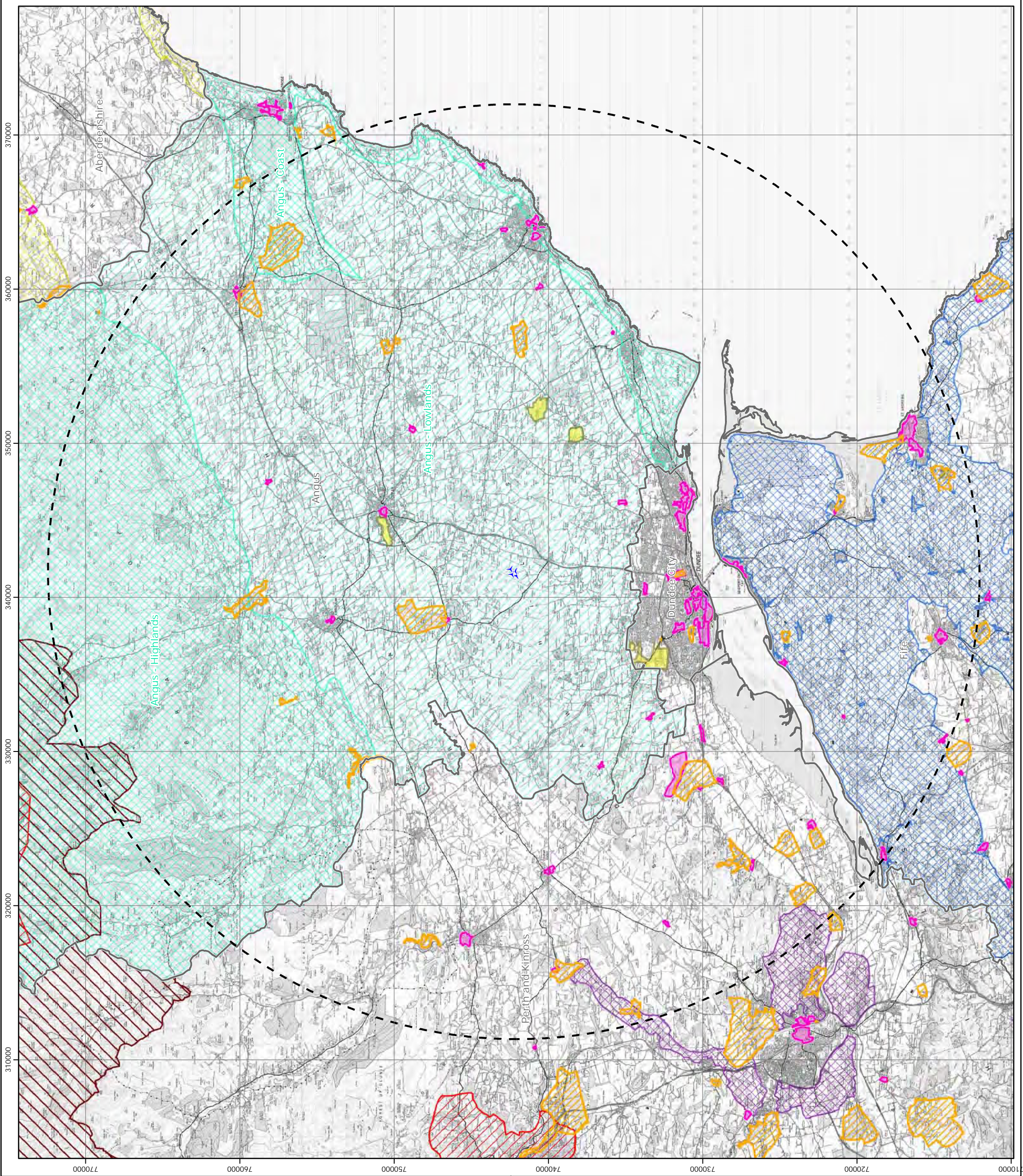


**AC34**

Figure 6-1  
Landscape Policy Context

Key

-  Turbine locations
-  30km study area
-  Council boundary
-  Garden or Designed Landscape
-  Country Park
-  Conservation Areas
-  National Scenic Area
-  National Park
-  Council Landscape Designation
-  Aberdeenshire - Area of Landscape Significance
-  Fife - Special Landscape Area
-  Perth and Kinross - Area of Great Landscape Value
-  Angus - most sensitive Principal Geographic Areas
-  Angus - less sensitive Principal Geographic Areas



Scale @ A3:  
1:230,000

**AC34**

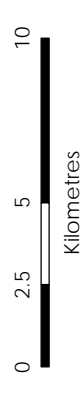
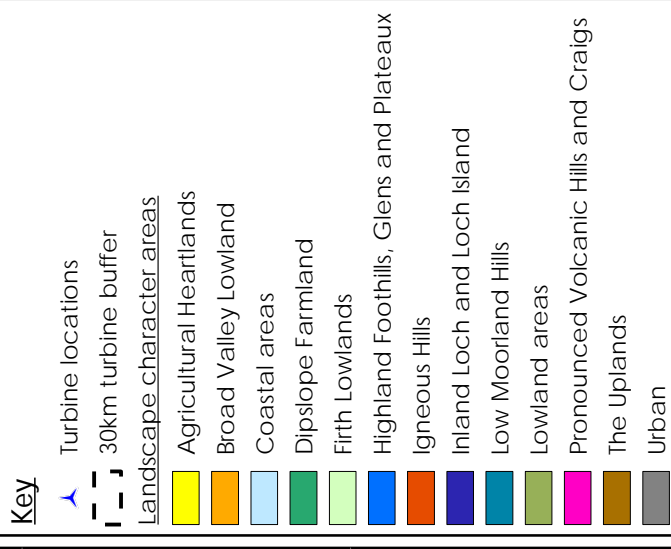


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# Frawney Wind Farm

## Polar Energy (Finlarg) Ltd

Figure 6-2  
Landscape Character Areas



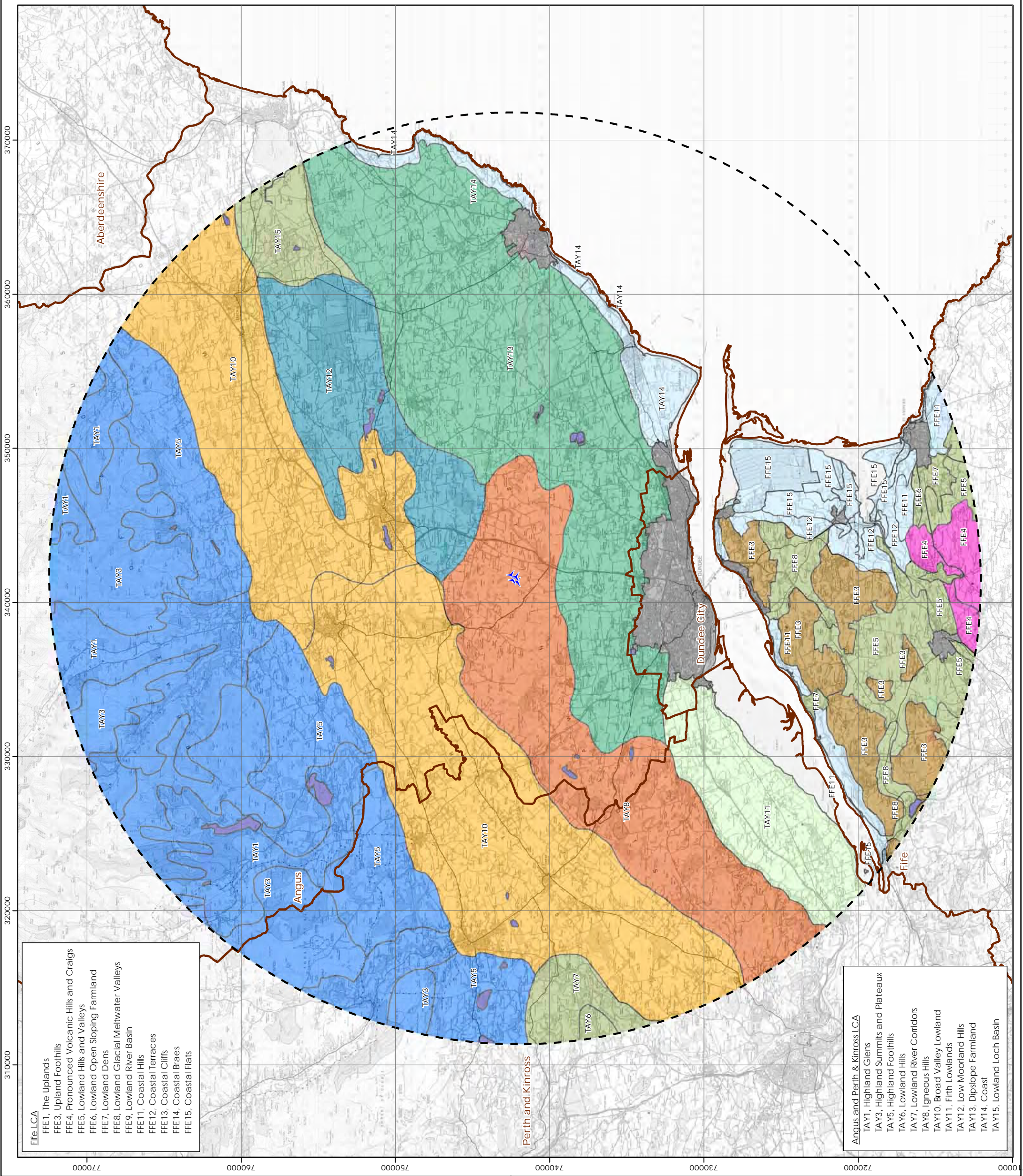
Scale @ A3:  
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04/03/2014 TL02a Checked by: AA Drawn by: TG  
4603/LS/008C Approved by: TG








**Fife LCA**  
 FFE1, The Uplands  
 FFE3, Upland Foothills  
 FFE4, Pronounced Volcanic Hills and Craigs  
 FFE5, Lowland Hills and Valleys  
 FFE6, Lowland Open Sloping Farmland  
 FFE7, Lowland Dens  
 FFE8, Lowland Glacial Meltwater Valleys  
 FFE9, Lowland River Basin  
 FFE11, Coastal Hills  
 FFE12, Coastal Terraces  
 FFE13, Coastal Cliffs  
 FFE14, Coastal Braes  
 FFE15, Coastal Flats

**Angus and Perth & Kinross LCA**  
 TAY1, Highland Glens  
 TAY3, Highland Summits and Plateaux  
 TAY5, Highland Foothills  
 TAY6, Lowland Hills  
 TAY7, Lowland River Corridors  
 TAY8, Igneous Hills  
 TAY10, Broad Valley Lowland  
 TAY11, Firth Lowlands  
 TAY12, Low Moorland Hills  
 TAY13, Dipslope Farmland  
 TAY14, Coast  
 TAY15, Lowland Loch Basin

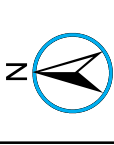
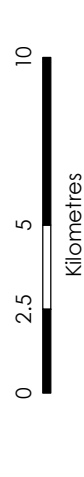
Figure 6-3  
Blade Tip and Hub Height  
Bare Ground ZTV with  
Viewpoints

**Key**

-  Turbine location
-  5km turbine radii to 30km
-  Landscape viewpoint
-  Turbine hubs visible (57m)
-  Turbine tips visible (92.5m)

Generated using Ordnance Survey's Terrain50 Dataset which does not take in to account the screening effects of buildings or vegetation.

Curvature of the Earth allowed for.  
Observer eye height 2m above ground.

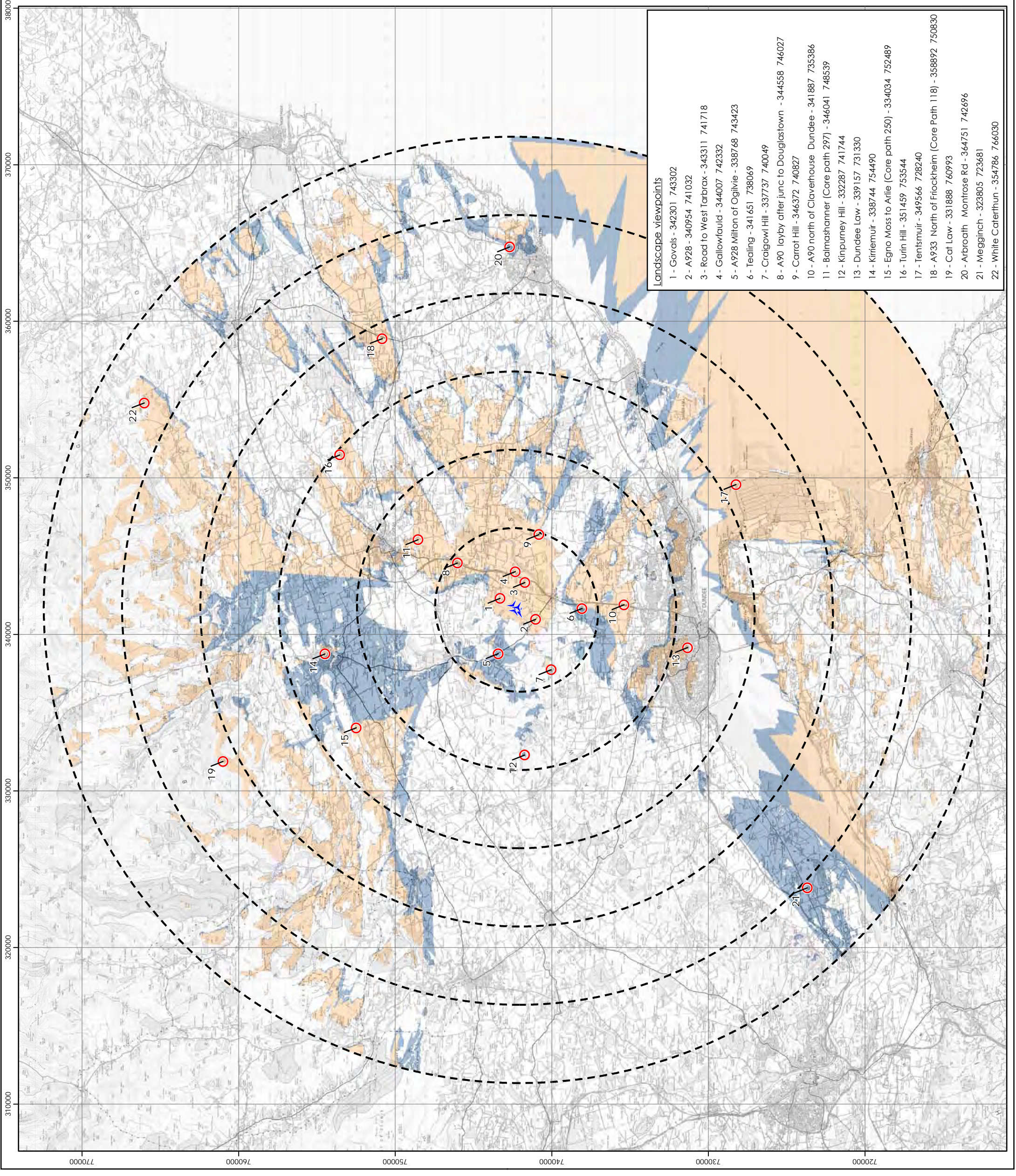


Scale @ A3:  
1:225,000

**AC34**



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**Landscape viewpoints**

1 - Govais - 342301 743302
2 - A928 - 340954 741032
3 - Road to West Tarbrax - 343311 741718
4 - Gallowfauld - 344007 742332
5 - A928 Milton of Ogilvie - 338768 743423
6 - Tealing - 341651 738069
7 - Craigowl Hill - 337737 740049
8 - A90 layby after junc to Douglstown - 344558 746027
9 - Carrot Hill - 346372 740827
10 - A90 north of Claverhouse Dundee - 341887 735386
11 - Balmashanner (Core path 297) - 346041 748539
12 - Kinpurney Hill - 332287 741744
13 - Dundee Law - 339157 731330
14 - Kirriemuir - 338744 754490
15 - Egno Moss to Avile (Core path 250) - 334034 752489
16 - Turin Hill - 351459 753544
17 - Tentismuir - 349566 728240
18 - A933 North of Fricockheim (Core Path 118) - 358892 750830
19 - Cat Law - 331888 760993
20 - Afbroath Montrose Rd - 364751 742696
21 - Megginch - 323805 723681
22 - White Caterthun - 354786 766030

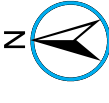
Figure 6-4  
Blade Tip Height Bare Ground  
ZTV and Viewpoints

**Key**

-  Turbine location
  -  5km turbine radii to 30km
  -  Landscape viewpoint
- Zone of Theoretical Visibility  
(92.5m tip)**
-  1 turbine visible
  -  2 turbines visible
  -  3 turbines visible
  -  4 turbines visible

Generated using Ordnance Survey's Terrain50  
Dataset which does not take in to account  
the screening effects of buildings or vegetation.

Curvature of the Earth allowed for.  
Observer eye height 2m above ground.



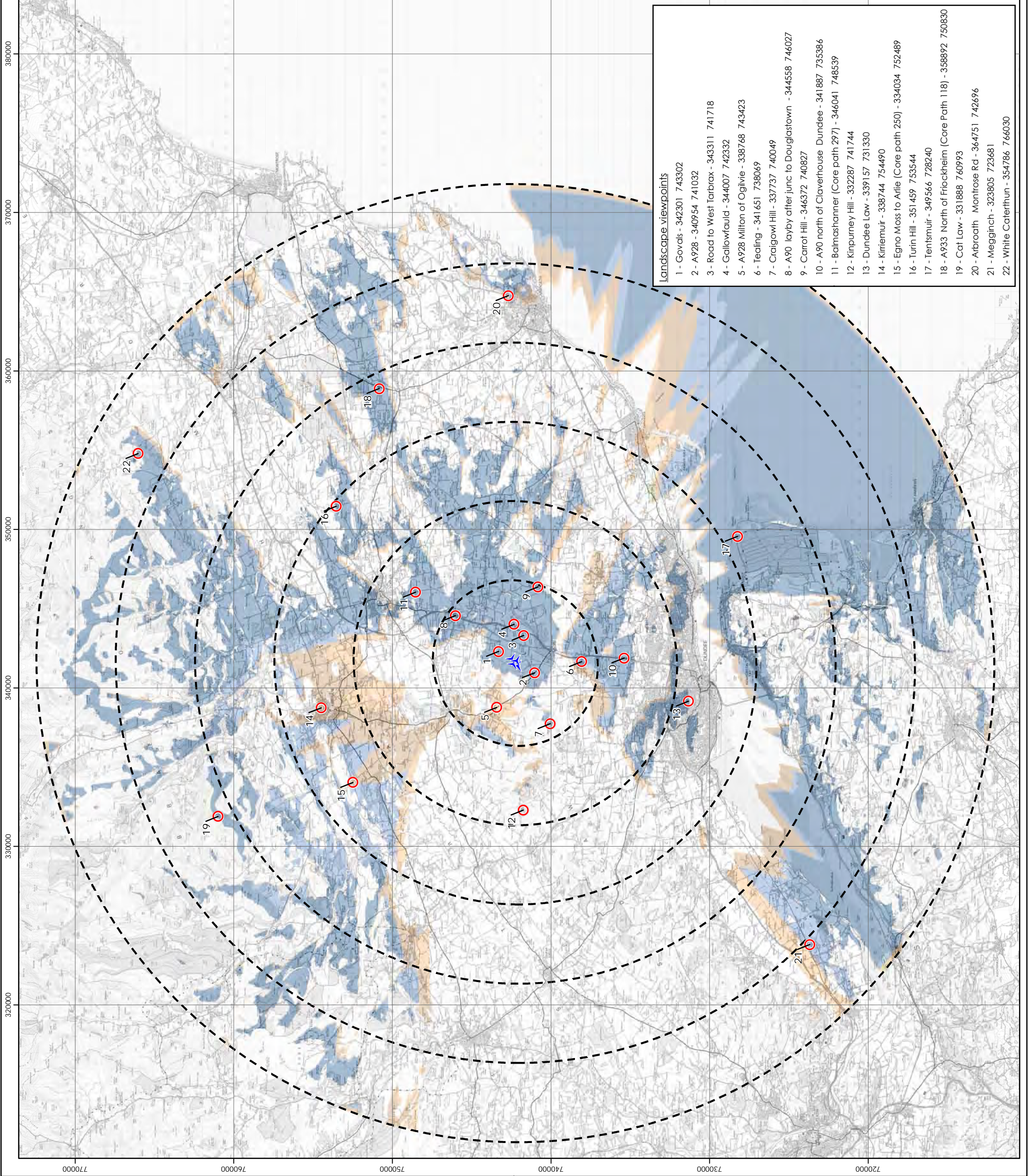
Scale @ A3:  
1:225,000

**AC34**



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04/03/2014 T102a 4603/ZV/026d  
Drawn by: AA Checked by: TH Approved by: TG







**Landscape viewpoints**





- 1 - Govals - 342301 743302
- 2 - A928 - 340954 741032
- 3 - Road to West Tarbrax - 343311 741718
- 4 - Gallowfauld - 344007 742332
- 5 - A928 Milton of Ogilvie - 338768 743423
- 6 - Tealing - 341651 738069
- 7 - Craigowl Hill - 337737 740049
- 8 - A90 layby after junc to Douglstown - 344558 746027
- 9 - Carrat Hill - 346372 740827
- 10 - A90 north of Claverhouse Dundee - 341887 735386
- 11 - Balmashanner (Core path 297) - 346041 748539
- 12 - Kinpurney Hill - 332287 741744
- 13 - Dundee Law - 339157 731330
- 14 - Kirriemuir - 338744 754490
- 15 - Egno Moss to Arlie (Core path 250) - 334034 752489
- 16 - Turin Hill - 351459 753544
- 17 - Tentismuir - 349566 728240
- 18 - A933 North of Ffrockheim (Core Path 118) - 358892 750830
- 19 - Caf Law - 331888 760993
- 20 - Atbroath Montrose Rd - 364751 742696
- 21 - Megginch - 323805 723681
- 22 - White Caterthun - 354786 766030

Figure 6-5  
Screened Blade Tip ZTV  
with Viewpoints

**Key**

-  Turbine location (92.5 m tip)
-  5km turbine radii to 30km
-  Landscape viewpoint
-  Forestry

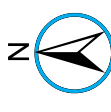
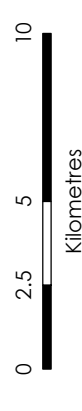
**Screened Zone of Theoretical Visibility  
(92.5m tip)**

-  1 turbine visible
-  2 turbines visible
-  3 turbines visible
-  4 turbines visible

Generated using Ordnance Survey's Terrain50 Dataset which does not take in to account the screening effects of buildings or vegetation.

OS VectorMap Forestry data screened at 10 m height.

Curvature of the Earth allowed for.  
Observer eye height 2m above ground.

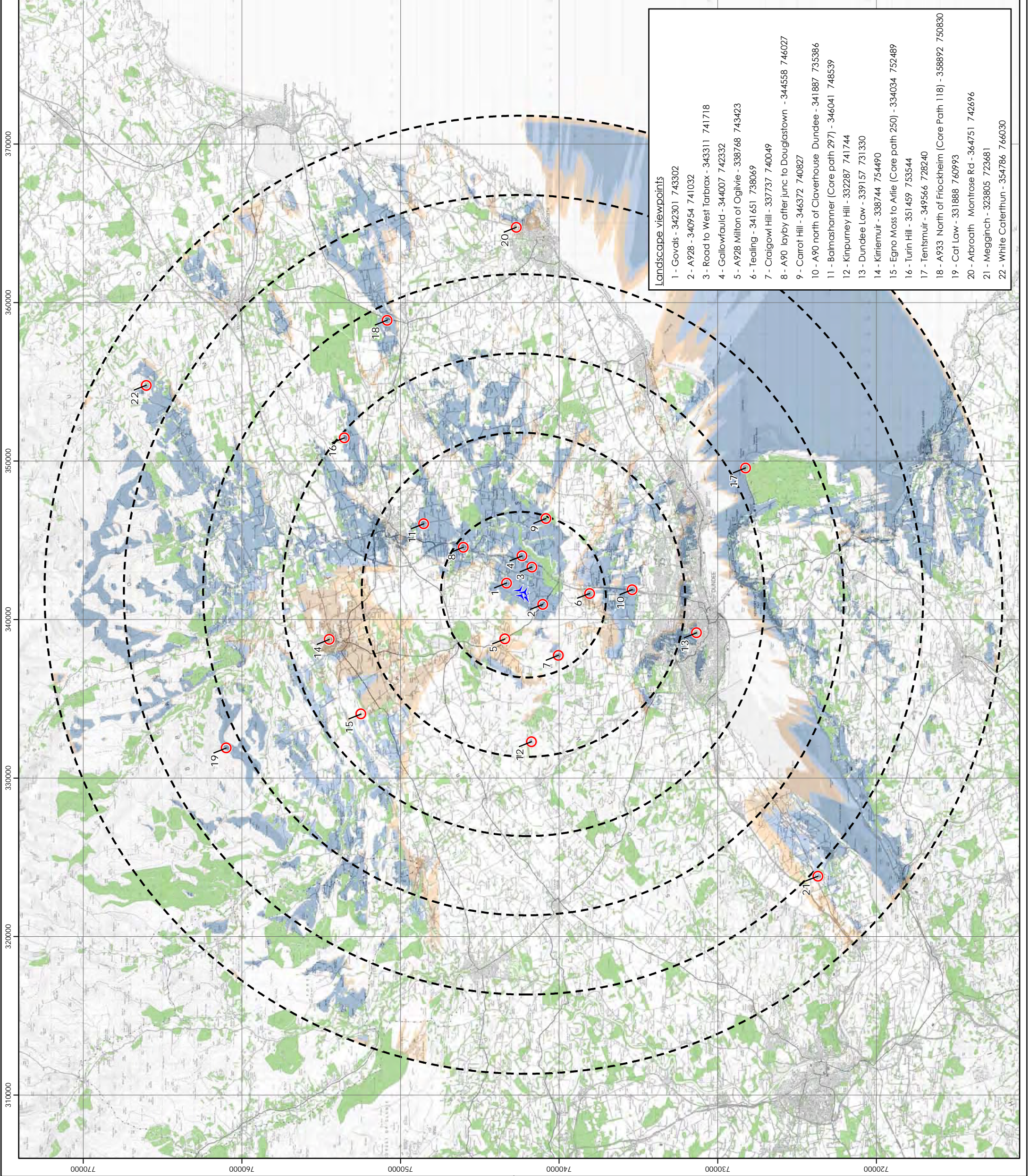


Scale @ A3:  
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**AC34**

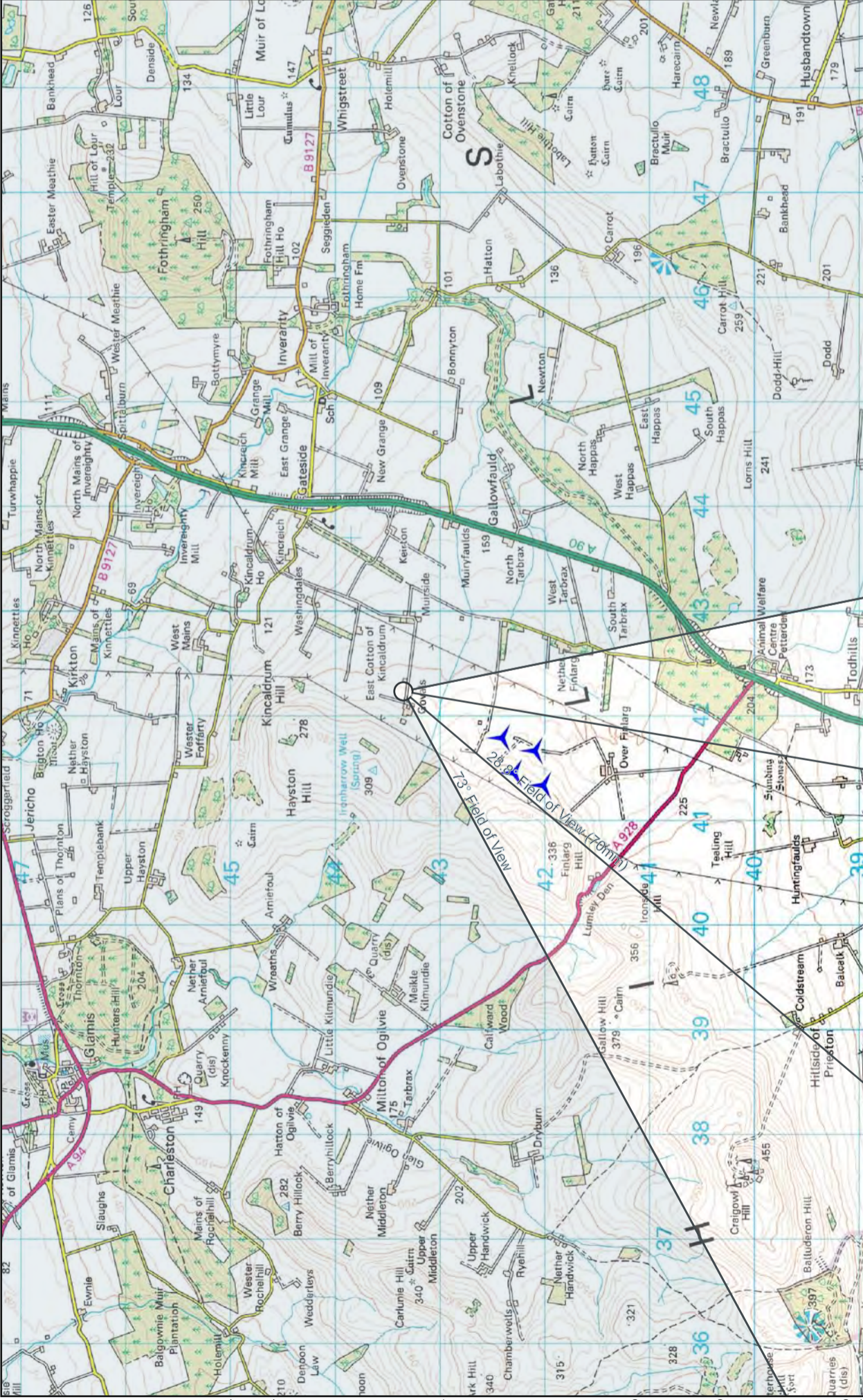


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**Landscape viewpoints**

- 1 - Govals - 342301 743302
- 2 - A928 - 340954 741032
- 3 - Road to West Tarbrax - 343311 741718
- 4 - Gallowfauld - 344007 742332
- 5 - A928 Millon of Ogilvie - 338768 743423
- 6 - Tealing - 341651 738069
- 7 - Craigowl Hill - 337737 740049
- 8 - A90 layby after junc to Douglasstown - 344558 746027
- 9 - Carrot Hill - 346372 740827
- 10 - A90 north of Claverhouse Dundee - 341887 735386
- 11 - Balmashanner (Core path 297) - 346041 748539
- 12 - Kinpurney Hill - 332287 741744
- 13 - Dundee Law - 339157 731330
- 14 - Kirriemuir - 338744 754490
- 15 - Egno Moss to Ailie (Core path 250) - 334034 752489
- 16 - Turin Hill - 351459 753544
- 17 - Tentismuir - 349566 728240
- 18 - A933 North of Frockheim (Core Path 118) - 358892 750830
- 19 - Cat Law - 331888 760993
- 20 - Abroath Montrose Rd - 364751 742696
- 21 - Megginch - 323805 723681
- 22 - White Caterthun - 354786 766030



## Frawney Wind Farm



**Figure 6-6a**  
**Viewpoint 1 - Govals**

### Viewpoint Data

Grid Reference E342301, N743302  
Elevation 207m AOD

### Wireframe/Photograph

Height above ground 1.6m  
Camera and Lens Canon 5D dSLR with fixed 50mm lens

### Proposed Turbine Information

Hub Height 57m  
Blade Tip Height 92.5m

### Predicted Wireframe Turbine Visibility

Number of Turbine Tips Visible\* 4  
Number of Turbine Hubs Visible 4  
Distance to Nearest Turbine 998m



Wide Angle Photo of Existing View Included Angle 110° Approximate Viewing Distance 210mm



The following images can only be accurately assessed from the correct Viewing Distance, where the curvature of the earth has been accounted for.

Wireframes are generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation.

\*Refers to the number of turbines that blade tips can be seen rather than the number of individual tips seen from the viewpoint.

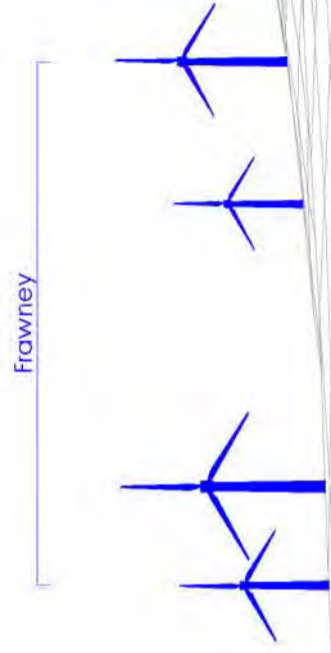


Drawn by SL  
Checked by TP  
Approved by

TL 02a  
18/03/2014  
4:03 PM C001b



Existing View



South

200°

210°

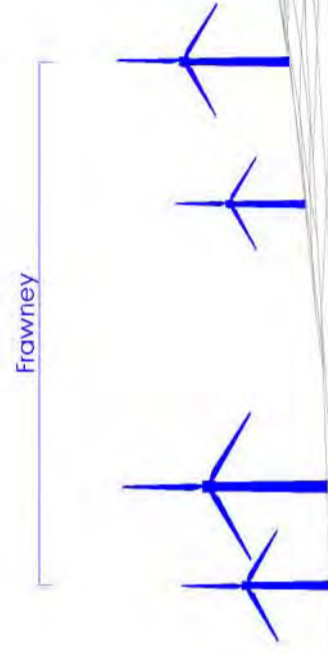
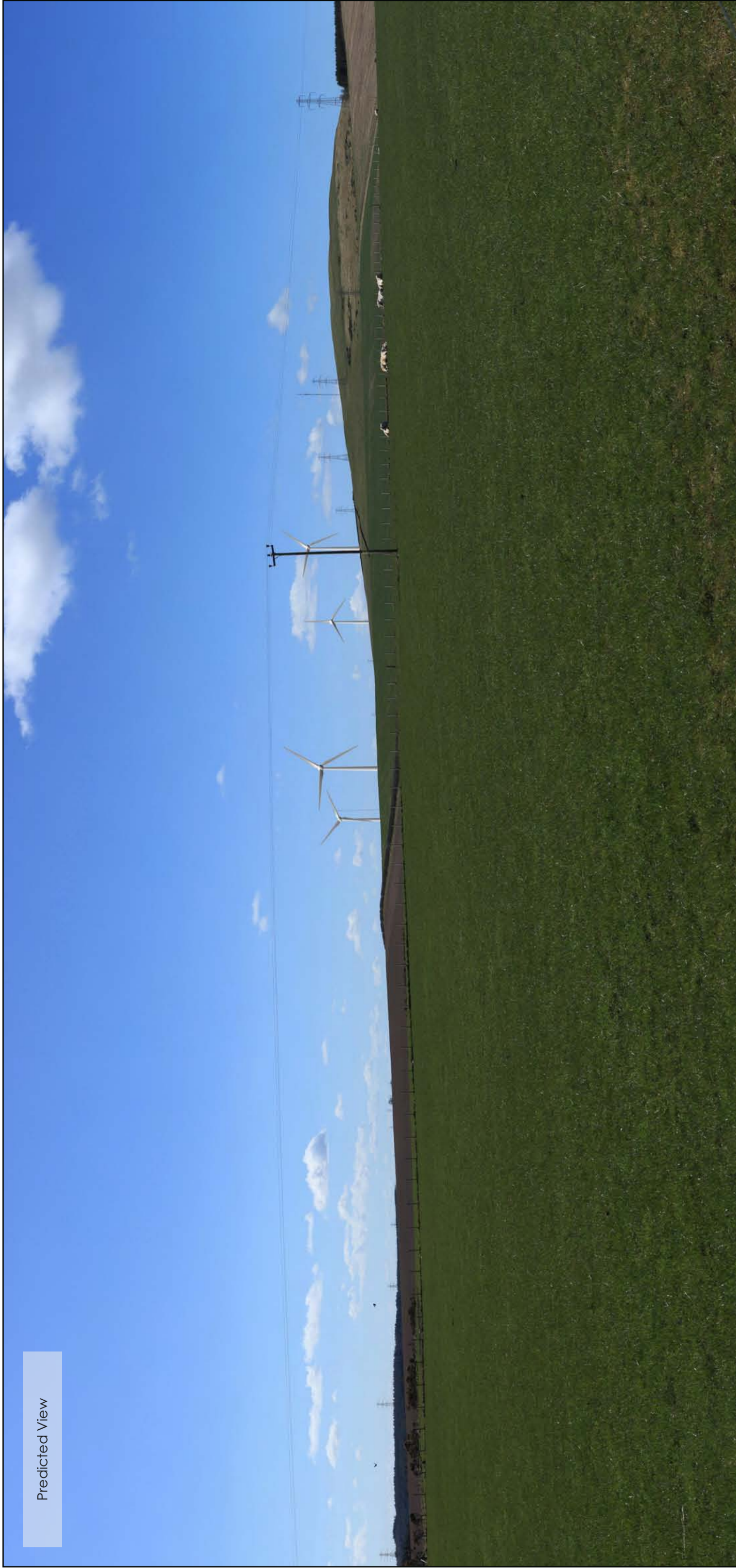
220°

230°

240°

AC34

Predicted View



South

190°

200°

210°

220°

230°

240°

AC34



**Polar Energy  
(Finlary) Ltd**

Frawney Wind Farm

Viewpoint 1: Govals

Horizontal View Angle 73°  
Approximate Viewing Distance 315mm

Figure 6-6c

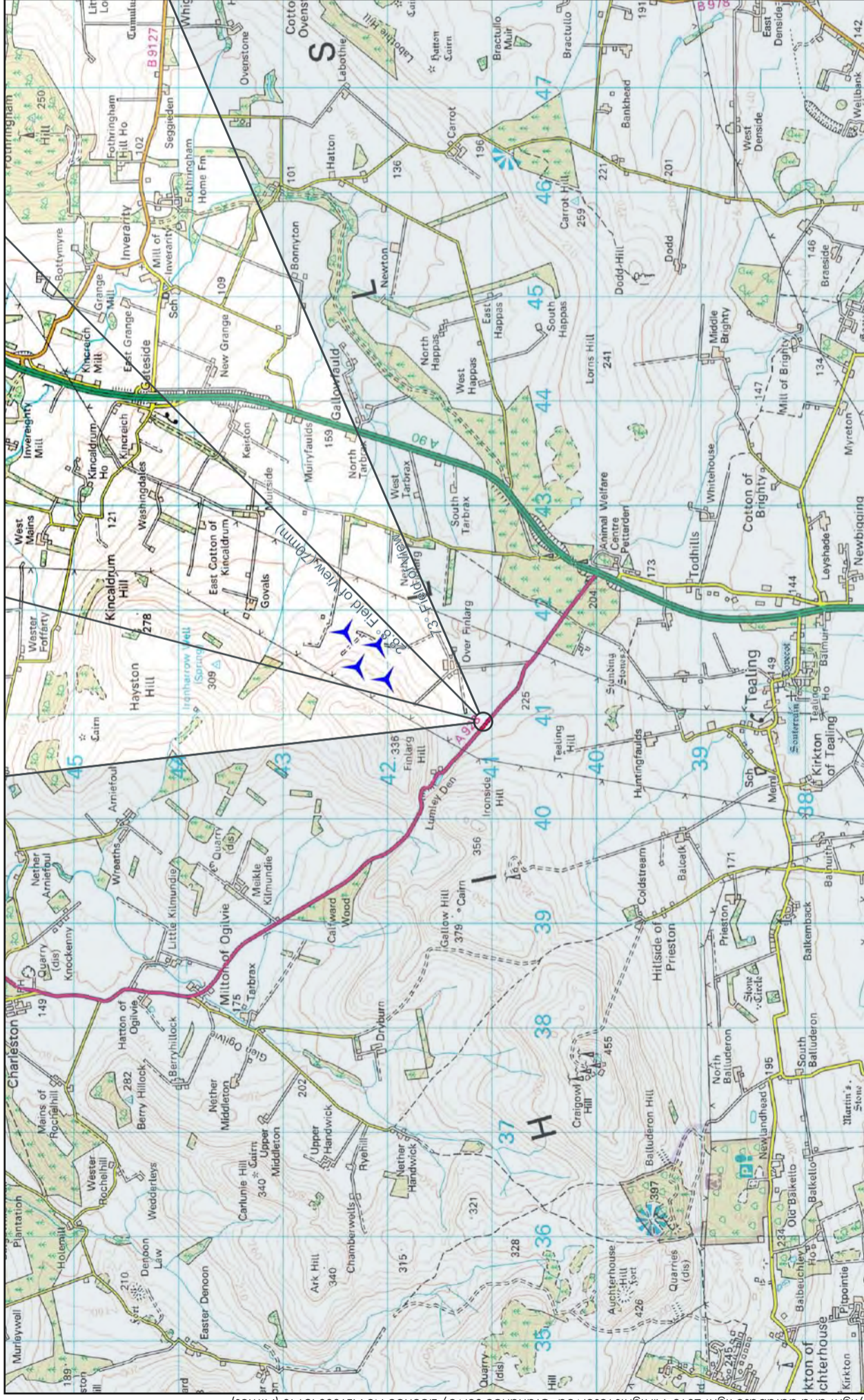


Drawn by SL  
Checked by TP  
Approved by

TL 02a  
18/03/2014  
4:03 PM C001b

Predicted View (70mm Focal Length)





# Frawney Wind Farm



**Figure 6-7a  
Viewpoint 2 - A928**

**Viewpoint Data**

Grid Reference E340954, N741032  
Elevation 231m AOD

**Wireframe/Photograph**

Height above ground 1.6m  
Camera and Lens Canon 5D dSLR with fixed 50mm lens

**Proposed Turbine Information**

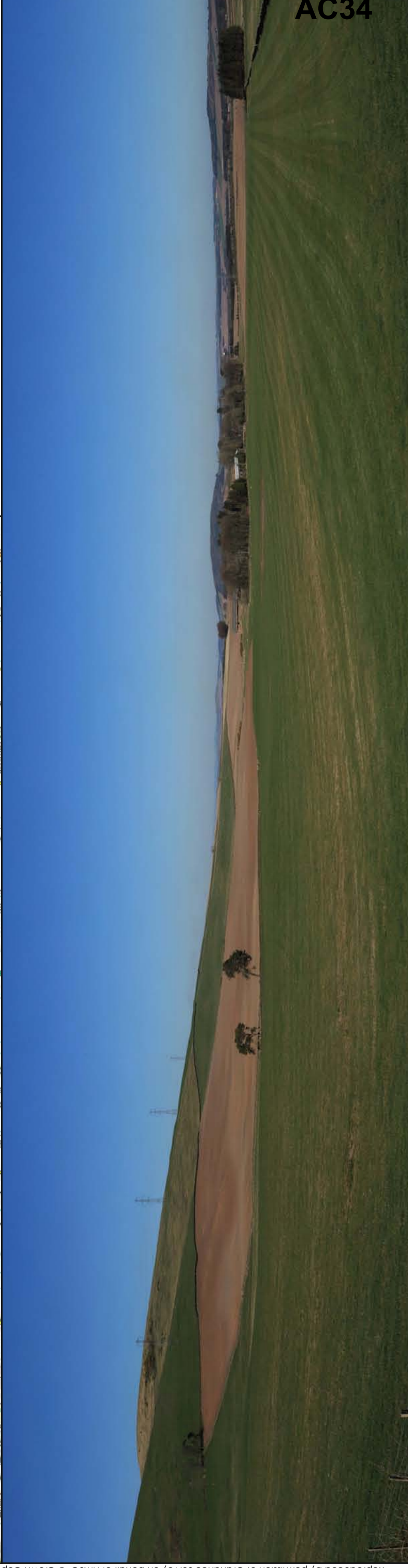
Hub Height 57m  
Blade Tip Height 92.5m

**Predicted Wireframe Turbine Visibility**

Number of Turbine Tips Visible\* 4  
Number of Turbine Hubs Visible 4  
Distance to Nearest Turbine 1,087m



Wide Angle Photo of Existing View Included Angle 110° Approximate Viewing Distance 210mm



The following images can only be accurately assessed from the correct Viewing Distance, where the curvature of the earth has been accounted for.

Wireframes are generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation.

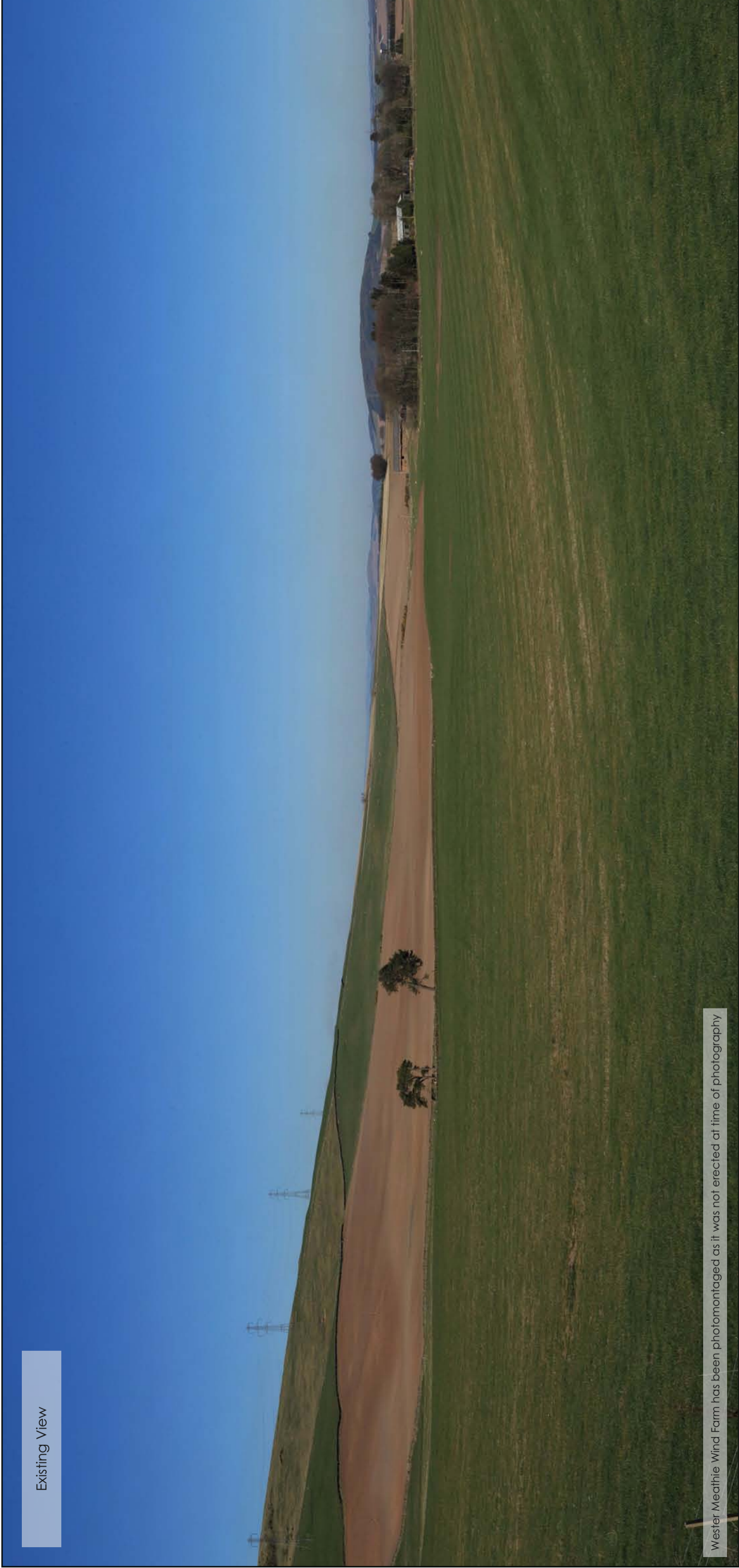
\*Refers to the number of turbines that blade tips can be seen rather than the number of individual tips seen from the viewpoint.



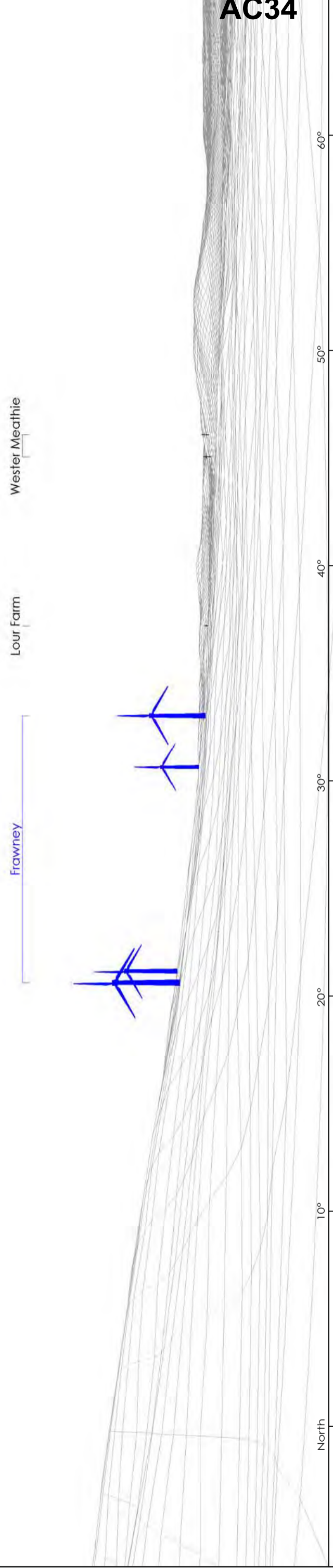
Drawn by SL  
Checked by TP  
Approved by

TL 02a  
18/03/2014  
4:03 PM C002b

Existing View



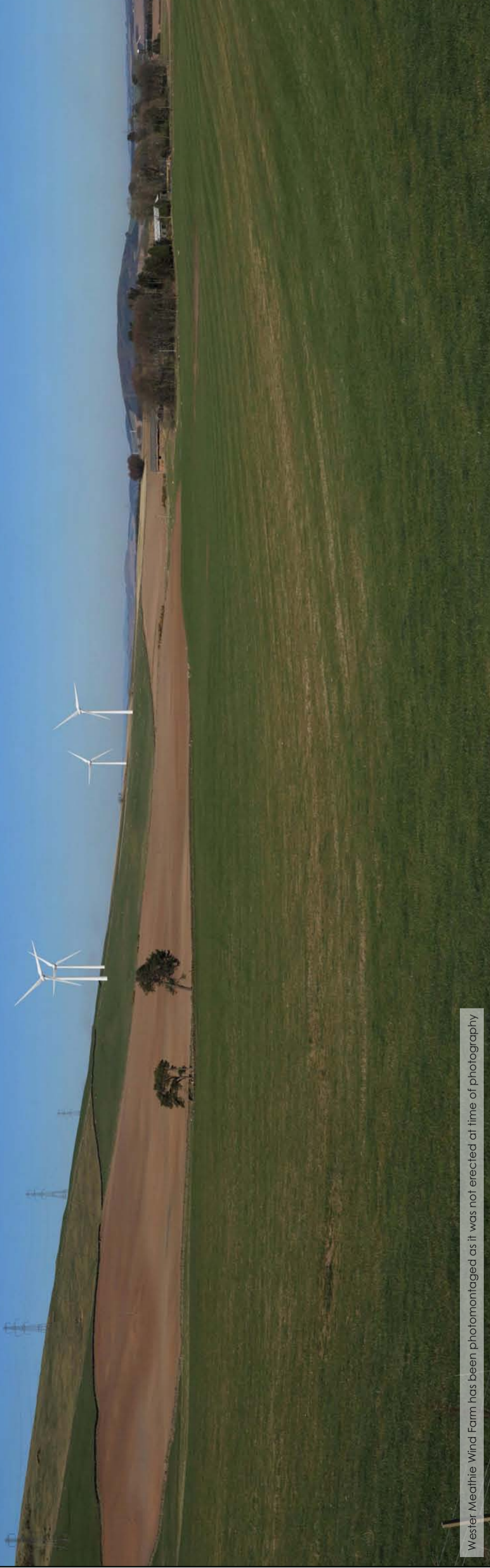
Wester Meathie Wind Farm has been photomontaged as it was not erected at time of photography



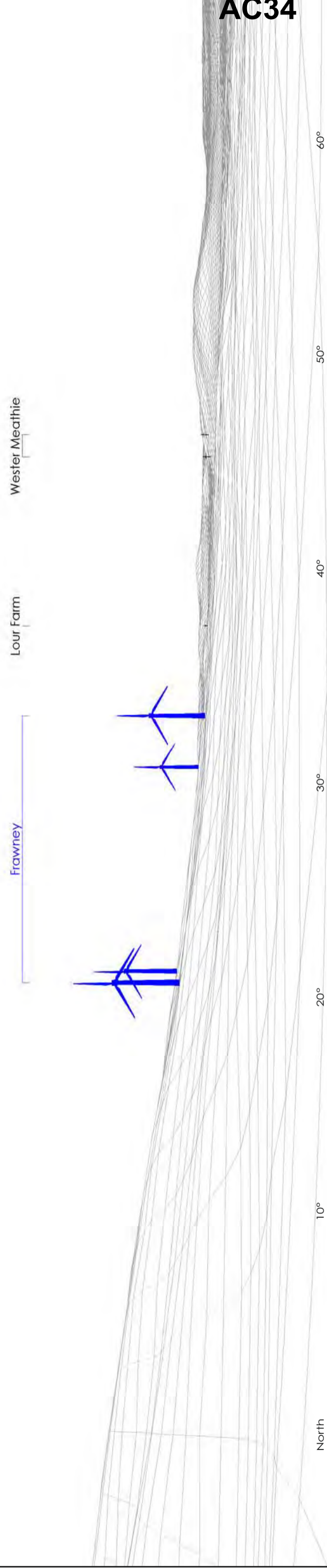
AC34

	<b>Polar Energy (Finlarg) Ltd</b>	Frawney Wind Farm	Viewpoint 2: A928	Horizontal View Angle 73° Approximate Viewing Distance 315mm	Figure 6-7b		Drawn by SL Checked by TP Approved by 18/03/2014 4:03 PM C002b TL 02a
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Predicted View



Wester Meathie Wind Farm has been photomontaged as it was not erected at time of photography



AC34

	<b>Polar Energy (Finlarg) Ltd</b>	Frawney Wind Farm	Viewpoint 2: A928	Horizontal View Angle 73° Approximate Viewing Distance 315mm	Figure 6-7c	 Drawn by SL Checked by TP Approved by 18/03/2014 4:03 PM C002b TL 02a
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Predicted View (70mm Focal Length)



# Frawney Wind Farm



**Figure 6-8a**  
**Viewpoint 3 - Road to West Tarbrax**

**Viewpoint Data**  
Grid Reference  
E343311, N741718  
Elevation  
170m AOD

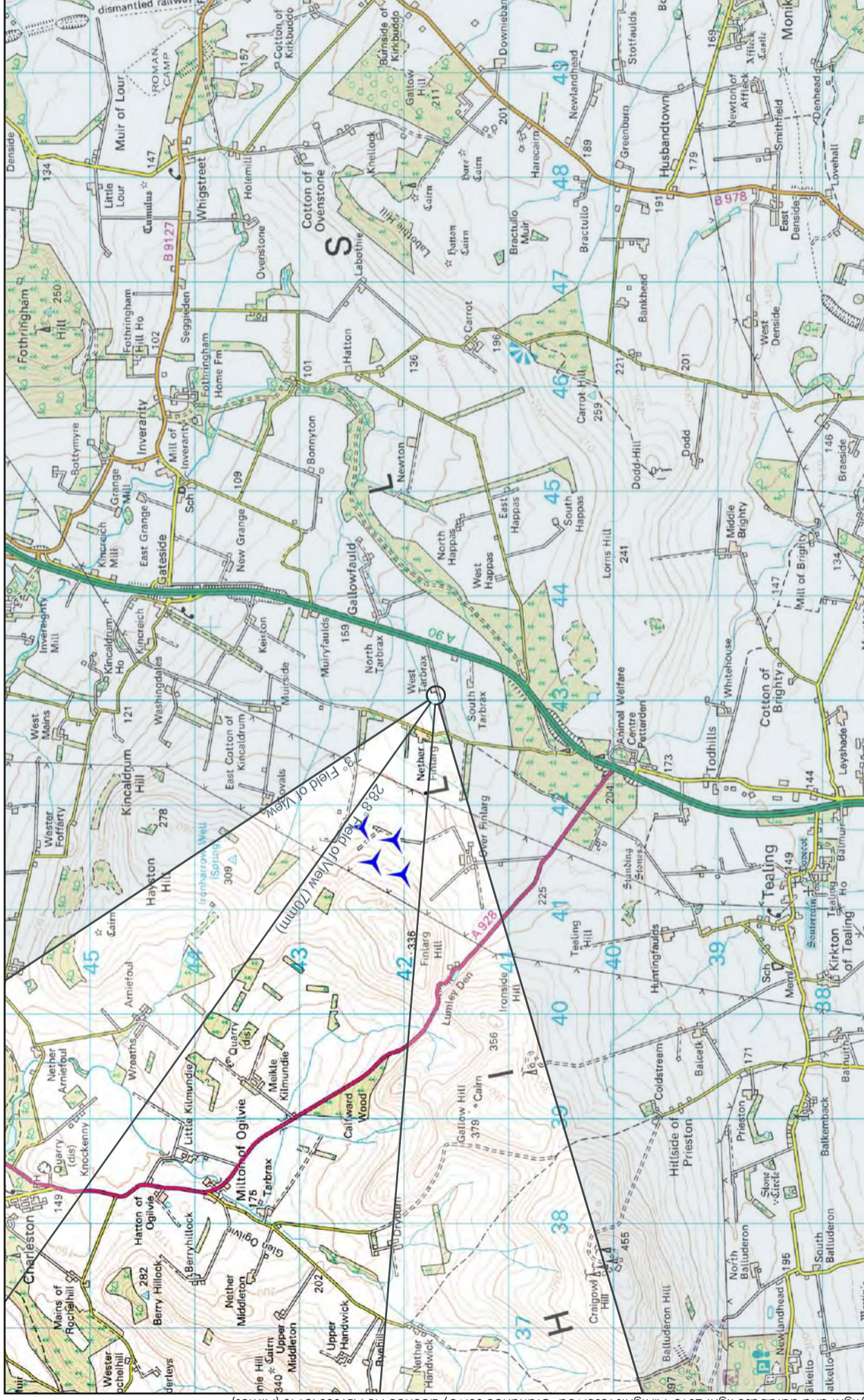
**Wireframe/Photograph**  
Height above ground  
1.6m  
Camera and Lens  
Canon 5D dSLR with fixed 50mm lens

**Proposed Turbine Information**  
Hub Height  
57m  
Blade Tip Height  
92.5m

**Predicted Wireframe Turbine Visibility**  
Number of Turbine Tips Visible\*  
4  
Number of Turbine Hubs Visible  
4  
Distance to Nearest Turbine  
1,685m



Wide Angle Photo of Existing View Included Angle 110° Approximate Viewing Distance 210mm



The following images can only be accurately assessed from the correct Viewing Distance, where the curvature of the earth has been accounted for.  
Wireframes are generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation.  
\*Refers to the number of turbines that blade tips can be seen rather than the number of individual tips seen from the viewpoint.



Drawn by SL  
Checked by TP  
Approved by

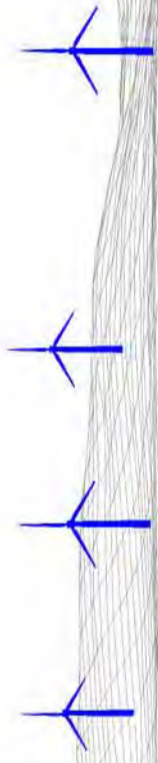
TL 02a  
18/03/2014  
4:03 PM C003b



Existing View



Frawney



260°

West

280°

290°

300°

310°

320°

AC34



**Polar Energy  
(Finlargo) Ltd**

Frawney Wind Farm

Viewpoint 3: Road to West Tarbrax

Horizontal View Angle  
Approximate Viewing Distance 73°  
31.5mm

Figure 6-7b

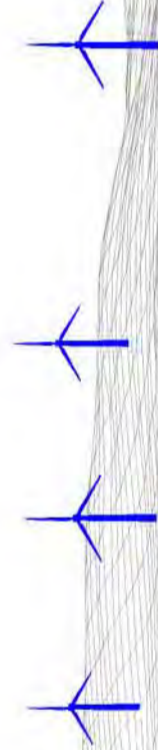


Drawn by SL  
Checked by TP  
Approved by  
TL 02a  
18/03/2014  
4:03 PM C003b

Predicted View



Frawney



260°

West

280°

290°

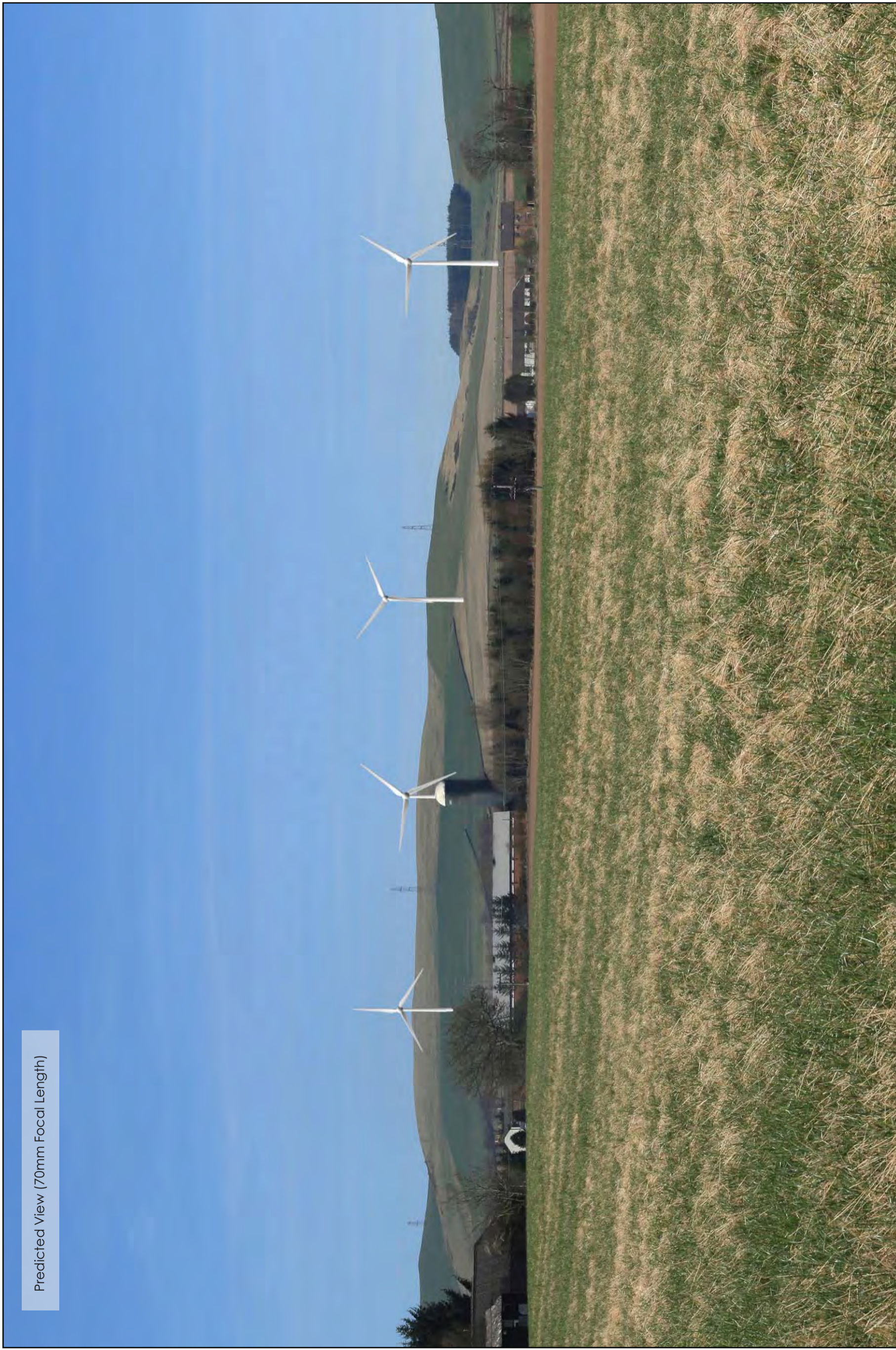
300°

310°

320°

AC34

Predicted View (70mm Focal Length)



# Frawney Wind Farm

## Polar Energy (Finlarg) Ltd



**Figure 6-9a  
Viewpoint 4 - Gallowfauld**

**Viewpoint Data**  
Grid Reference  
E344007, N742332  
Elevation  
150m AOD

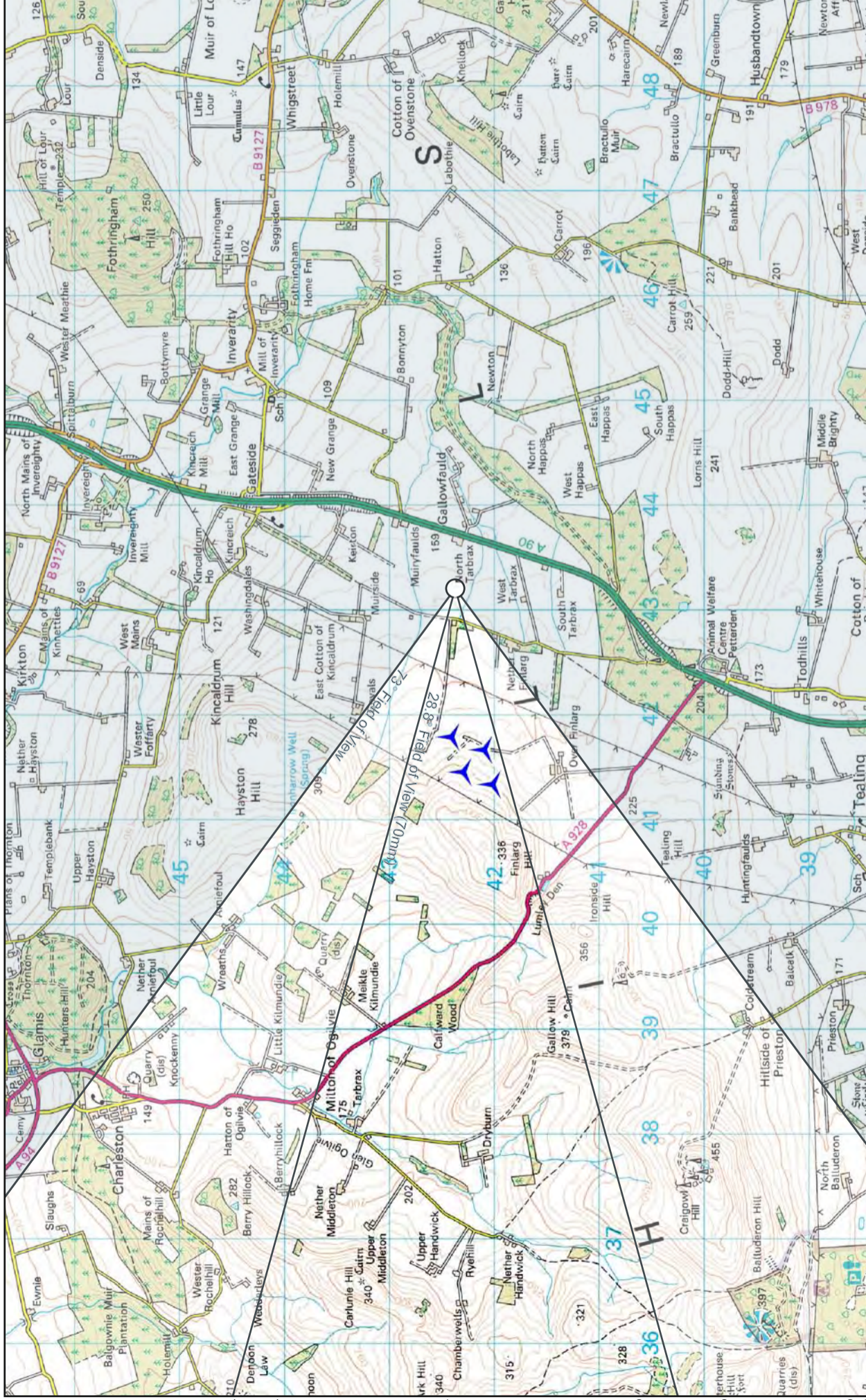
**Wireframe/Photograph**  
Height above ground  
1.6m  
Camera and Lens  
Canon 5D dSLR with fixed 50mm lens

**Proposed Turbine Information**  
Hub Height  
57m  
Blade Tip Height  
92.5m

**Predicted Wireframe Turbine Visibility**  
Number of Turbine Tips Visible\*  
4  
Number of Turbine Hubs Visible  
4  
Distance to Nearest Turbine  
2.219m



Wide Angle Photo of Existing View Included Angle 110° Approximate Viewing Distance 210mm



AC34

The following images can only be accurately assessed from the correct Viewing Distance, where the curvature of the earth has been accounted for. Wireframes are generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation. \*Refers to the number of turbines that blade tips can be seen rather than the number of individual tips seen from the viewpoint.

