

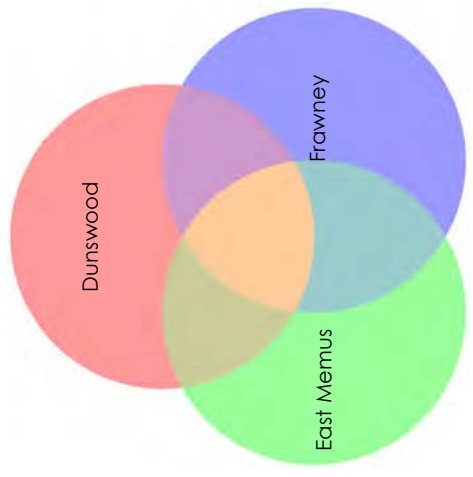
Frawney Wind Farm

Polar Energy (Finlarg) Ltd

6-30b
Cumulative ZTV - Approved - Frawney
with East Memus and Dunswood

Key

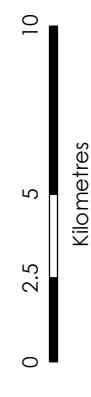
- Frawney turbine (92.5m)
- Frawney 30km turbine buffer
- East Memus turbine (86.5m)
- East Memus 30km turbine buffer
- Dunswood turbine (77m)
- Dunswood 25km turbine buffer



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.

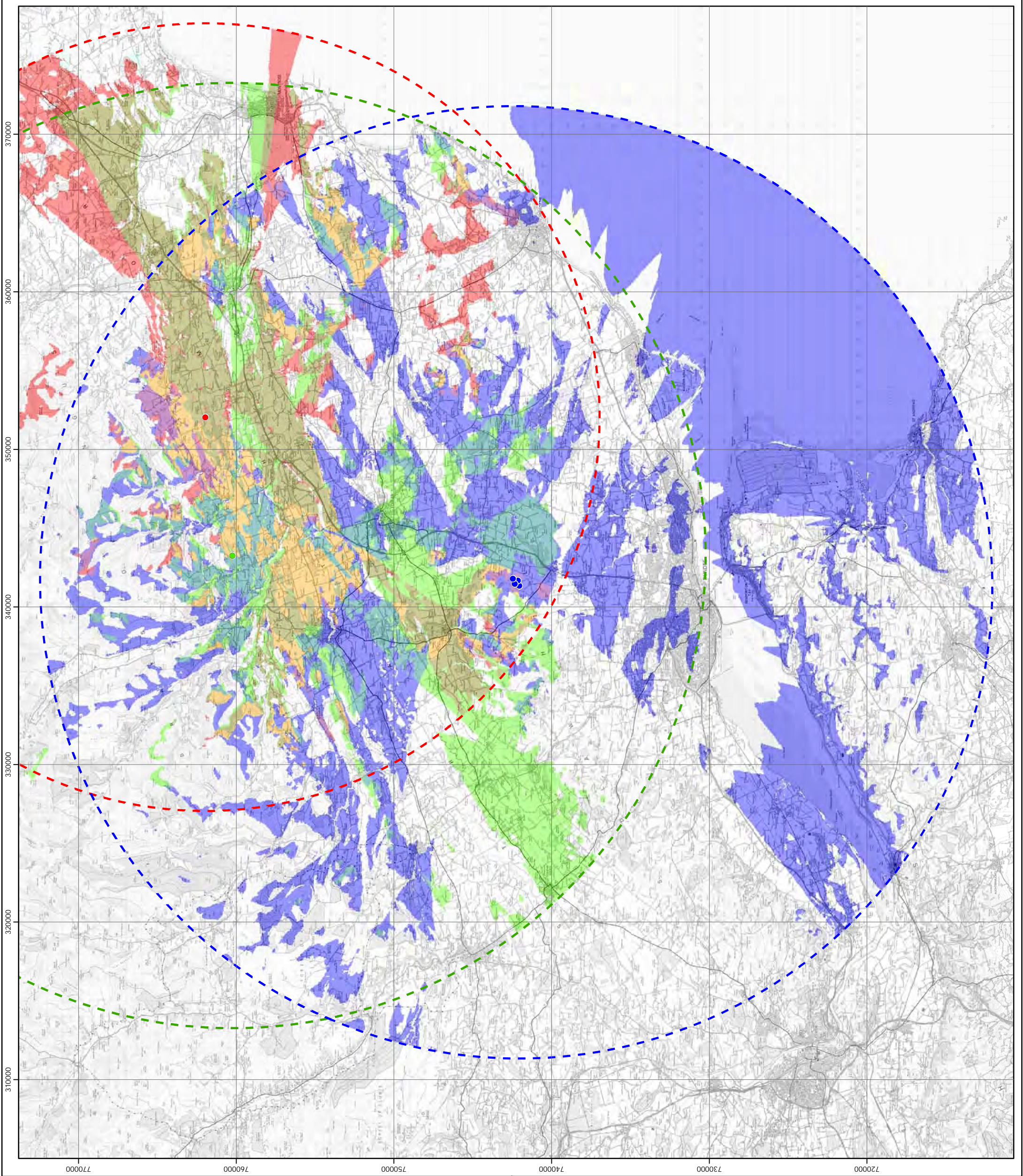
Distance of ZTV calculations based on SNH guidelines
51 to 70 m tip - 20 km
71 to 85 m tip - 25 km
86 to 100 m tip - 30 km
101 m to tip and above - 35 km



Scale @ A3:
1:225,000

AC34

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Frawney Wind Farm

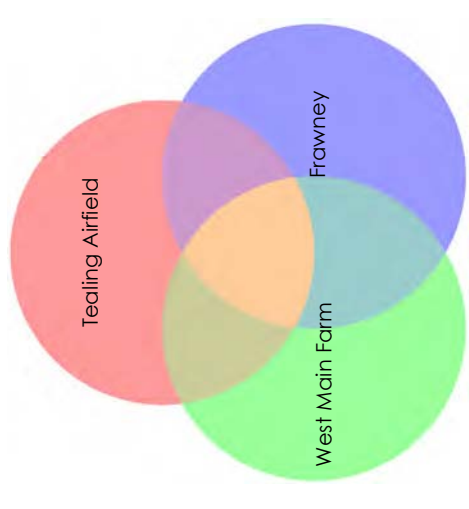
Polar Energy (Finlarg) Ltd

6-30c

Cumulative ZTV - Approved - Frawney with West Main Farm and Tealing Airfield

Key

- Frawney turbine (92.5m)
- Frawney 30km turbine buffer
- West Main Farm turbine (61m)
- West Main Farm 20km turbine buffer
- Tealing Airfield turbine (93.5m)
- Tealing Airfield 30km turbine buffer

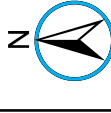
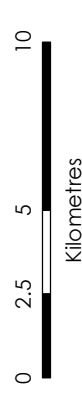


Generated using Ordnance Survey's Terrain50 dataset which does not take in to account the screening effects of buildings or vegetation.

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

Distance of ZTV calculations based on SNH guidelines

- 51 to 70 m tip - 20 km
- 71 to 85 m tip - 25 km
- 86 to 100 m tip - 30 km
- 101 m to tip and above - 35 km



Scale @ A3:
1:225,000

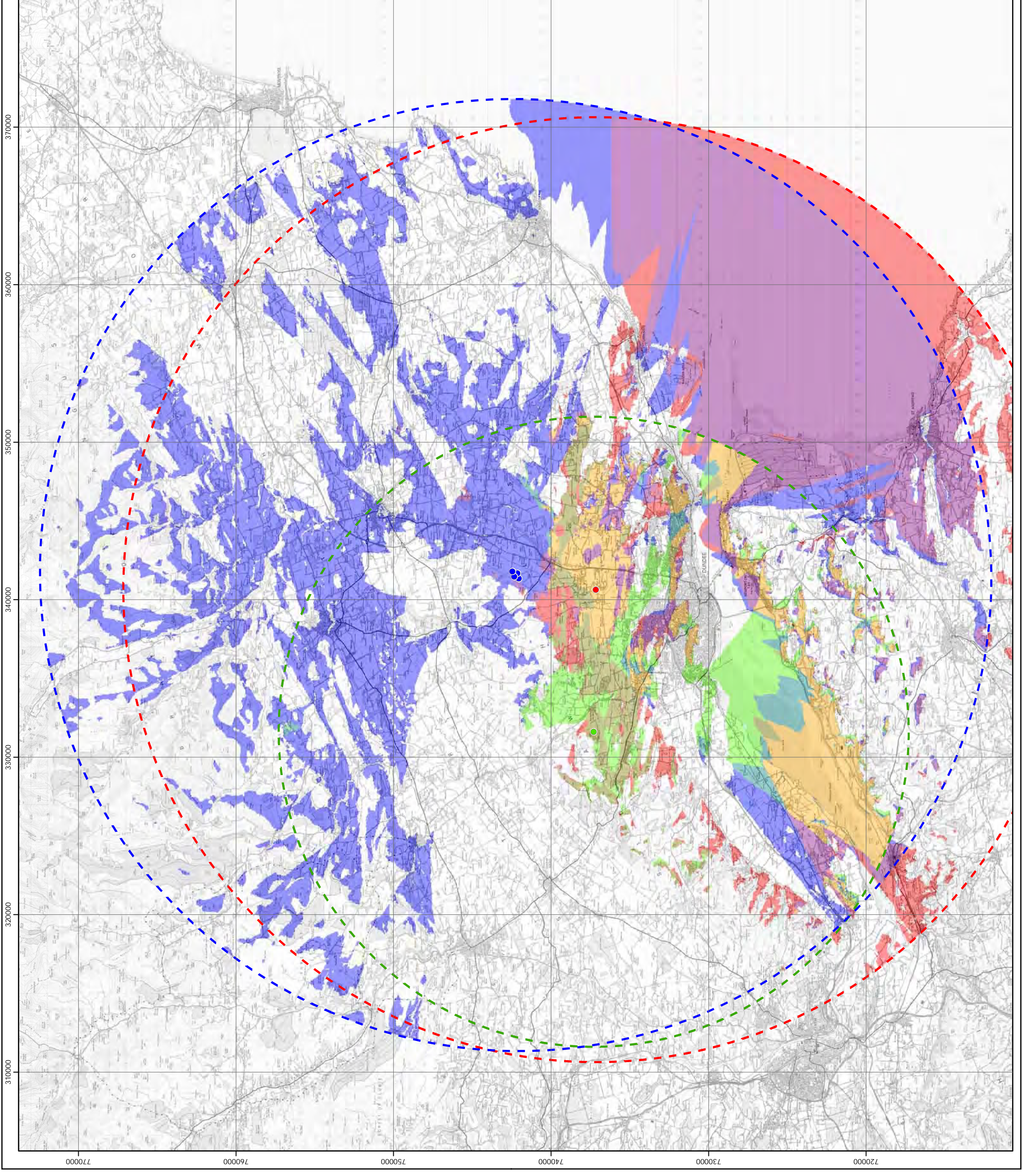
AC34



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04/03/2014 T102a
Drawn by: AA Checked by: TH Approved by: TG

4603/ZV/084a



Frawney Wind Farm

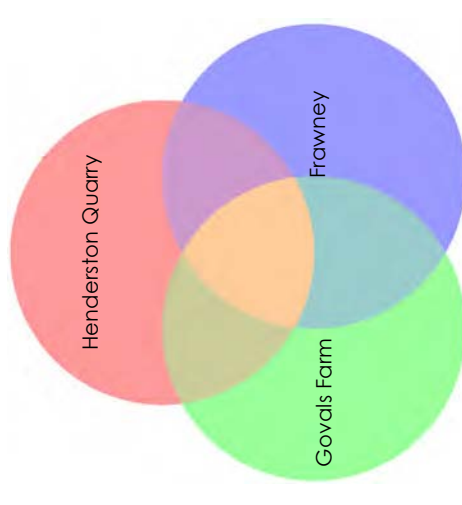
Polar Energy (Finlarg) Ltd

6-30d

Cumulative ZTV - Approved - Frawney
with Govals Farm and Henderston
Quarry

Key

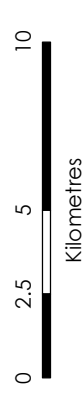
- Frawney turbine (92.5m)
- Frawney 30km turbine buffer
- Govals Farm turbine (87m)
- Govals Farm 30km turbine buffer
- Henderston Quarry turbine (66m)
- Henderston Quarry 20km turbine buffer



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.

Distance of ZTV calculations based on SNH guidelines
51 to 70 m tip - 20 km
71 to 85 m tip - 25 km
86 to 100 m tip - 30 km
101 m to tip and above - 35 km



Scale @ A3:
1:225,000

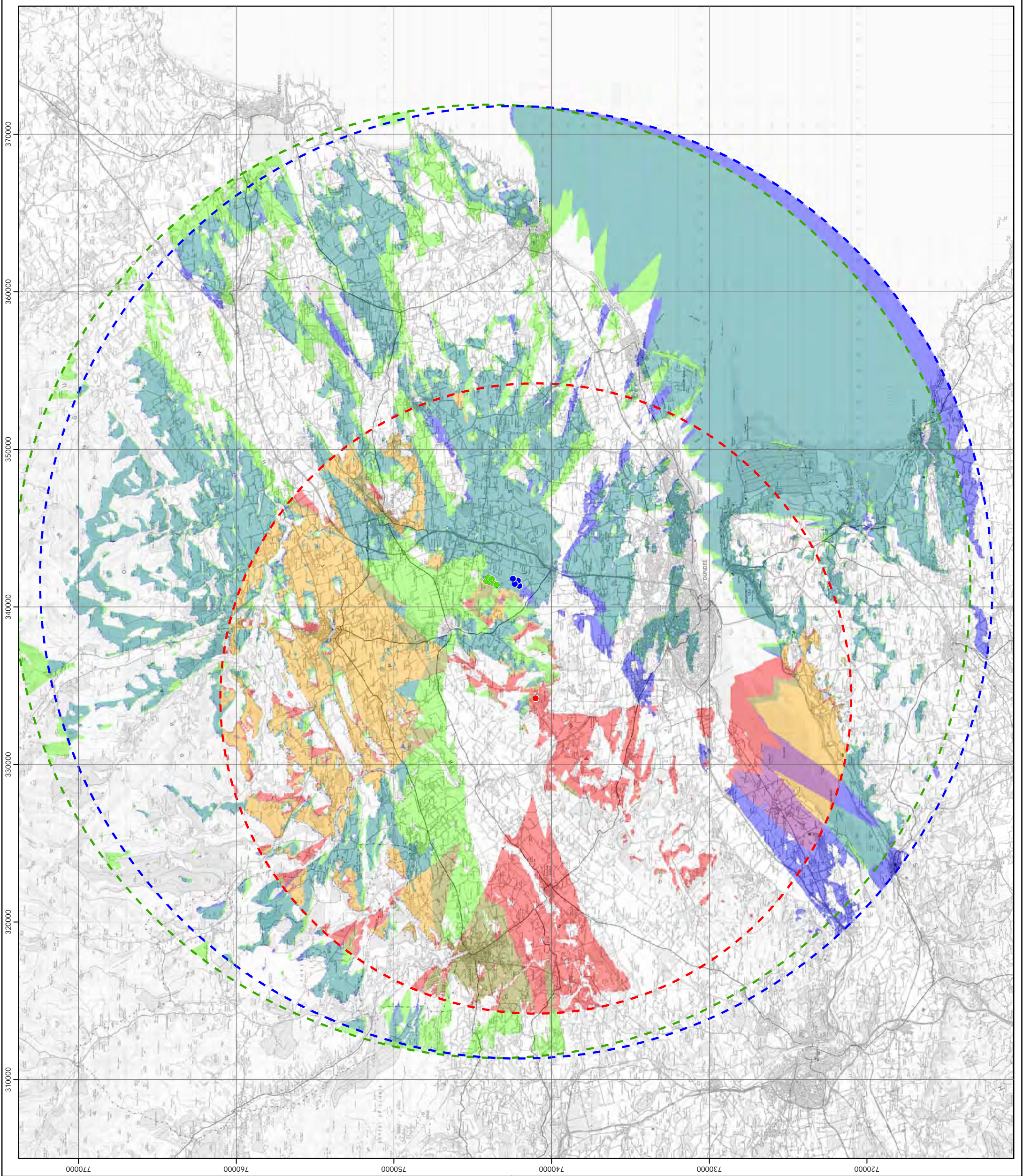


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04/03/2014 T102a 4603/ZV/084a
Drawn by: AA Checked by: TH Approved by: TG



Frawney Wind Farm

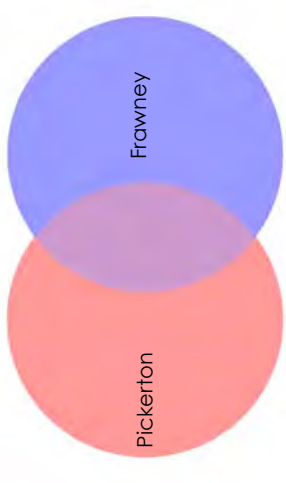
Polar Energy (Finlargo) Ltd

6-30e

Cumulative ZTV - Approved - Frawney
with Pickerton

Key

- Frawney turbine (92.5m)
- Frawney 30km turbine buffer
- Pickerton turbine (77m)
- Pickerton 25km turbine buffer



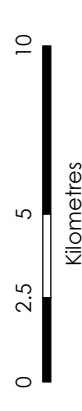
Generated using Ordnance Survey's Terrain50 dataset which does not take in account the screening effects of buildings or vegetation.

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

Distance of ZTV calculations based on SNH guidelines

- 51 to 70 m tip - 20 km
- 71 to 85 m tip - 25 km
- 86 to 100 m tip - 30 km
- 101 m to tip and above - 35 km

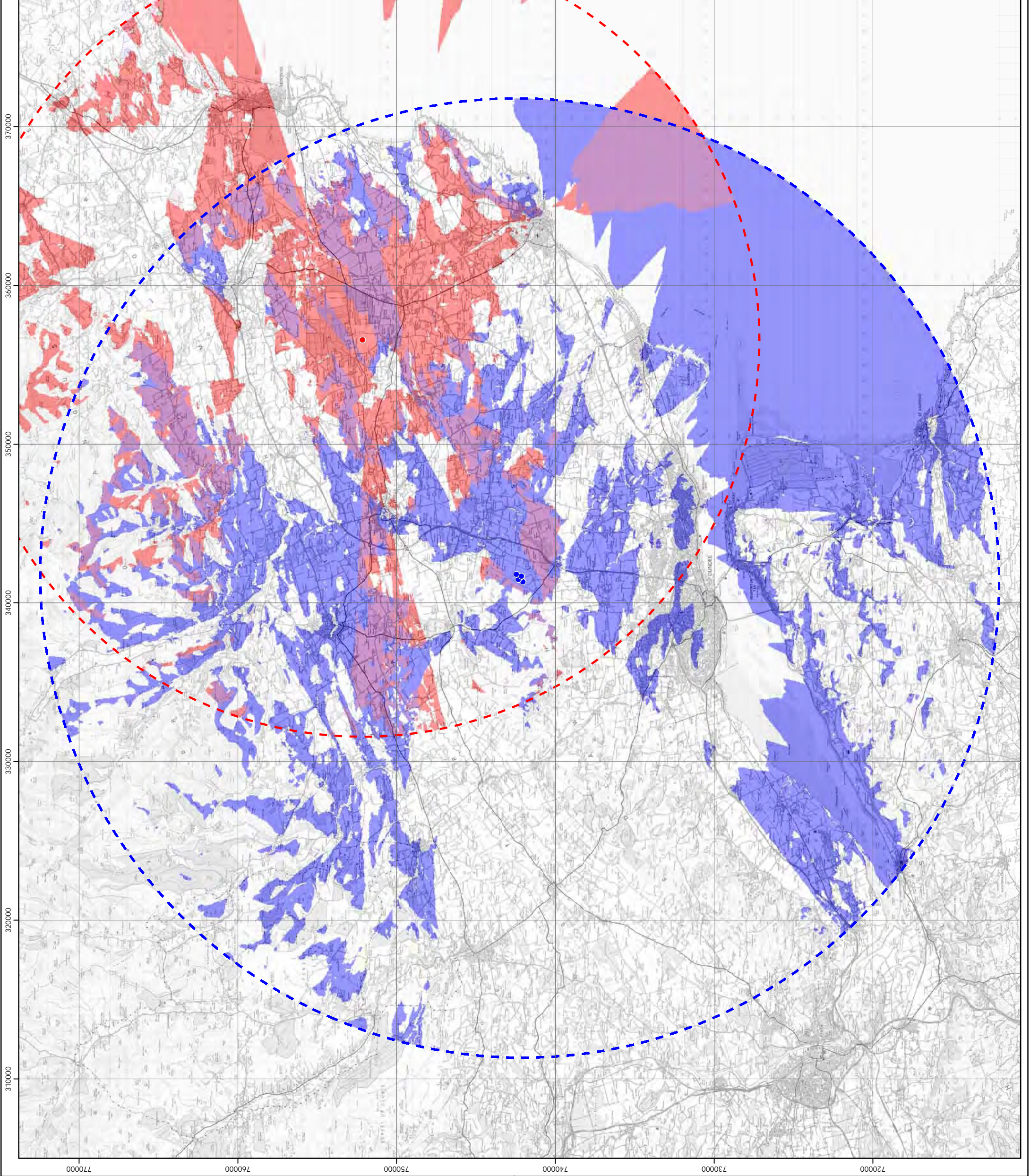
atmos
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Scale @ A3:
1:225,000



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Frawney Wind Farm

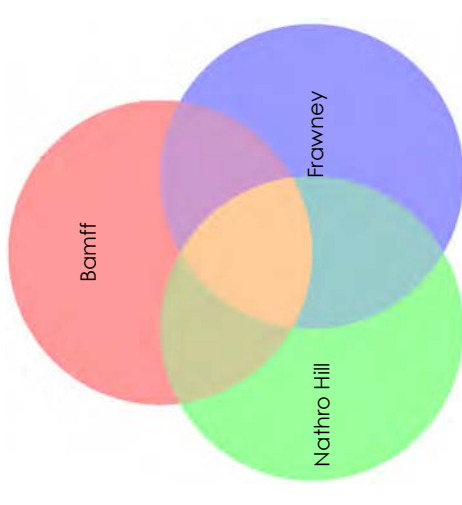
Polar Energy (Finlarg) Ltd

6-31a

Cumulative ZTV - In planning - Frawney
with Nathro Hill and Bamff

Key

- Frawney turbine (92.5m)
- Frawney 30km turbine buffer
- Nathro Hill turbine (135m)
- Nathro Hill 35km turbine buffer
- Bamff turbine (111m)
- Bamff 35km turbine buffer

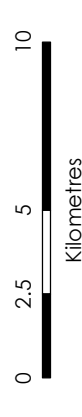


Generated using Ordnance Survey's Terrain50 dataset which does not take in to account the screening effects of buildings or vegetation.

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

Distance of ZTV calculations based on SNH guidelines

- 51 to 70 m tip - 20 km
- 71 to 85 m tip - 25 km
- 86 to 100 m tip - 30 km
- 101 m to tip and above - 35 km



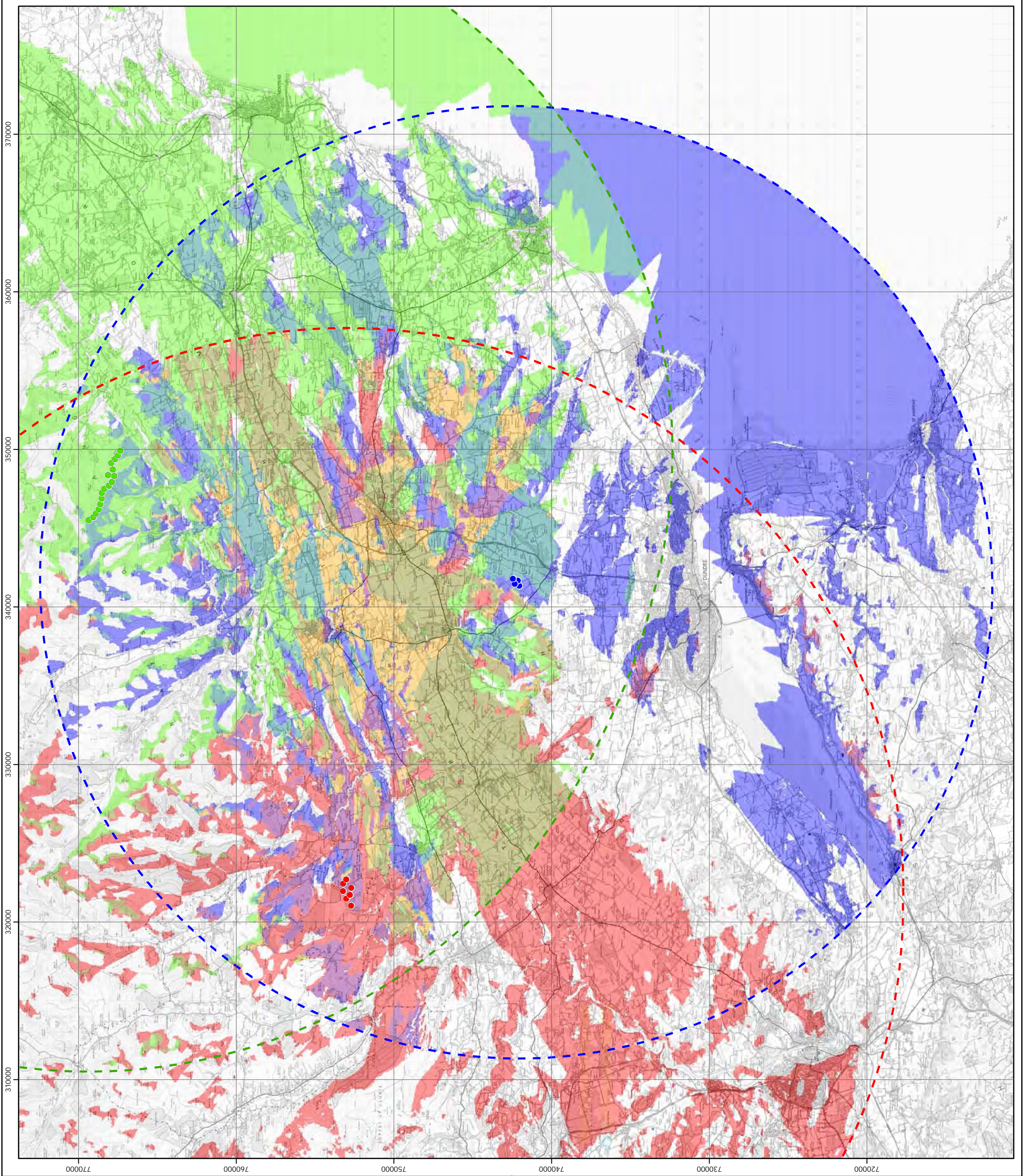
Scale @ A3:
1:225,000



AC34



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Frawney Wind Farm

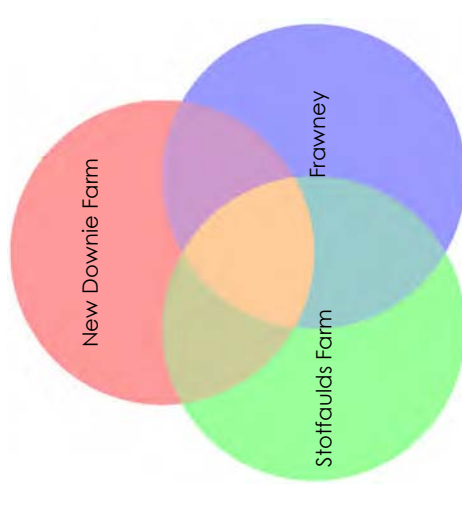
Polar Energy (Finlarg) Ltd

6-31b

Cumulative ZTV - In planning - Frawney with Stoffaulds Farm and New Downie Farm

Key

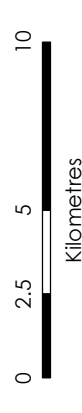
- Frawney turbine (92.5m)
- Frawney 30km turbine buffer
- Stoffaulds Farm turbine (77m)
- Stoffaulds Farm 25km turbine buffer
- New Downie Farm turbine (54m)
- New Downie Farm 20km turbine buffer



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.

Distance of ZTV calculations based on SNH guidelines
51 to 70 m tip - 20 km
71 to 85 m tip - 25 km
86 to 100 m tip - 30 km
101 m to tip and above - 35 km

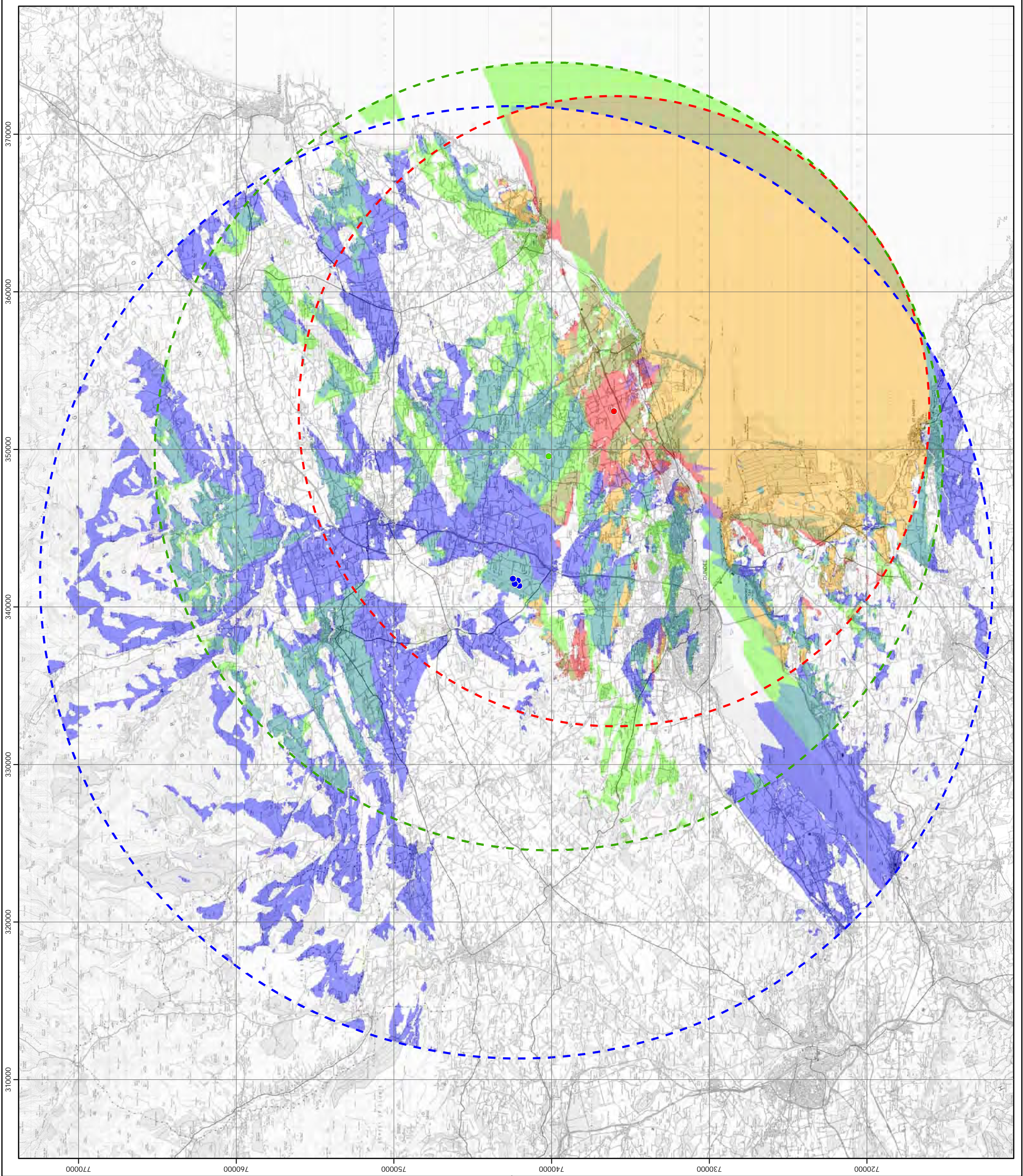


Scale @ A3:
1:225,000

AC34



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Frawney Wind Farm

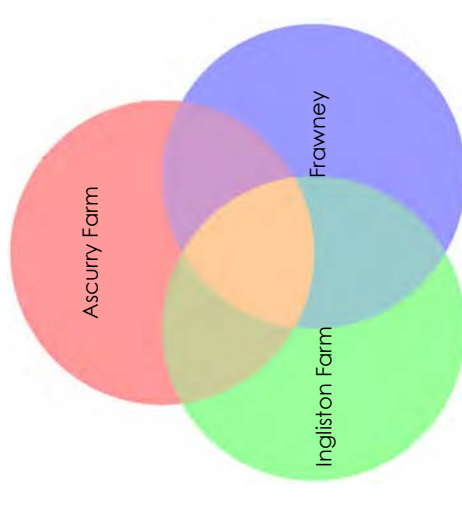
Polar Energy (Finlarg) Ltd

6-31c

Cumulative ZTV - In planning - Frawney with Ingliston Farm and Ascurry Farm

Key

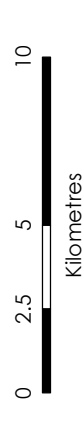
- Frawney turbine (92.5m)
- Frawney 30km turbine buffer
- Ingliston Farm turbine (132m)
- Ingliston Farm 35km turbine buffer
- Ascurry Farm turbine (77m)
- Ascurry Farm 25km turbine buffer



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.

Distance of ZTV calculations based on SNH guidelines
51 to 70 m tip - 20 km
71 to 85 m tip - 25 km
86 to 100 m tip - 30 km
101 m to tip and above - 35 km

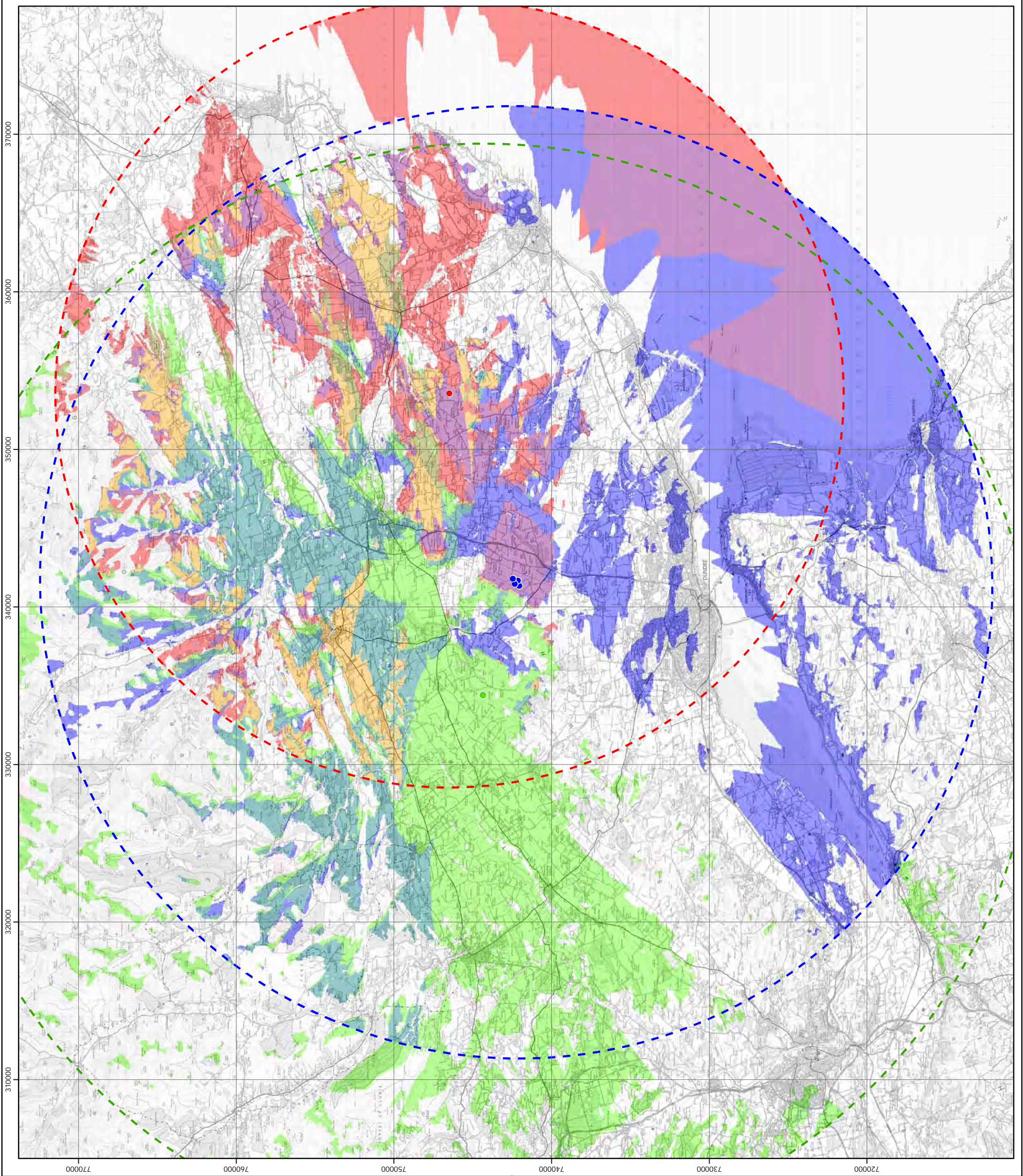


Scale @ A3:
1:225,000

AC34



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Frawney Wind Farm

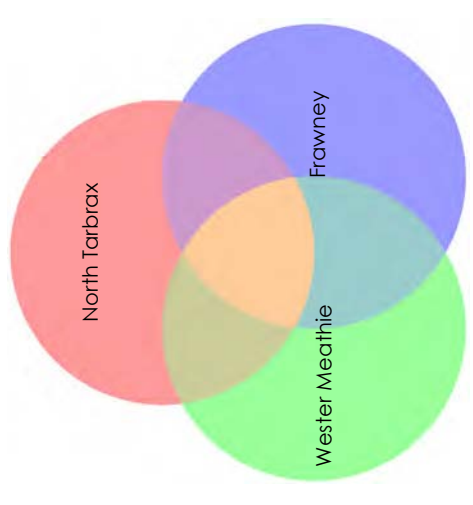
Polar Energy (Finlarg) Ltd

6-32

Cumulative ZTV - Operational - Frawney with Wester Meathie and North Tarbrax

Key

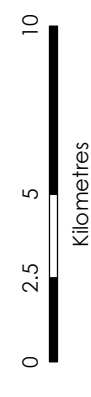
- Frawney turbine (92.5m)
- Frawney 30km turbine buffer
- Wester Meathie turbine (45.6m)
- Wester Meathie 15km turbine buffer
- North Tarbrax turbine (45m)
- North Tarbrax 15km turbine buffer



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.

Distance of ZTV calculations based on SNH guidelines
51 to 70 m tip - 20 km
71 to 85 m tip - 25 km
86 to 100 m tip - 30 km
101 m to tip and above - 35 km

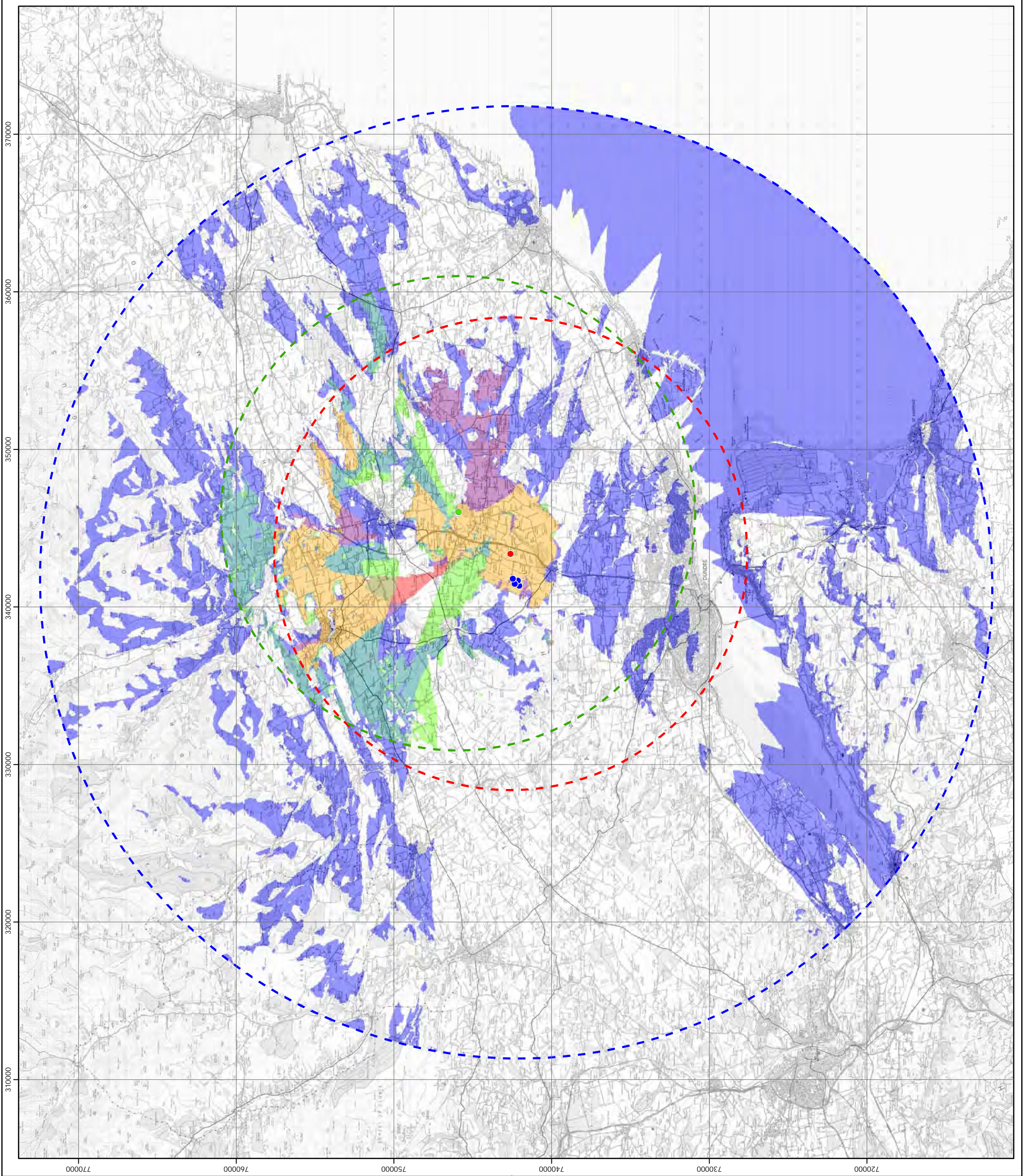


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Scale @ A3:
1:225,000

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Drawn by: AA Checked by: TH Approved by: TG



View A - 0°

Scotston Hill
Balkerback Farm
Tealing Airfield

Frawney
Govals Farm

Stotfoulds Farm



View B - 180°







**Frawney
Wind Farm**

**Polar Energy
(Finlargo) Ltd**

Viewpoint 10 - A90 north of Claverhouse, Dundee
Grid Reference: E841887, N735386
Elevation: 119m AOD
Height Above Ground: 2m
Horizontal Included Angle: 180°
Approximate Viewing Distance: 130mm

Cumulative Turbine Information

-  Frawney Turbine
-  Operational Turbine
-  Consented Turbine
-  Turbine at Appeal
-  Turbine in Planning



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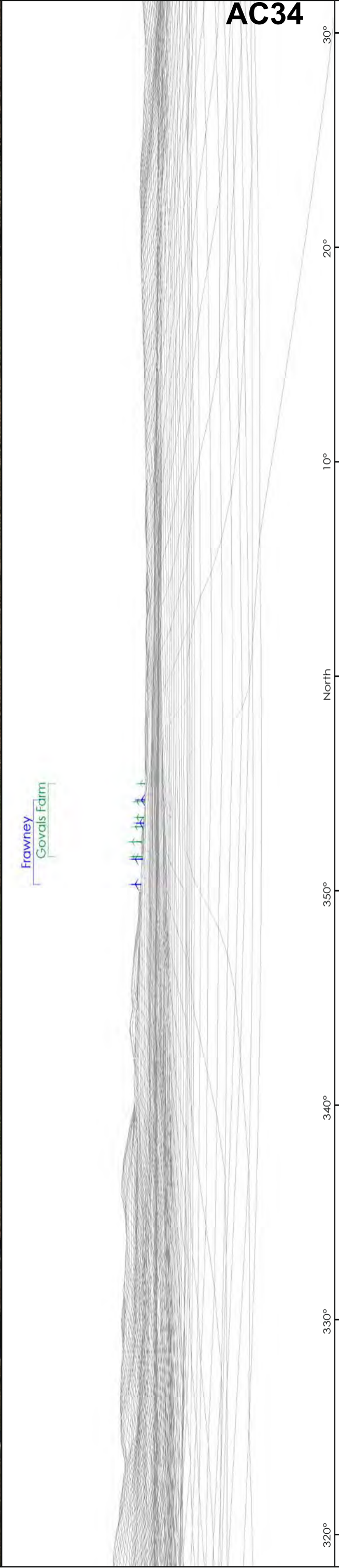
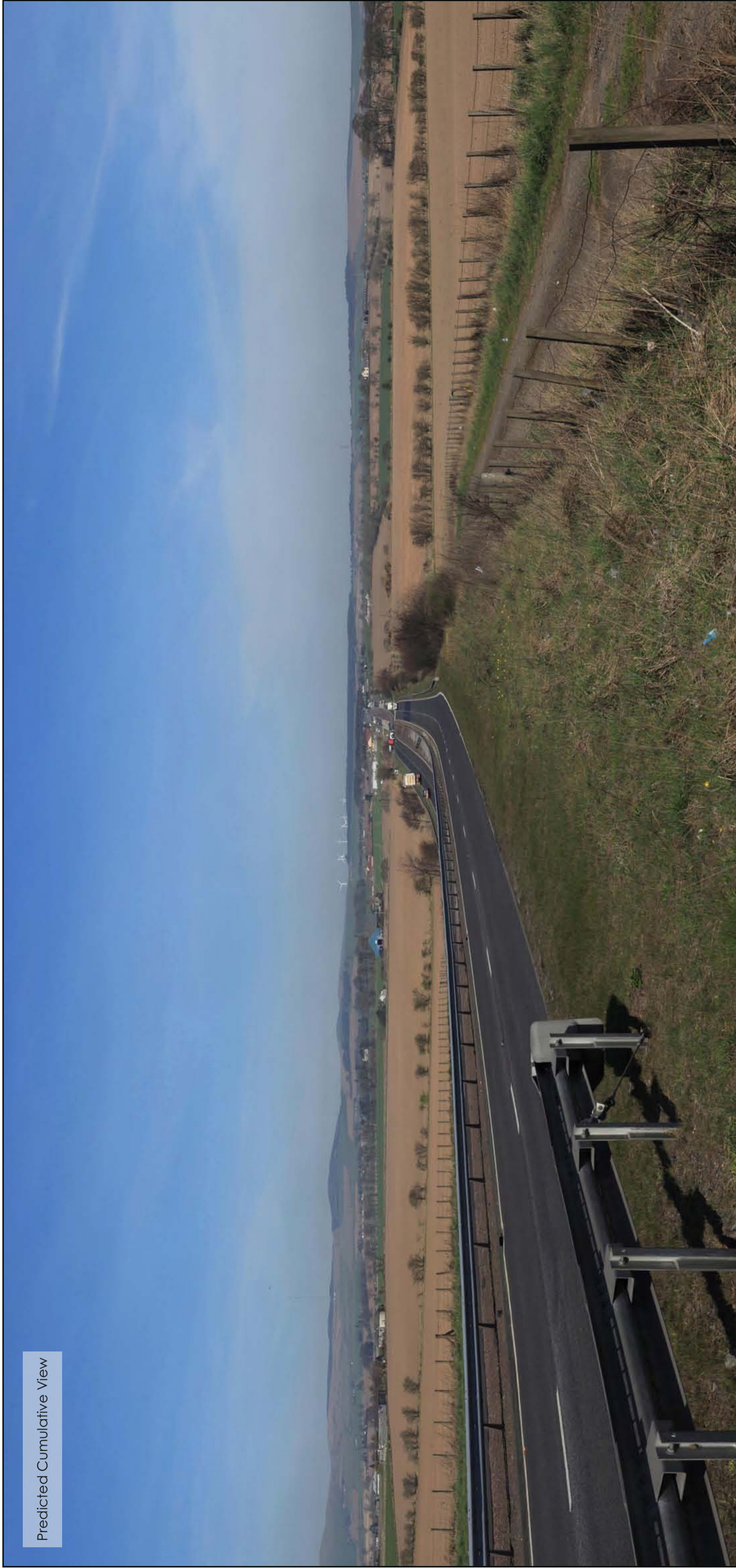
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Drawn by SL T102a
Checked by TP 20/03/2014
Approved by 4603 WF C037b

Curvature of the Earth has been allowed for. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation

Figure 6-34a

Predicted Cumulative View



AC34

320°	330°	340°	350°	North	10°	20°	30°
Polar Energy (Finlargo) Ltd		Frawney Wind Farm		Viewpoint 10: A90 North of Claverhouse, Dundee		Horizontal View Angle Approximate Viewing Distance	
				73° 315mm		Figure 6-34b	
atmos CONSULTING							
						Drawn by SL Checked by TP Approved by	
						TL 02a 11/03/2014 4:03 PM C0034b	

View A - 210°

ochclair Farm
Greenhilllock

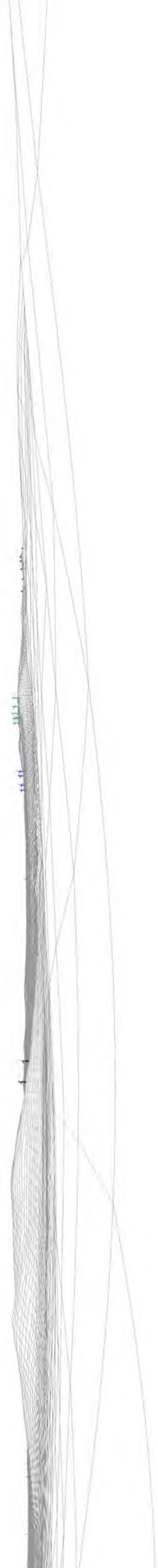
Wester Meathie

Frawney

Scoliston Hill
Henderson Quarry
Ark Hill

Govalls Farm

Nether Finlarg
Nether Finlarg Extension
North Tarbrax



View B - 30°

Lour Farm
North Mains of Cononsyth



Frawney
Wind Farm

**Polar Energy
(Finlarg) Ltd**

Viewpoint 11 - Balmashanner (Core path 297)

Grid Reference: E346041, N748539
 Elevation: 145m AOD
 Height Above Ground: 2m
 Horizontal Included Angle: 180°
 Approximate Viewing Distance: 130mm

Cumulative Turbine Information

-  Frawney Turbine
-  Operational Turbine
-  Consented Turbine
-  Turbine at Appeal
-  Turbine in Planning

Figure 6-35a

Curvature of the Earth has been allowed for. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation



Scale 1:100,000@ A3
 0km
 6km

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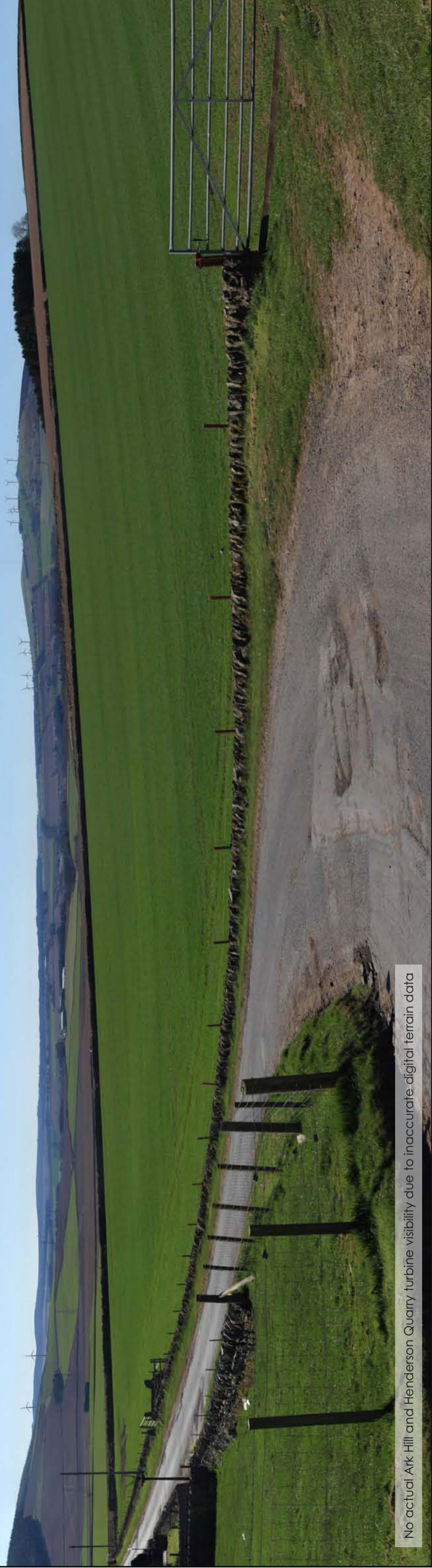


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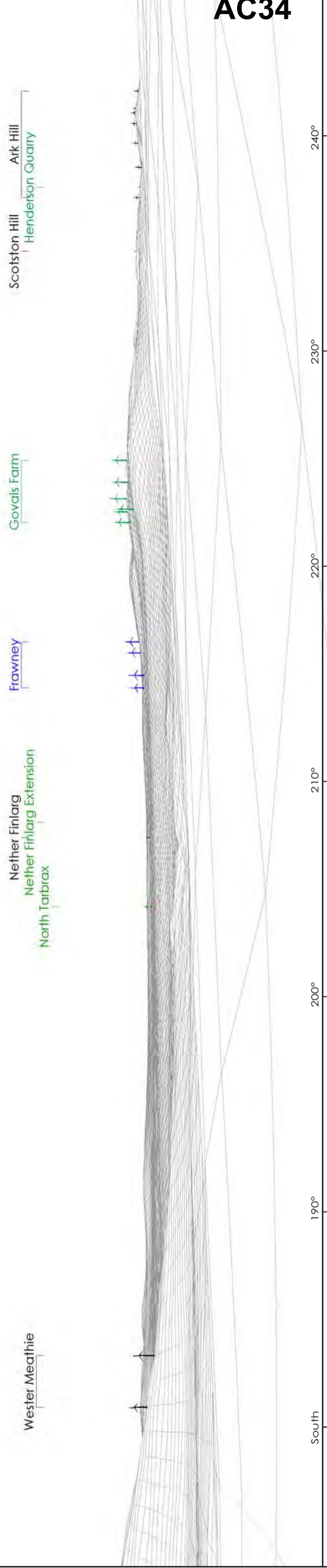
Drawn by SL
 Checked by TP
 Approved by 4603 WF C0388b

T102a
 20/03/2014

Predicted Cumulative View



No actual Ark Hill and Henderson Quarry turbine visibility due to inaccurate digital terrain data



South 190° 200° 210° 220° 230° 240°

	Polar Energy (Finlarg) Ltd	Frawney Wind Farm	Viewpoint 11: Balmashanner Hill	Horizontal View Angle 73° Approximate Viewing Distance 315mm	Figure 6-35b		Drawn by SL Checked by TP Approved by	TL 02a 11/03/2014 4:03 PM C035b
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AC34

View A - 85°

East Menus
Nathra
East Menus II

Dunswood

Ark Hill

Frawney

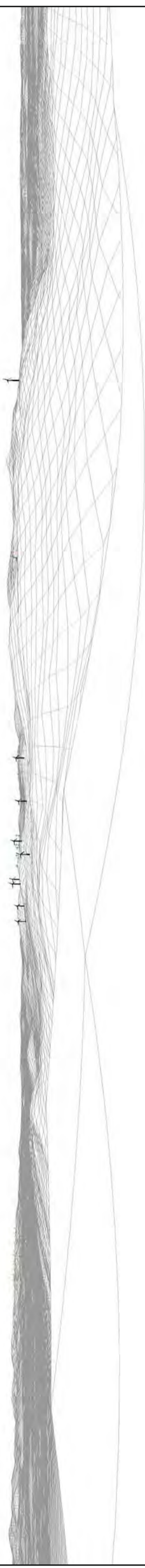
Colton of Pillekenny Farm
Lour Farm

Govals Farm

Henderson Quarry

Scotston Hill

North Leach



View B - 265°

West Main Farm

Wellton of Creuchies Drumderg
Barrif
Tullymurdoch



**Frawney
Wind Farm**

**Polar Energy
(Finlargo) Ltd**

Viewpoint 12 - Kinpurney Hill

Grid Reference
E332287, N741744

Elevation
342m AOD

Height Above Ground
2m

Horizontal Included Angle
180°

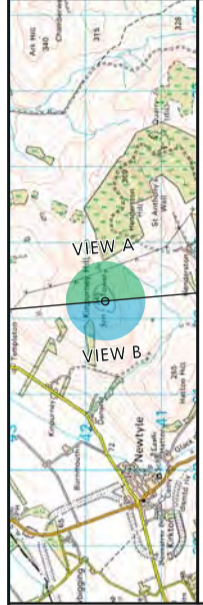
Approximate Viewing Distance
130mm

Cumulative Turbine Information

- Frawney Turbine
- Operational Turbine
- Consented Turbine
- Turbine at Appeal
- Turbine in Planning

Figure 6-36a

Curvature of the Earth has been allowed for. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation



Scale 1:100,000@ A3

0km
6km

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Approved by 4603 WF C039b

Predicted Cumulative View



Henderson Quarry

Frawney

Lour Farm

Ark Hill
Govals Farm



50°

60°

70°

80°

East

100°

110°

120°

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Polar Energy
(Finlång) Ltd

Frawney Wind Farm

Viewpoint 12: Kinpurney Hill

Horizontal View Angle 73°
Approximate Viewing Distance 31.5mm

Figure 6-36b



Drawn by SL
Checked by TP
Approved by

TL 02a
20/03/2014
4:03 PM C035b

AC34

View A - 60°



View B - 240°

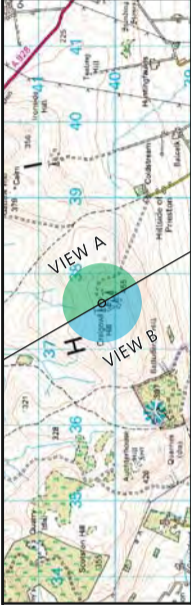


Frawney Wind Farm

Polar Energy (Finlurg) Ltd

Viewpoint 7 - Craigowl Hill	
Grid Reference	E337737N740049
Elevation	451m AOD
Height Above Ground	2m
Horizontal Included Angle	180°
Approximate Viewing Distance	130mm

Cumulative Turbine Information	
	Frawney Turbine
	Operational Turbine
	Consented Turbine
	Turbine at Appeal
	Turbine in Planning



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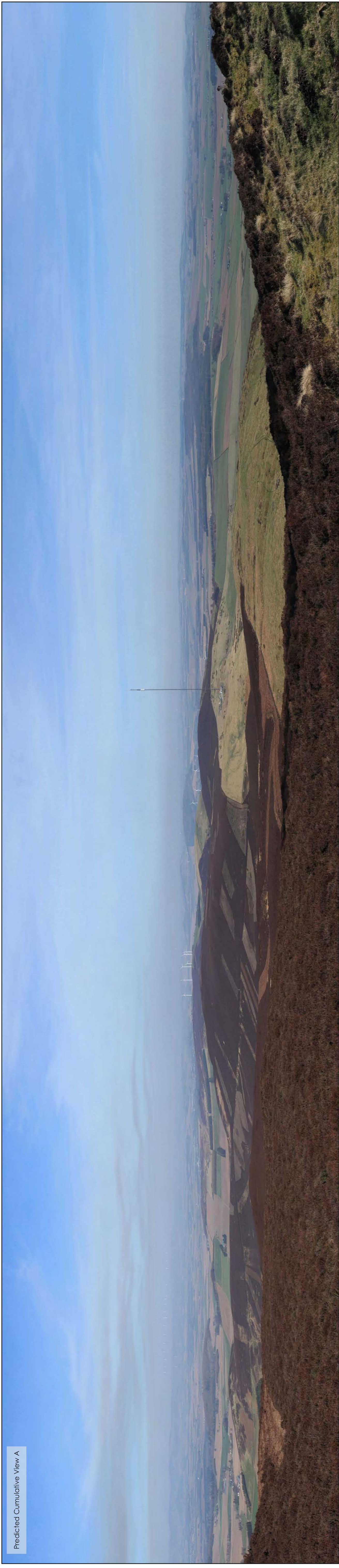
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Drawn by SL T102a
Checked by TP 20/03/2014
Approved by 4603 WF C040b

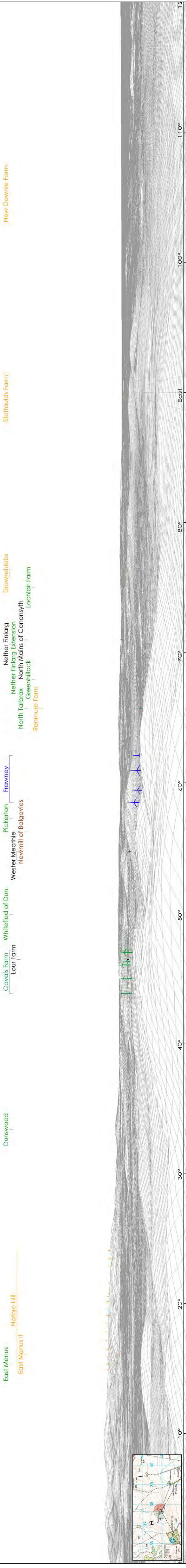
Figure 6-37a

Curvature of the Earth has been allowed for. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation

Predicted Cumulative View A



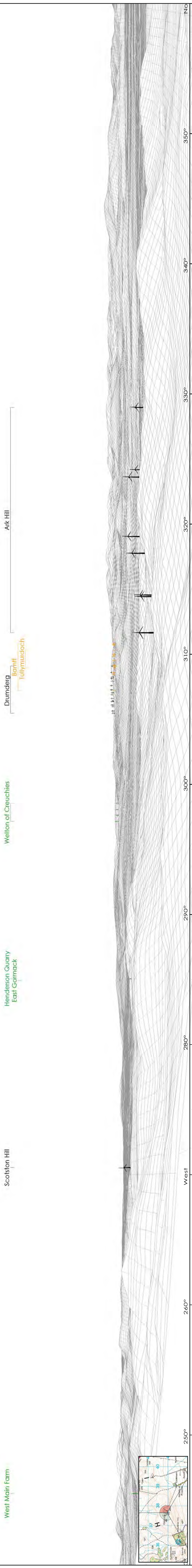
- East Menus
- East Menus II
- Nathro Hill
- Dunswood
- Govals Farm
- Whitfield of Dun
- Lour Farm
- Wester Meathie
- Newmill of Balgavies
- Pickerton
- Frawney
- Nether Finlarg
- Nether Finlarg Extension
- North Taibrax
- North Mains of Cononsyth
- Greenhillock
- Lochclair Farm
- Remmuire Farm
- Stairfoulds Farm
- New Downhie Farm



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Predicted Cumulative View B



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	Polar Energy (Finglary) Ltd	Frawney Wind Farm	Viewpoint 7: Craigowil Hill	Horizontal View Angle Approximate Viewing Distance 382mm	Figure 6-37c	 Drawn By: St Checked By: JP Approved By:	100a 20/03/2014 4:03 PM C041b
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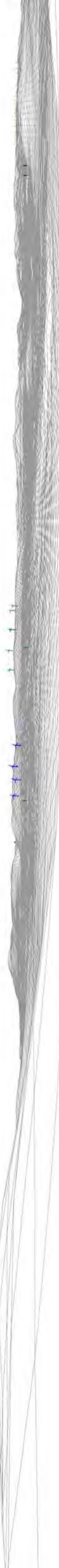
View A - 285°

West Main Farm

Ark Hill
Frawney
Nether Finlarg
Nether Finlarg Extension

Govals Farm
North Tarbrax

Wester Meathie
East Menus
East Menus II
Nathro



View B - 105°

Cotton of Pirkennedy Farm

Newmill of Balgavies

Stollfoulds Farm



**Frawney
Wind Farm**

**Polar Energy
(Finlarg) Ltd**

Viewpoint 9 - Carrot Hill
Grid Reference
Elevation
Height Above Ground
Horizontal Included Angle
Approximate Viewing Distance

E346372N740827
215m AOD
2m
180°
130mm

Cumulative Turbine Information

- Frawney Turbine
- Operational Turbine
- Consented Turbine
- Turbine at Appeal
- Turbine in Planning

Curvature of the Earth has been allowed for. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation

Figure 6-38a



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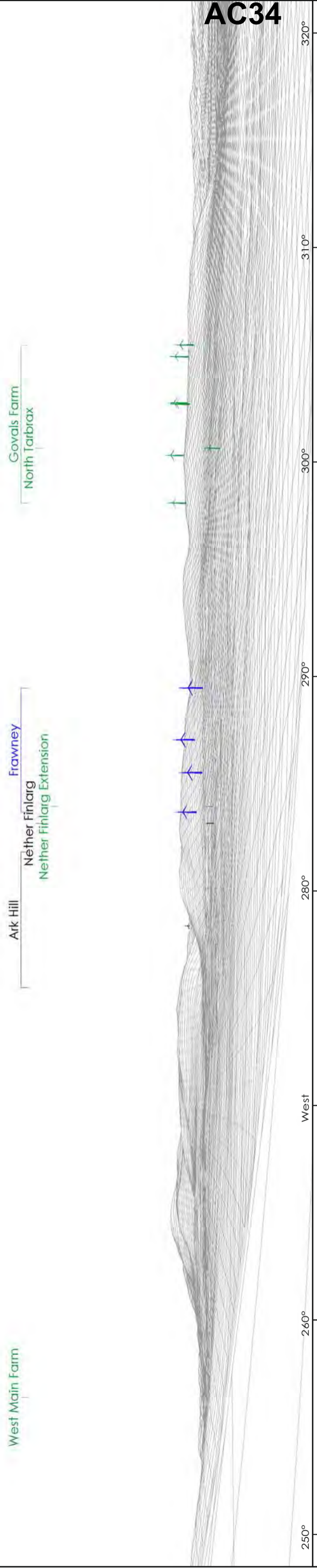
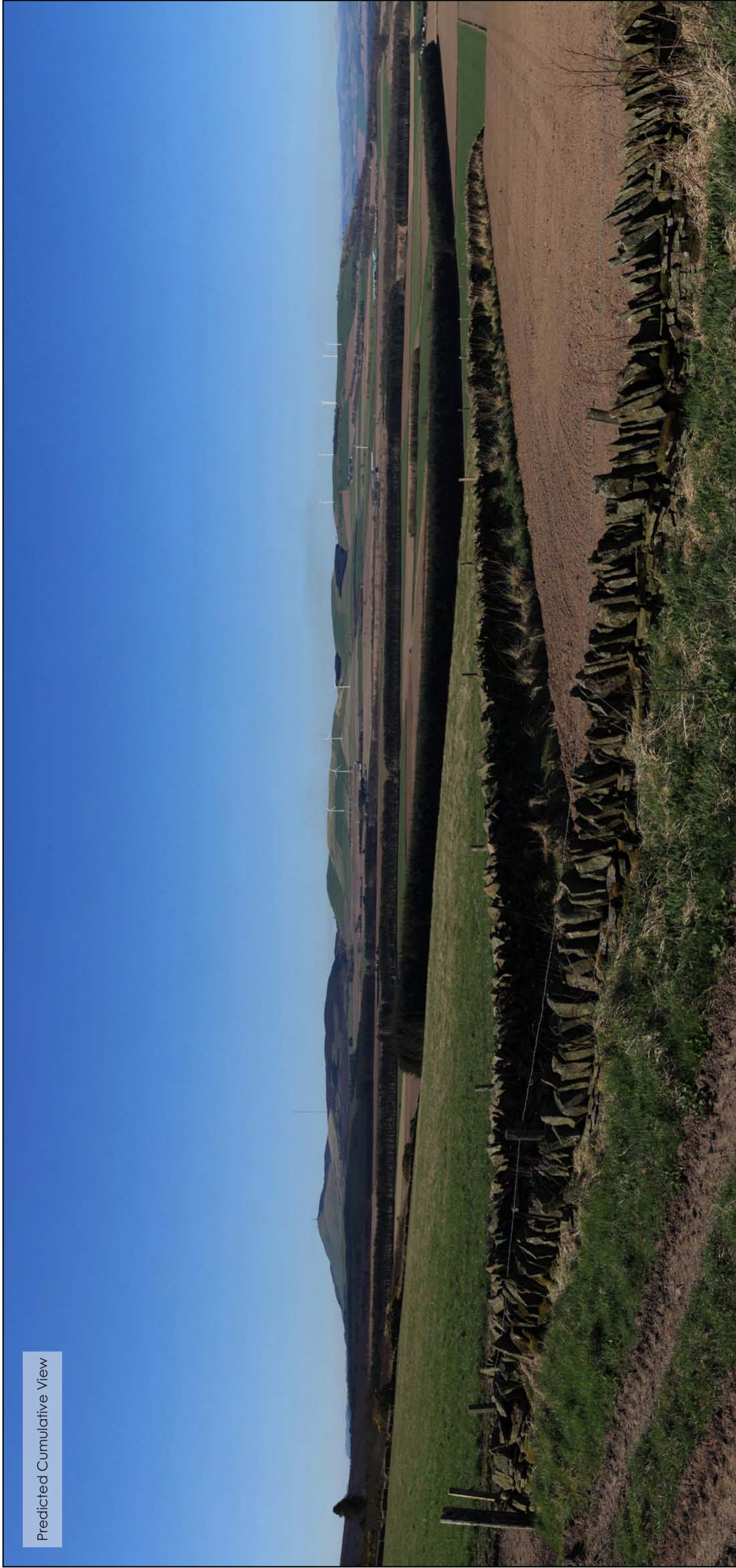


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Drawn by SL
Checked by TP
Approved by 4603 WF C040b

T102a
20/03/2014

Predicted Cumulative View



AC34

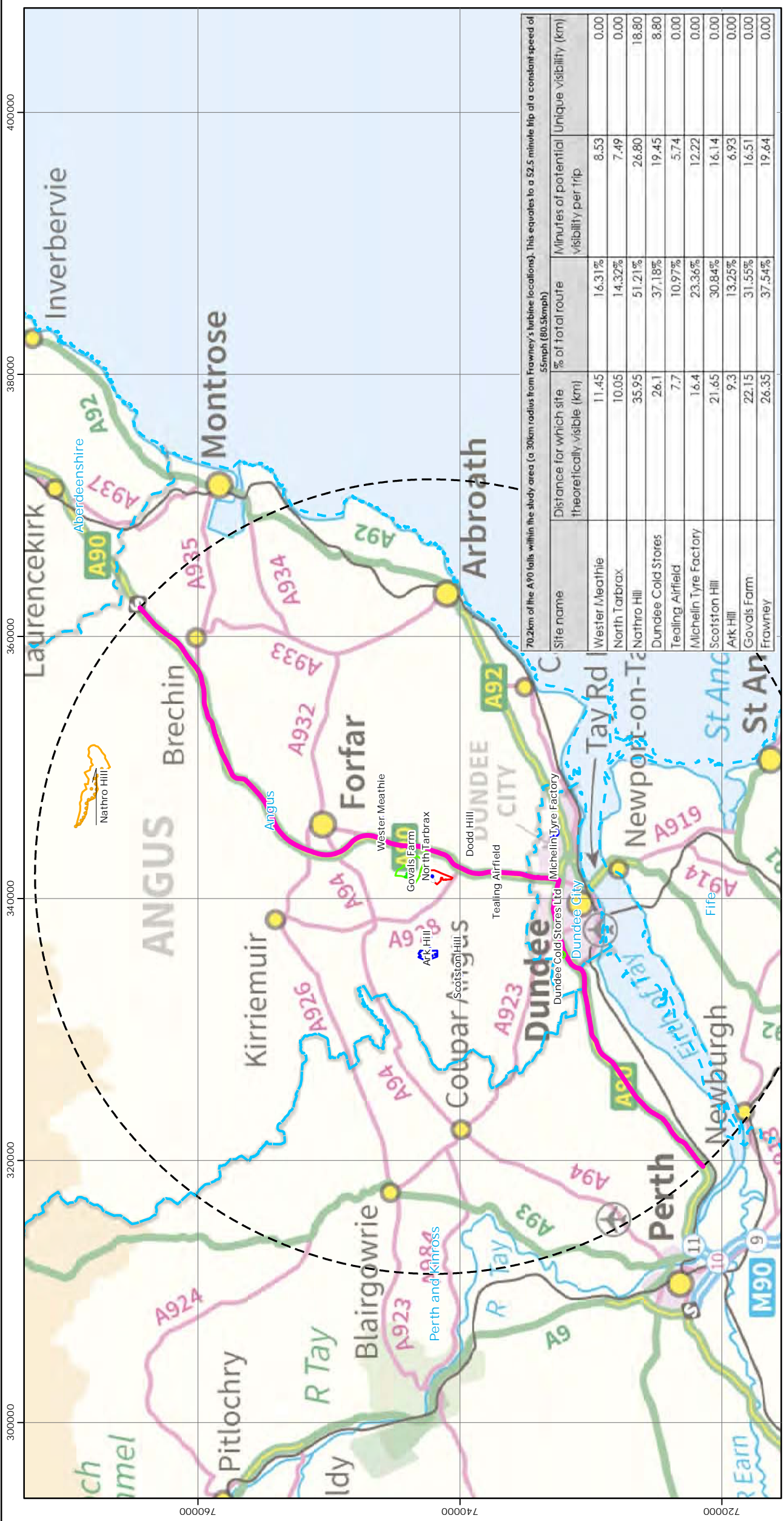
	Polar Energy (Finlarg) Ltd	Frawney Wind Farm	Viewpoint 9: Carrot Hill	Horizontal View Angle 73° Approximate Viewing Distance 315mm	Figure 6-38b		Drawn by SL Checked by TP Approved by	TL 02a 20/03/2014 4:03 PM C043b
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Frawney Wind Farm

Polar Energy (Finlarg) Ltd

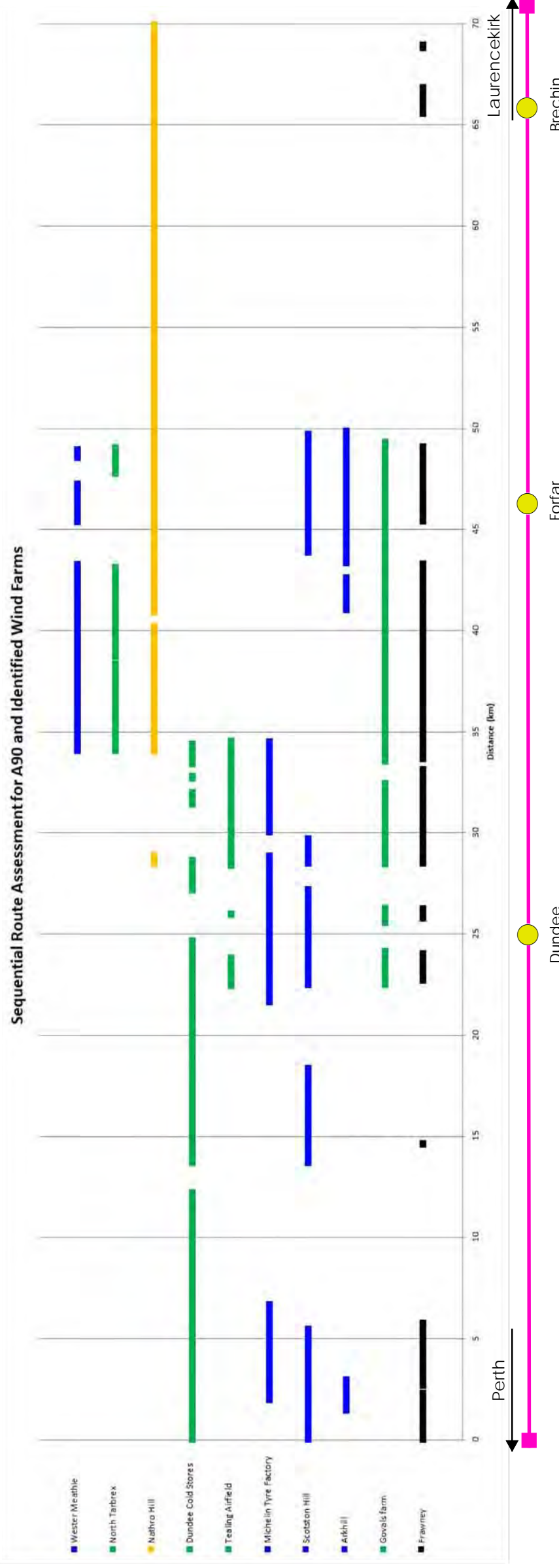
Figure 6-39
Sequential Route Assessment
For A90

- Key**
- Site boundary
 - Proposed Frawney turbines
 - 30km turbine buffer
 - Section of A90 included in visibility assessment (approx 70.2km)
 - Council boundary
 - Cumulative Wind Farms
 - Wind farm in planning
 - Approved wind farm
 - Operational wind farm
 - Cumulative Turbines
 - Turbine in planning
 - Approved turbine
 - Operational turbine



70.2km of the A90 falls within the study area (a 30km radius from Frawney's turbine locations). This equates to a 52.5 minute trip at a constant speed of 55mph (80.5kmph)

Site name	Distance for which site theoretically visible (km)	% of total route	Minutes of potential visibility per trip	Unique visibility (km)
Wester Meathie	11.45	16.31%	8.53	0.00
North Tarbrax	10.05	14.32%	7.49	0.00
Nathro Hill	35.95	51.21%	26.80	18.80
Dundee Cold Stores	26.1	37.18%	19.45	8.80
Tealing Airfield	7.7	10.97%	5.74	0.00
Michelin Tyre Factory	16.4	23.36%	12.22	0.00
Scotston Hill	21.65	30.84%	16.14	0.00
Ark Hill	9.3	13.25%	6.93	0.00
Gova's Farm	22.15	31.55%	16.51	0.00
Frawney	26.35	37.54%	19.64	0.00



AC34

Scale @ A3:
1:350,000

Kilometres
0 5 10 20

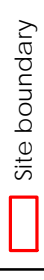
atmos
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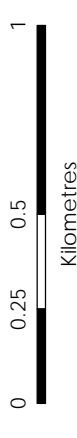
05/03/2014 TL02a 4603/LS/060C
Drawn by: AA Checked by: TH Approved by: TG

Figure 6-40
Residential Properties within
2km of Proposed Development

Key



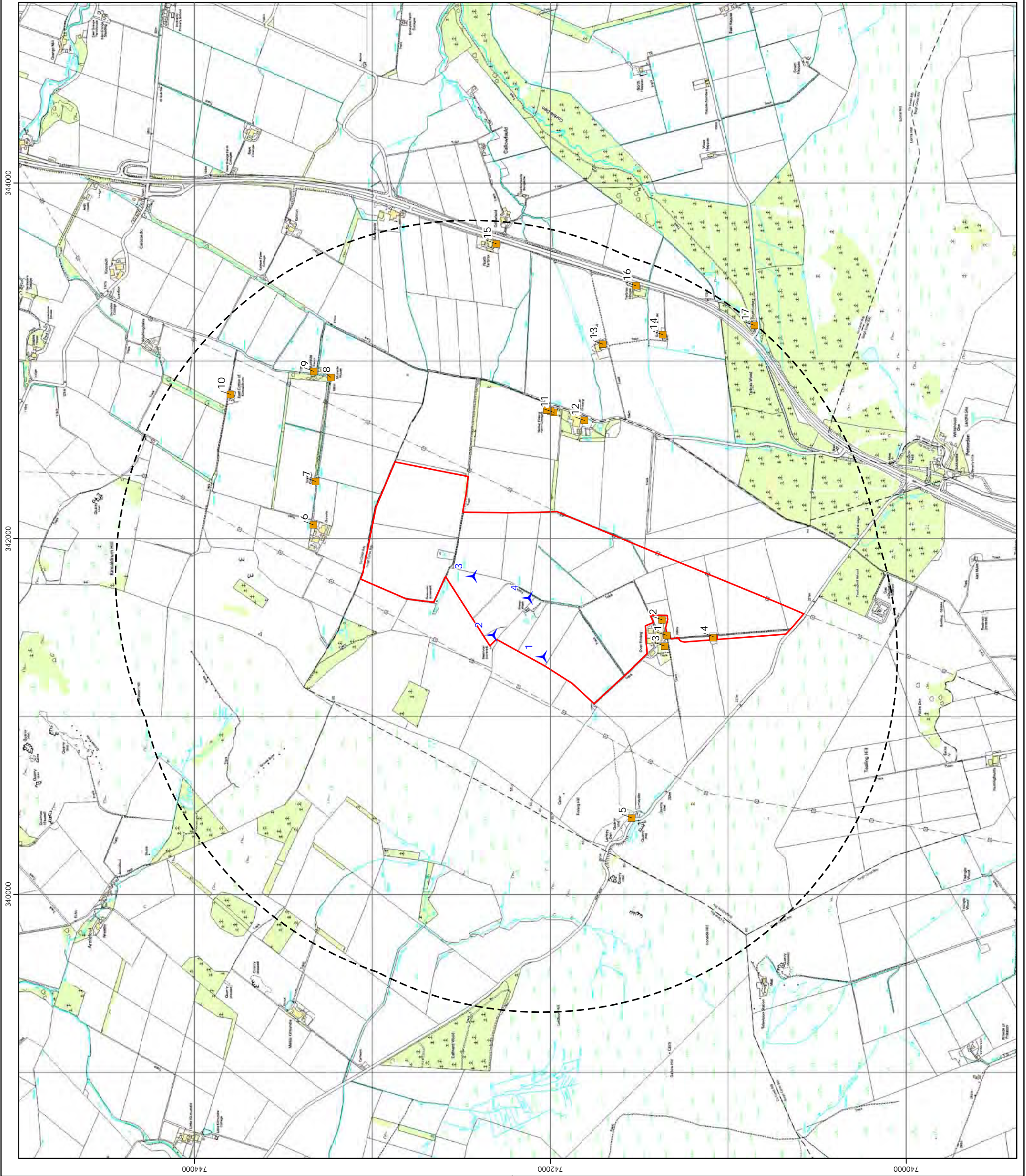
- 1 - Over Finlarg, Farm bungalow
- 2 - Over Finlarg, Old farmhouse
- 3 - Over Finlarg, New farmhouse
- 4 - Over Finlarg, Farm cottages 1 & 2
- 5 - Lumleyden
- 6 - Govals farm
- 7 - Govals cottage
- 8 - Muirside cottage
- 9 - Muirside farm
- 10 - East Cotton of Kincaldrum
- 11 - Nether Finlarg farm cottages 1 - 4
- 12 - Nether Finlarg farm
- 13 - West Tarbrax farmhouse
- 14 - South Tarbrax farmhouse
- 15 - North Tarbrax farmhouse
- 16 - Tarbrax house
- 17 - Inverarity, South lodge



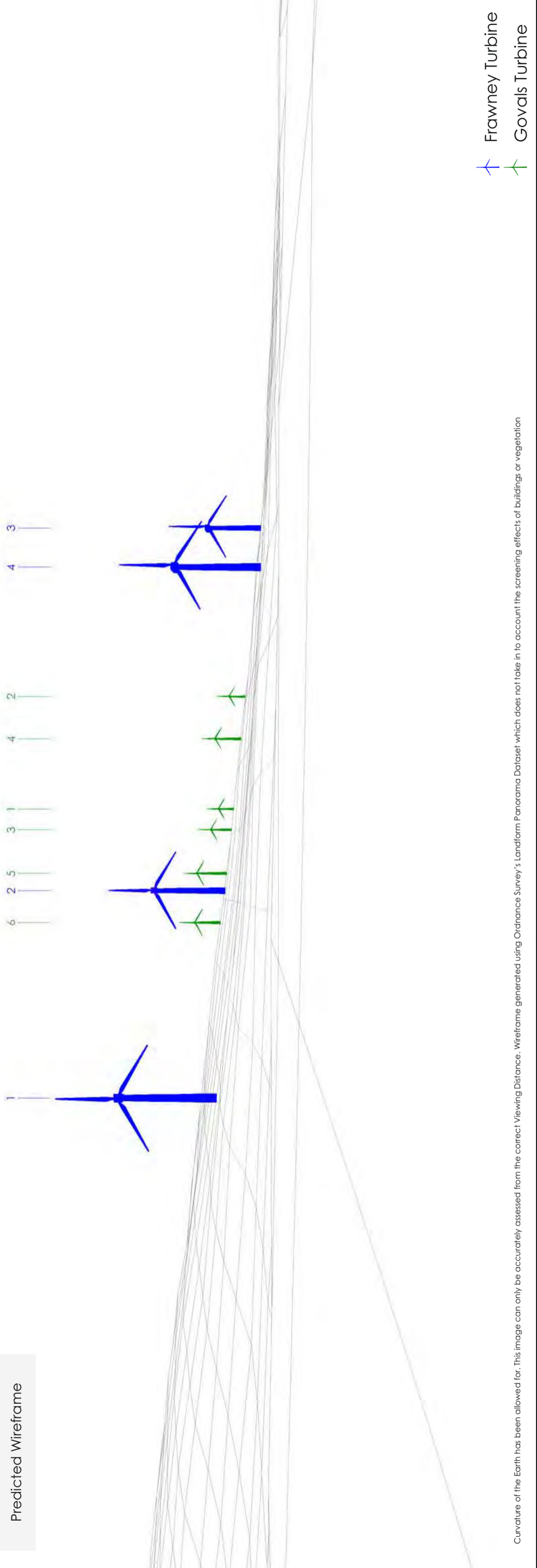
Scale @ A3:
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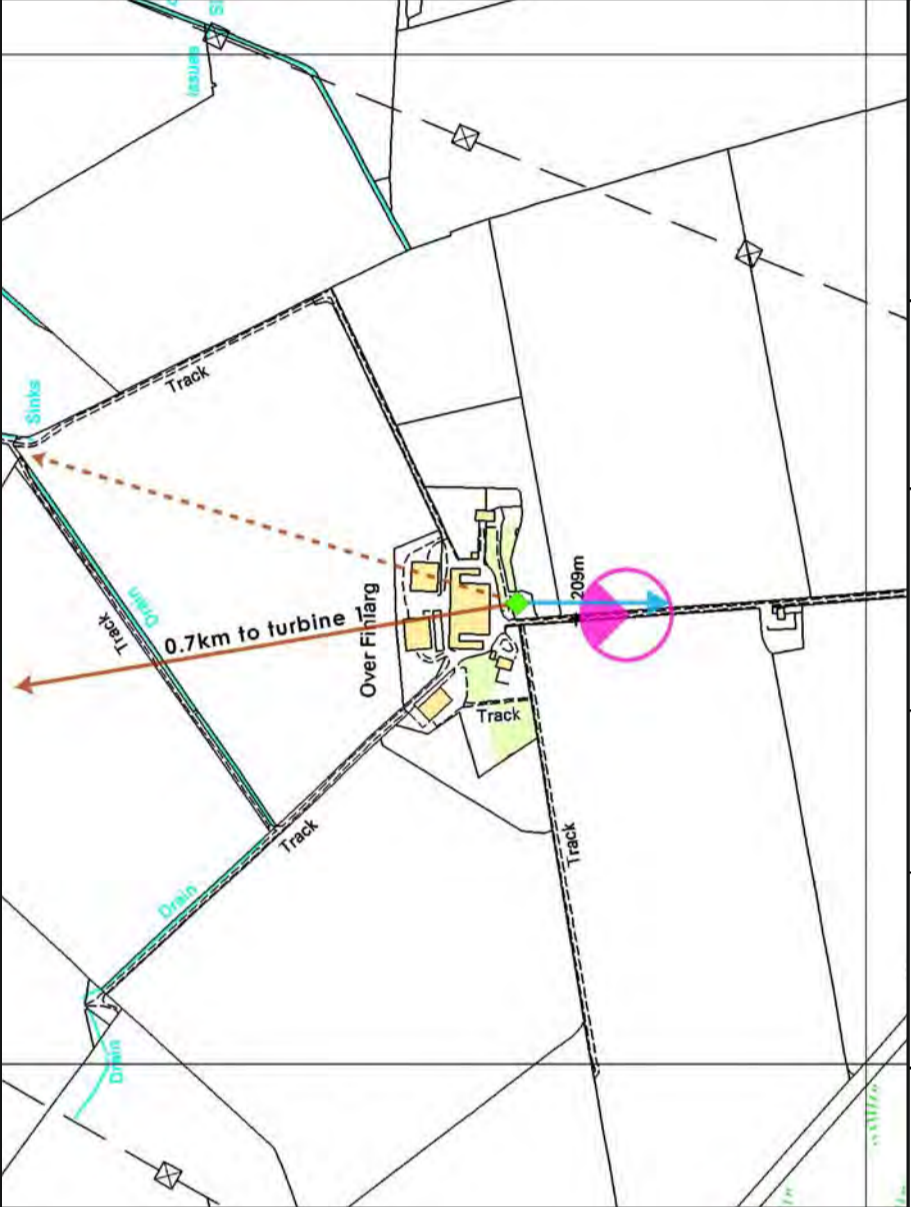


Predicted Wireframe








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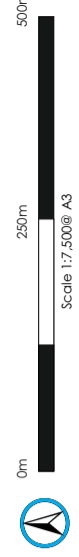
-  Frawney Turbine
-  Govals Turbine



Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)

AC34



Frawney Wind Farm	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine	Distance (m)	Centre Bearing	Direction Nearest Turbine
	Approximate Viewing Distance : 315mm @ A3		1	Over Finlarg, Farm Bungalow				
Figure 6-41			Easting	341456				
			Northing	741344				

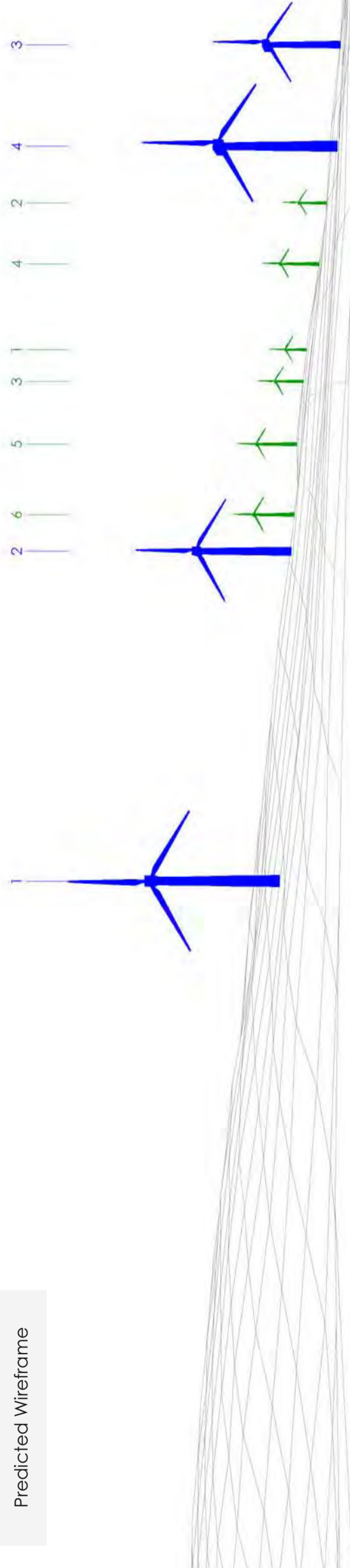
atmos
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Checked by AJ
Approved by TG

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4604 WF C046a

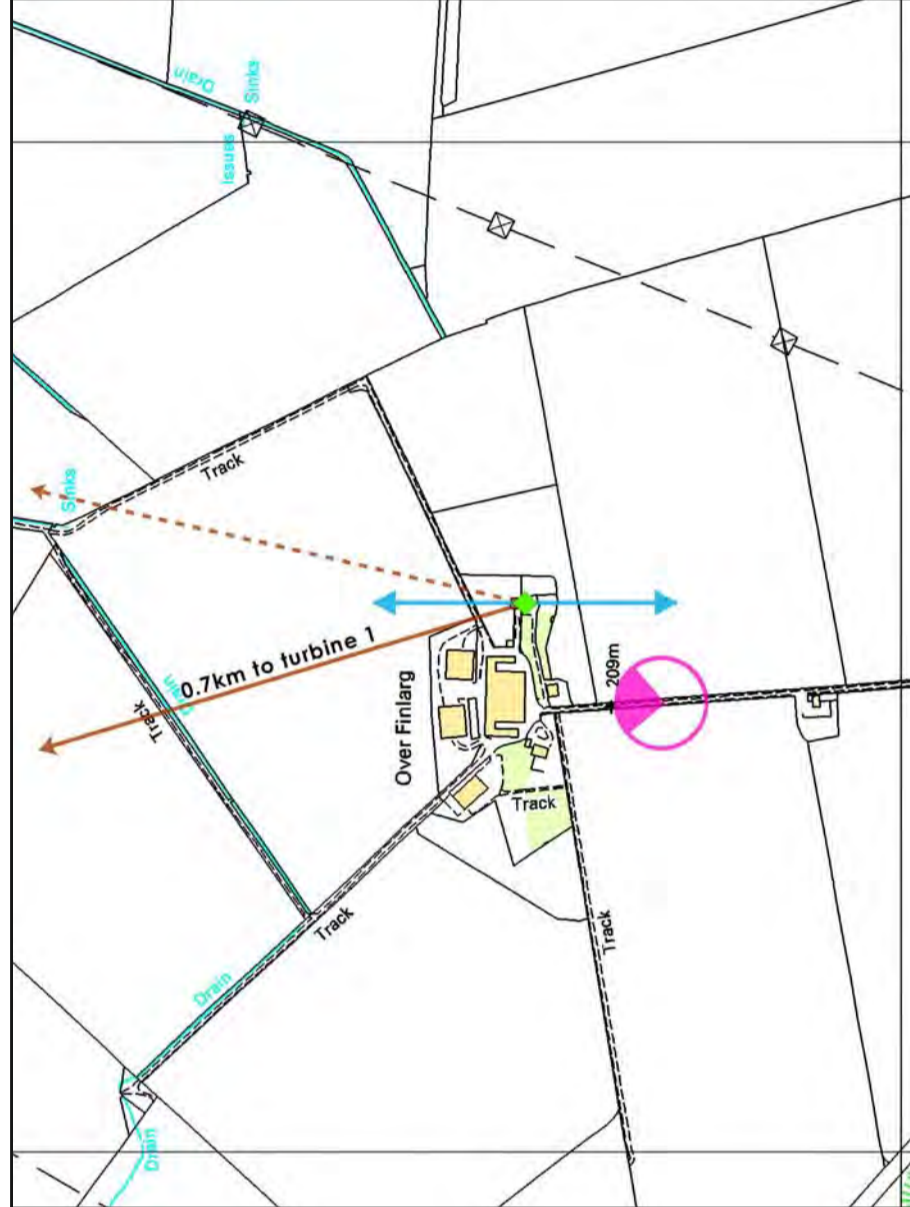


Predicted Wireframe



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- Frawney Turbine
- Govals Turbine



Map Key

- Wireline / Photomontage Location
- Photograph Location and Direction
- Direction to Nearest Turbine
- Direction to Outermost Turbines
- Principle Property Orientation(s)

Frawney Wind Farm	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	Approximate Viewing Distance : 315mm @ A3		2	Over Finlarg, Old Farmhouse					
			Easting	341543					
			Northing	741371					

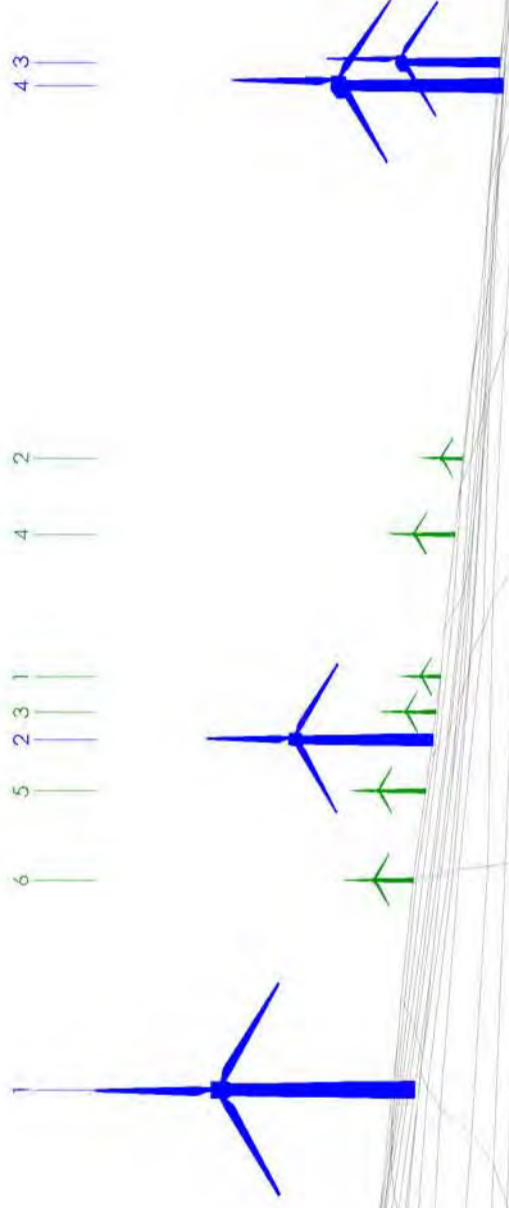


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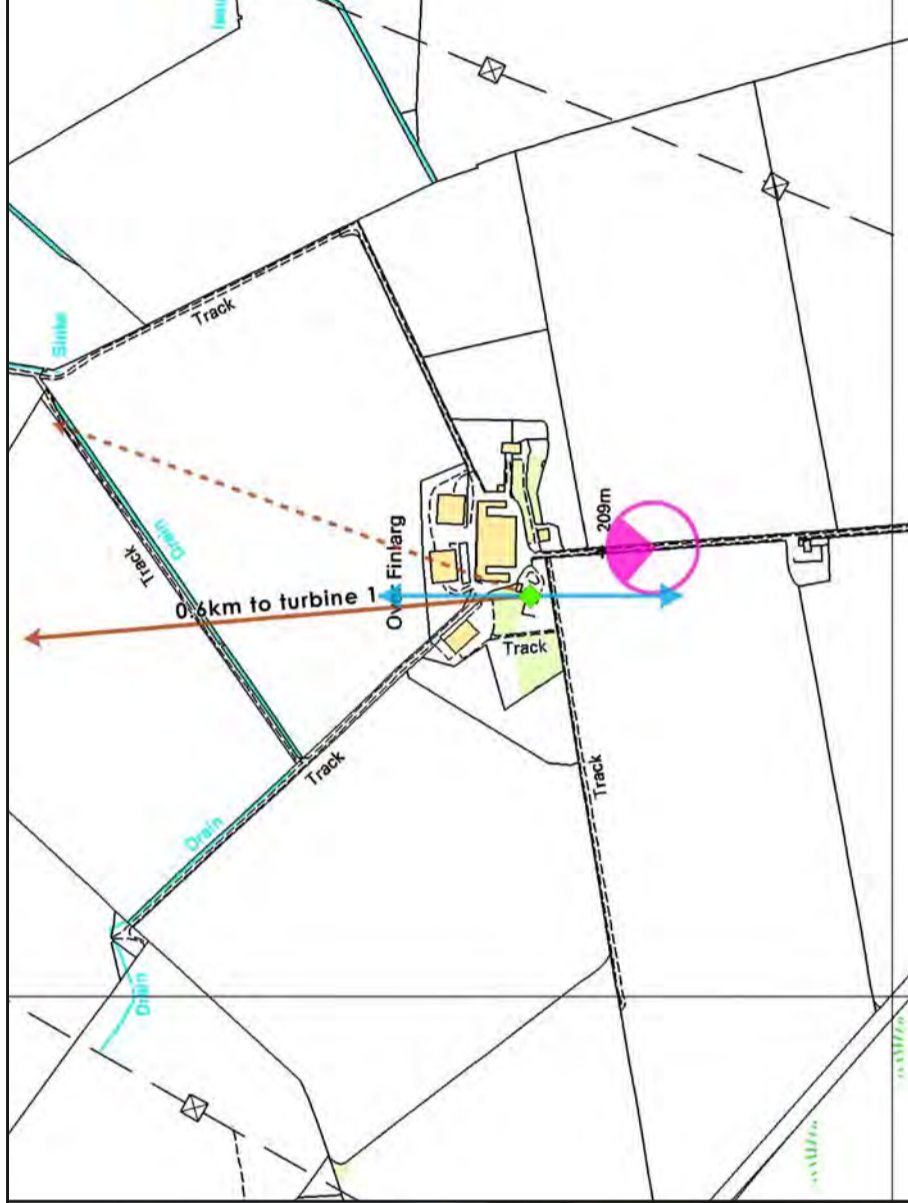
Figure 6-42

Predicted Wireframe








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-  Frawney Turbine
-  Govals Turbine



Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)



0m 250m 500m
Scale 1:7,500@ A3

Frawney Wind Farm	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	3	Over Finlarg, New Farmhouse	3	Over Finlarg, New Farmhouse					
		Eastings	341396	Northings					
		Approximate Viewing Distance : 315mm @ A3							

Polar Energy (Finlarg) Ltd

Receptor
Over Finlarg, New Farmhouse
Eastings 341396
Northings 741357

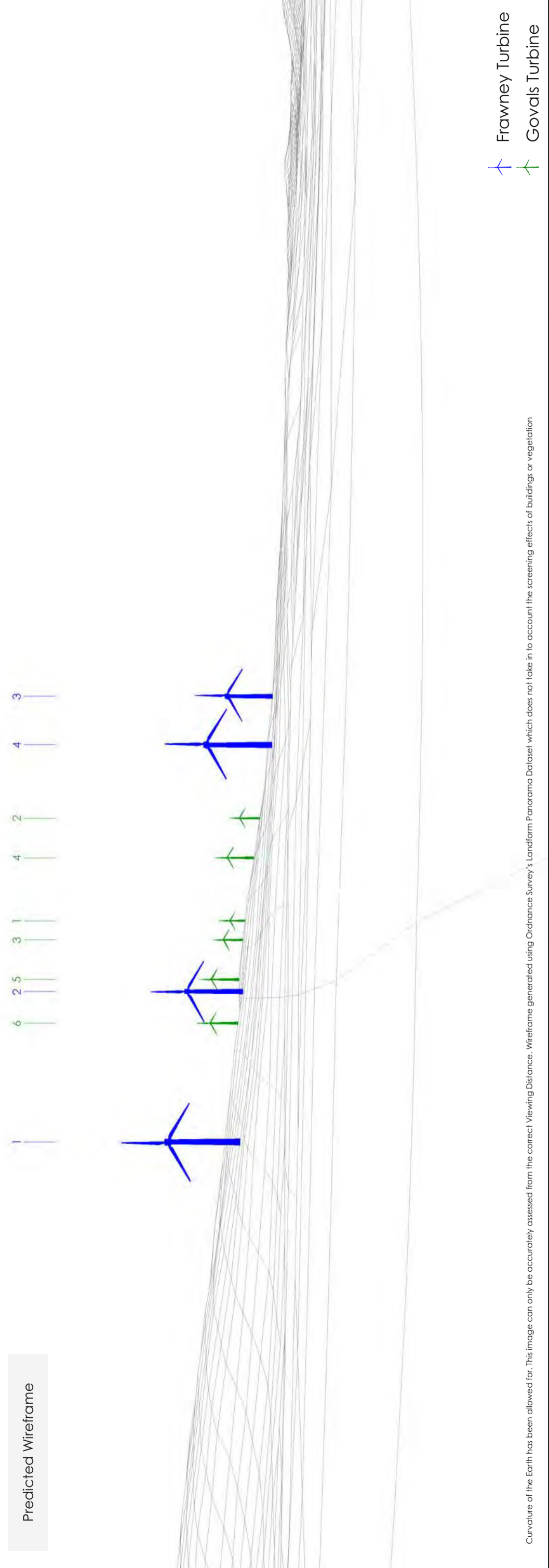
Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
1	696	25°	11°	355°



Drawn by TP
Checked by AJ
Approved by TG

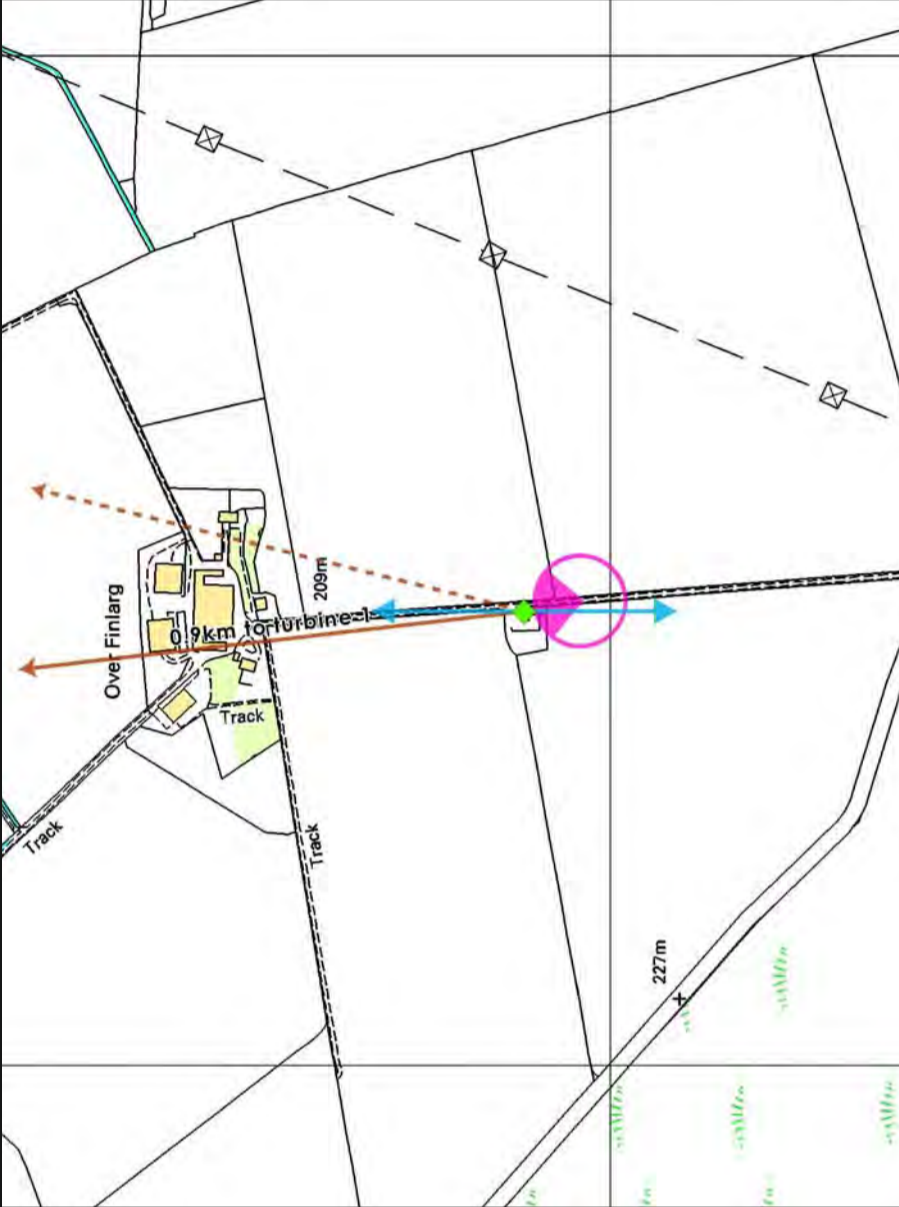
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Predicted Wireframe



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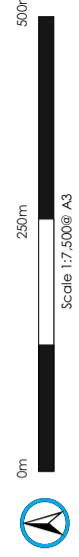
↑ Frawney Turbine
↑ Govals Turbine



Map Key

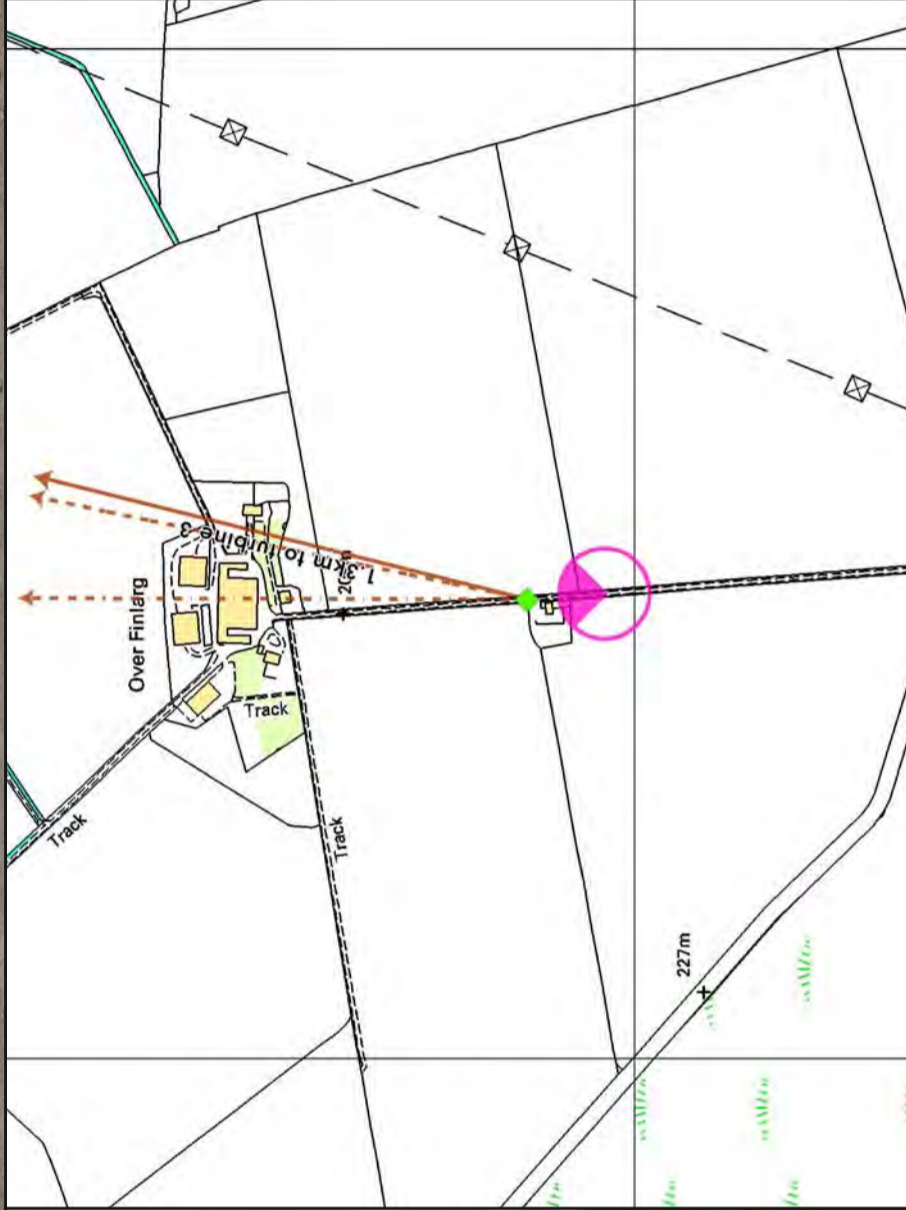
- ◆ Wireline / Photomontage Location
- Photograph Location and Direction
- Direction to Nearest Turbine
- ↔ Direction to Outermost Turbines
- Principle Property Orientation(s)

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Frawney Wind Farm Figure 6-44a	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	4a	Over Finlarg, Farm cottages 1 & 2	Eastings	Northings				
			341449	741084	1	21°	6°	353°
		Approximate Viewing Distance : 315mm @ A3						

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Map Key

- ◆ Wireline / Photomontage Location
- Photograph Location and Direction
- Direction to Nearest Turbine
- ↗ Direction to Outermost Turbines
- ← Principle Property Orientation(s)

Scale 1:7,500 @ A3

0m 250m 500m

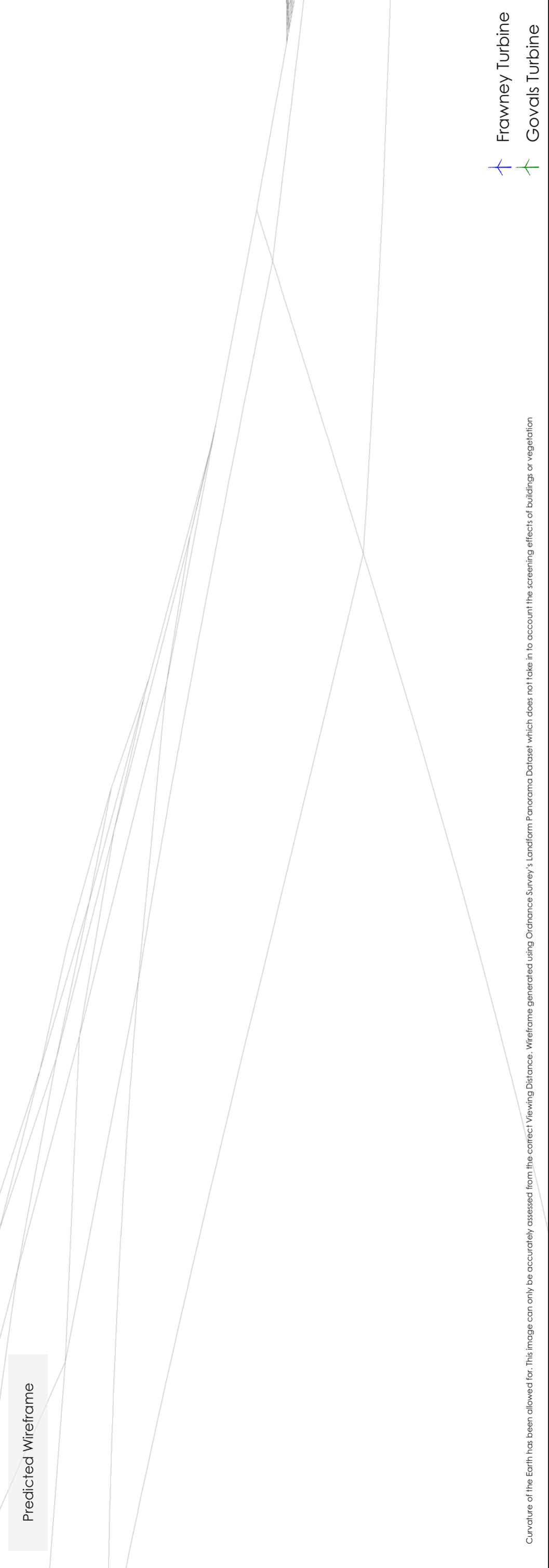
Frawney Wind Farm Figure 6-44b	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	4b	Over Finlarg Photomontage	Eastings	Northings					
		341454	741105		1	952	21°	5°	353°
	Approximate Viewing Distance : 315mm @ A3								

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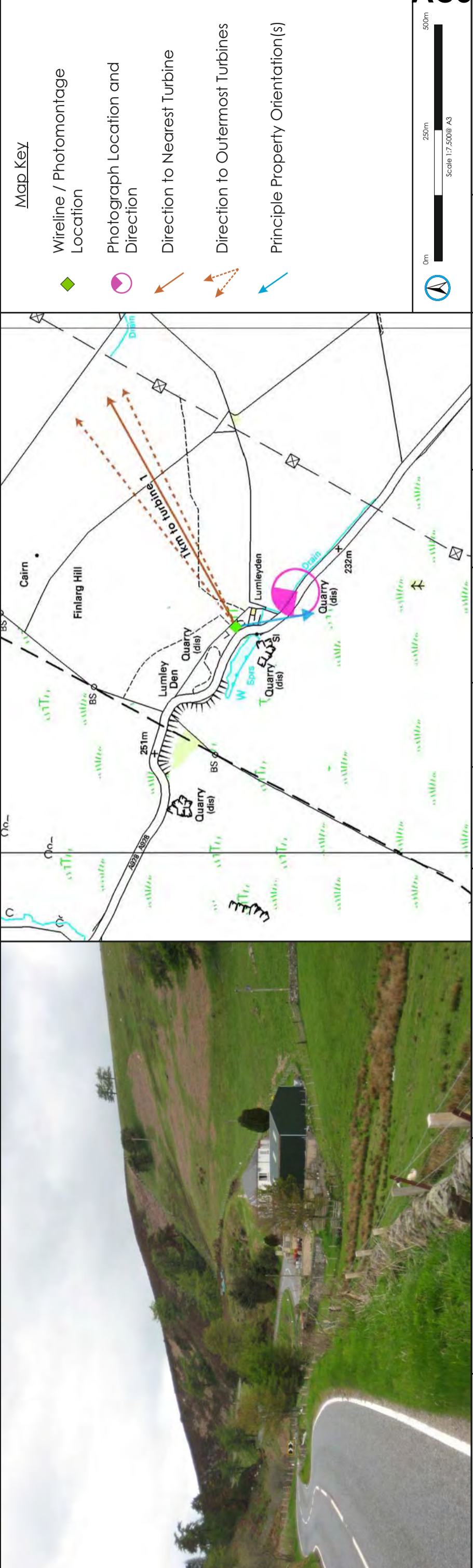
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-  Frawney Turbine
-  Govals Turbine

Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)



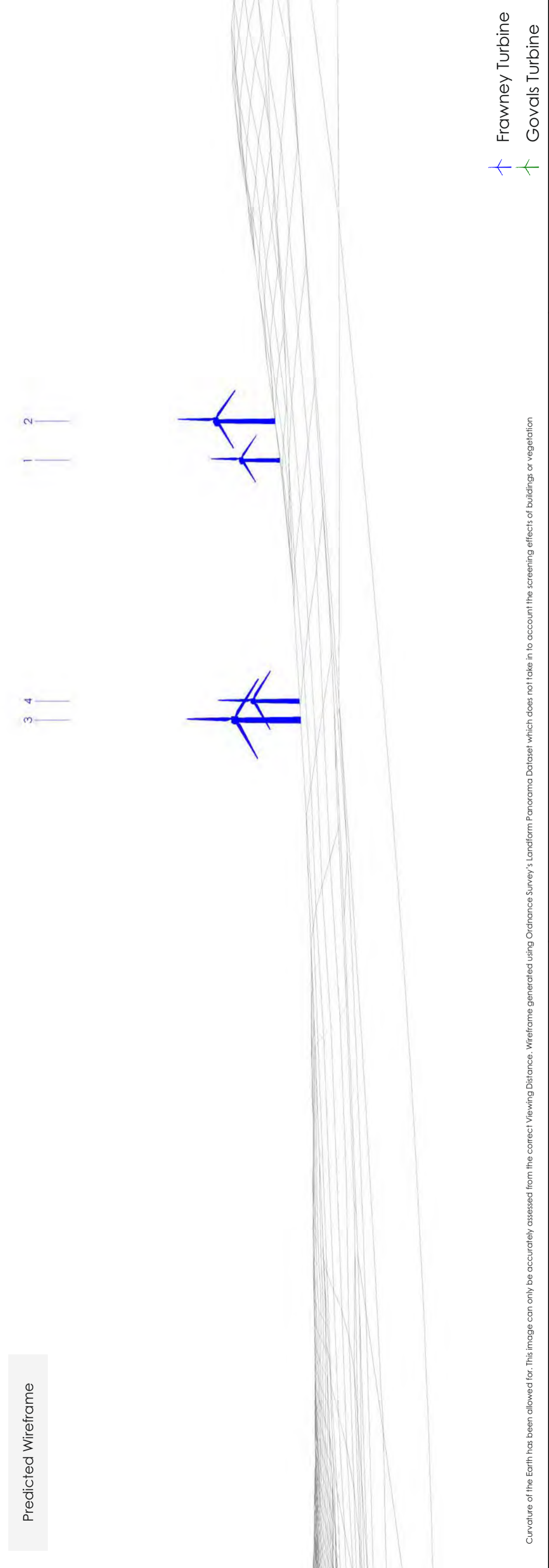
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Scale 1:7,500 @ A3

Frawney Wind Farm	Polar Energy (Finlarg) Ltd		Receptor		Direction Nearest Turbine
	5	Lumleyden	Eastings	340430	
Figure 6-45	Approximate Viewing Distance : 315mm @ A3		Northings	741543	61°
					58°
					12°
					1,039
					Horizontal Spread
					Nearest Turbine
					Distance (m)
					1

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-  Frawney Turbine
-  Govals Turbine

Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)



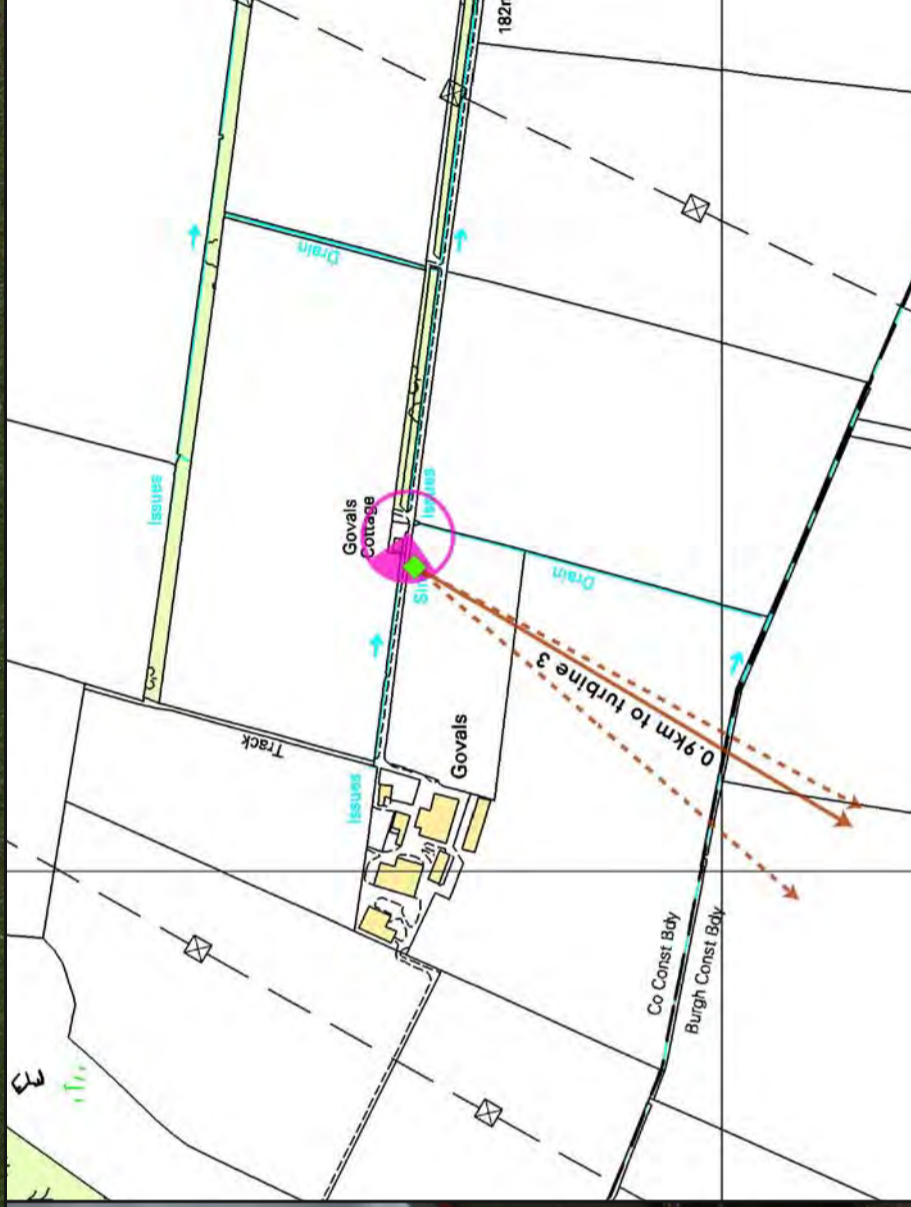
Frawney Wind Farm	Receptor		Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	6a	Govals Farm					
	Easting		342078				
	Northing		743332				
Figure 6-46a	Approximate Viewing Distance : 315mm @ A3						
Polar Energy (Finlargo) Ltd							

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Predicted Photomontage



Map Key

- ◆ Wireline / Photomontage Location
- Photograph Location and Direction
- Direction to Nearest Turbine
- ↔ Direction to Outermost Turbines
- ← Principle Property Orientation(s)



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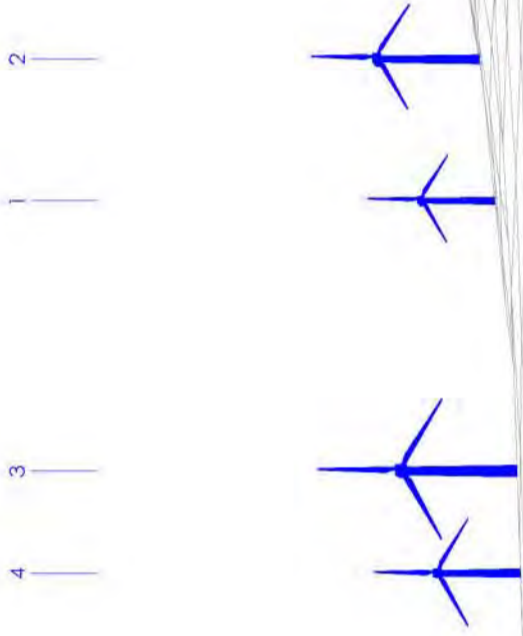
Frawney Wind Farm Figure 6-46b	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	6b	Govals Photomontage	3	999					
	Easting	342301							
	Northing	743302							
	Approximate Viewing Distance : 315mm @ A3								





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Checked by AJ
Approved by TG

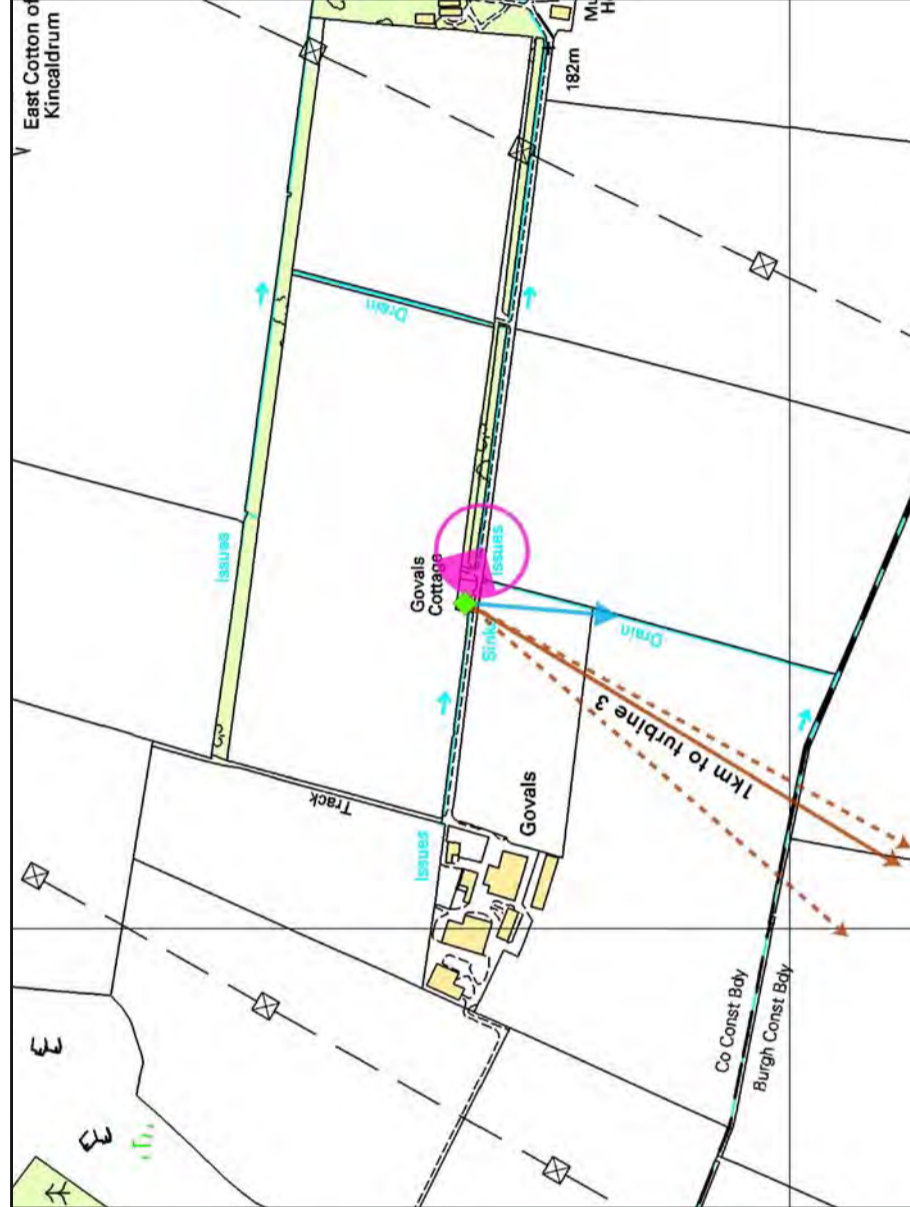
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24/03/2014
4604 WF C046a

Predicted Wireframe








-  Frawney Turbine
-  Govals Turbine

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Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)



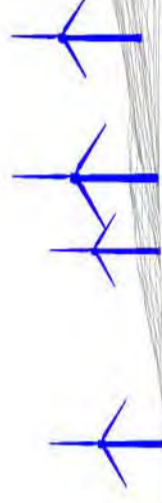
Frawney Wind Farm Figure 6-47	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	7	Govals Cottage	7	Govals Cottage	3	12°	215°	211°
			Easting	342322	Distance (m)	1,024		
			Northing	743319				
			Approximate Viewing Distance : 315mm @ A3					



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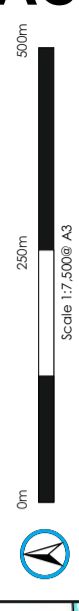
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- Frawney Turbine
- Govals Turbine



Map Key

- Wireline / Photomontage Location
- Photograph Location and Direction
- Direction to Nearest Turbine
- Direction to Outermost Turbines
- Principle Property Orientation(s)



Frawney Wind Farm Figure 6-48a	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	8a	Muirside Cottage	3	1,368	10°	234°	235°	
	Easting	342907						
	Northing	743233						
	Approximate Viewing Distance : 315mm @ A3							

AC34

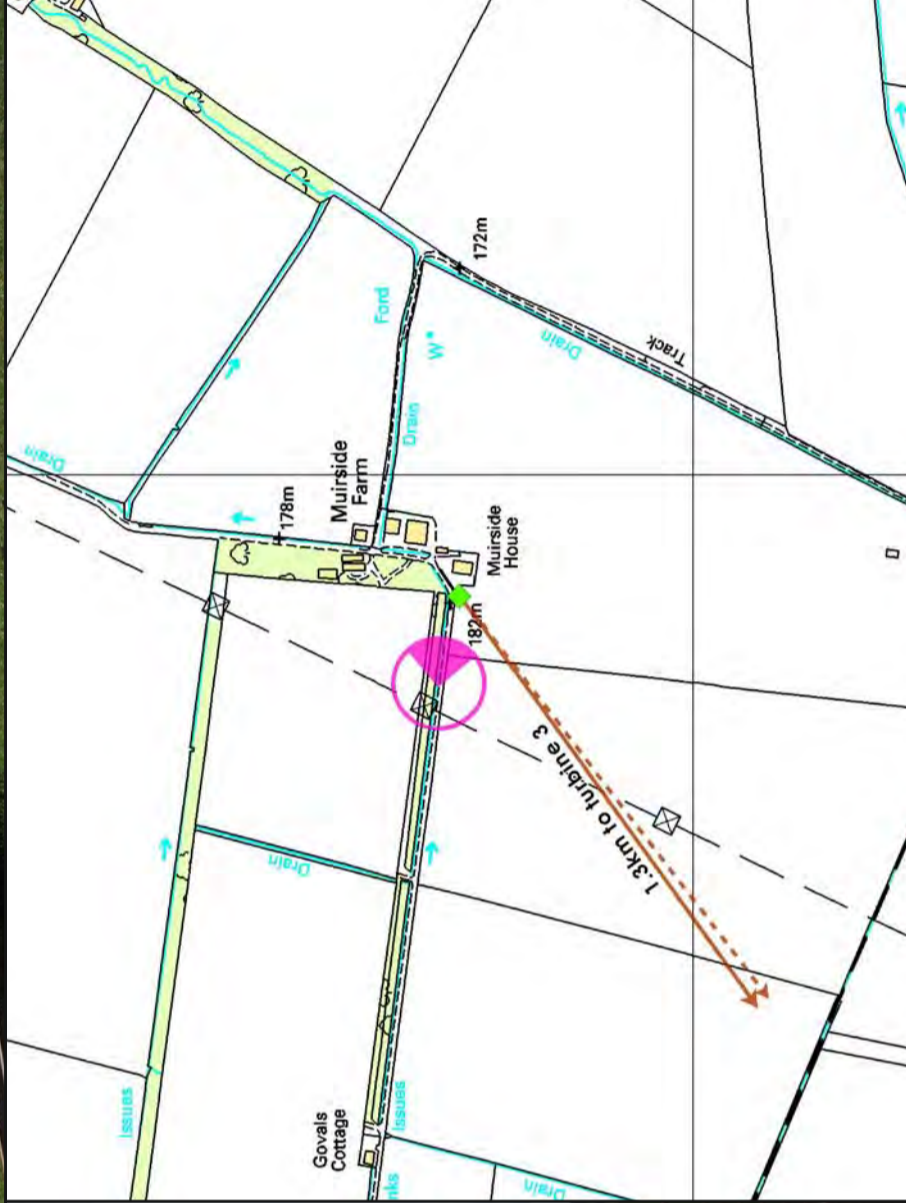
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Predicted Photomontage



Map Key

- ◆ Wireline / Photomontage Location
- Photograph Location and Direction
- Direction to Nearest Turbine
- ↗ Direction to Outermost Turbines
- ← Principle Property Orientation(s)



Scale 1:7,500 @ A3

AC34

Frawney Wind Farm Figure 6-48b	Polar Energy (Finlargo) Ltd		Receptor		Nearest Turbine	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	Approximate Viewing Distance : 315mm @ A3	8b	Muirside Photomontage	3	1,342	10°	233°	234°
	Easting	342879						
	Northing	743229						



Drawn by TP
Checked by AJ
Approved by TG

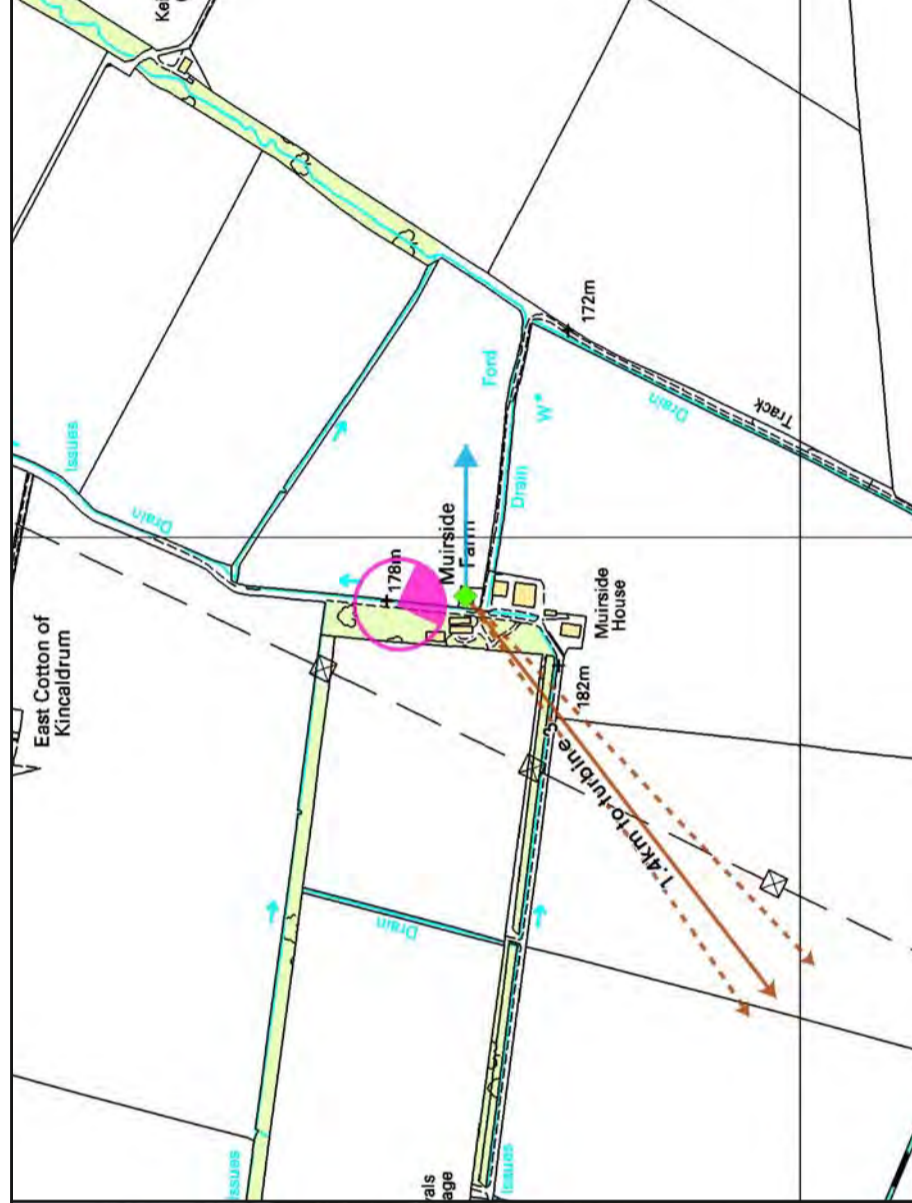
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4604 WF C046a

Predicted Wireframe







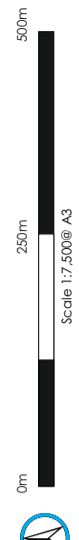
-  Frawney Turbine
-  Govals Turbine

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Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)



Frawney Wind Farm Figure 6-49	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	9	Muirside Farm	342941	743329					
Approximate Viewing Distance : 315mm @ A3		Easting		Northing					
		342941		743329					

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Checked by AJ
Approved by TG

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24/03/2014
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Predicted Wireframe




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-  Frawney Turbine
-  Govals Turbine



Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)

0m 250m 500m
Scale 1:7,500 @ A3

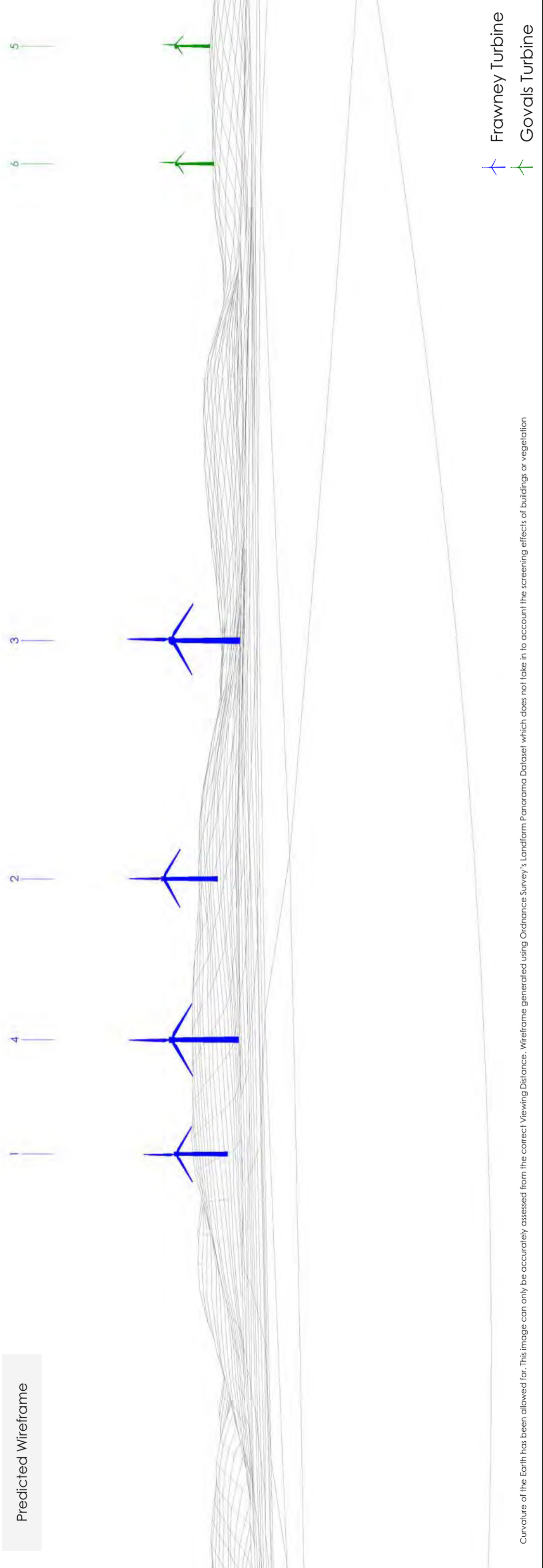
Frawney Wind Farm Figure 6-50	Receptor		Nearest Turbine Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	10	East Cotton of Kincaidrum				
	Easting	342811				
	Northing	743798				
	Approximate Viewing Distance : 315mm @ A3					

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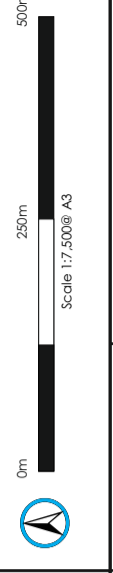
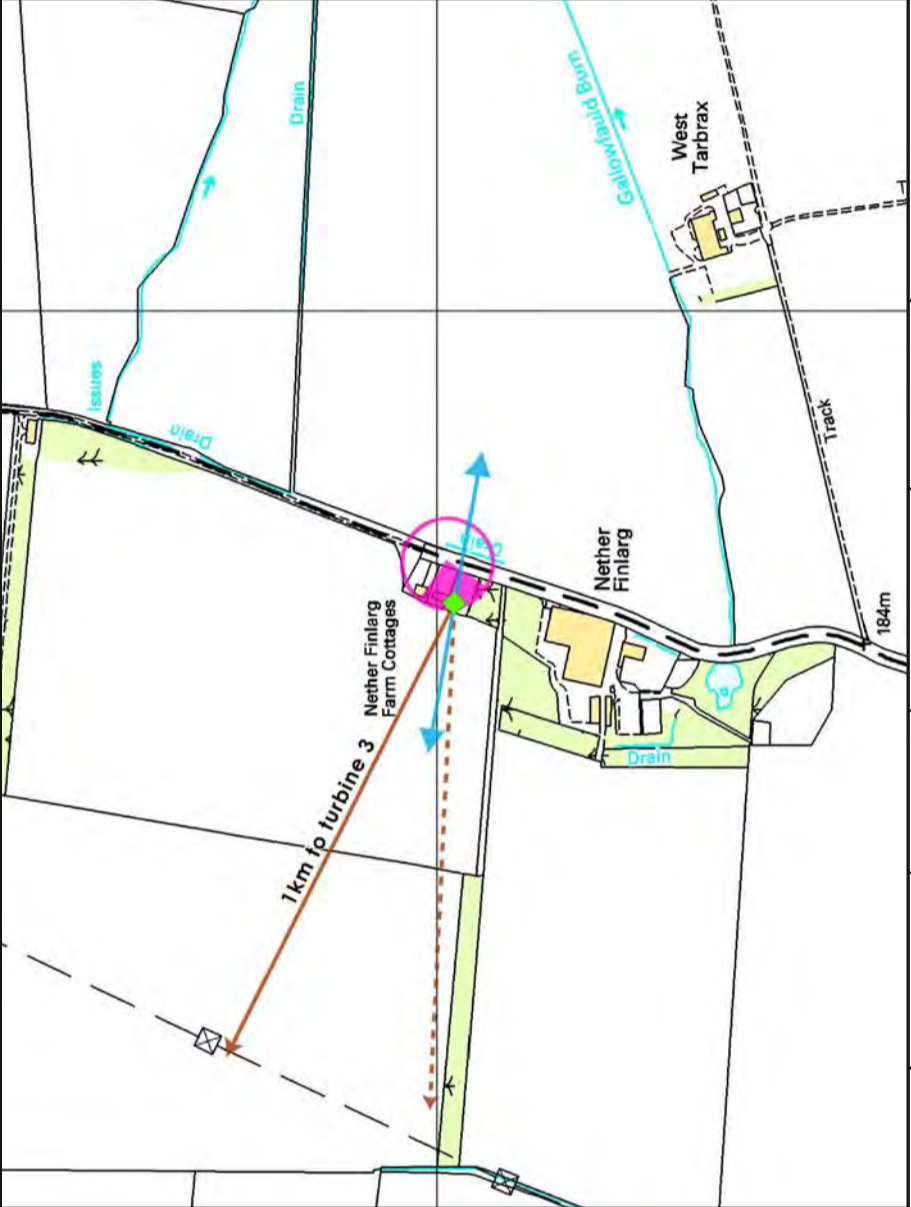
Drawn by TP
Checked by AJ
Approved by TG

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Predicted Wireframe



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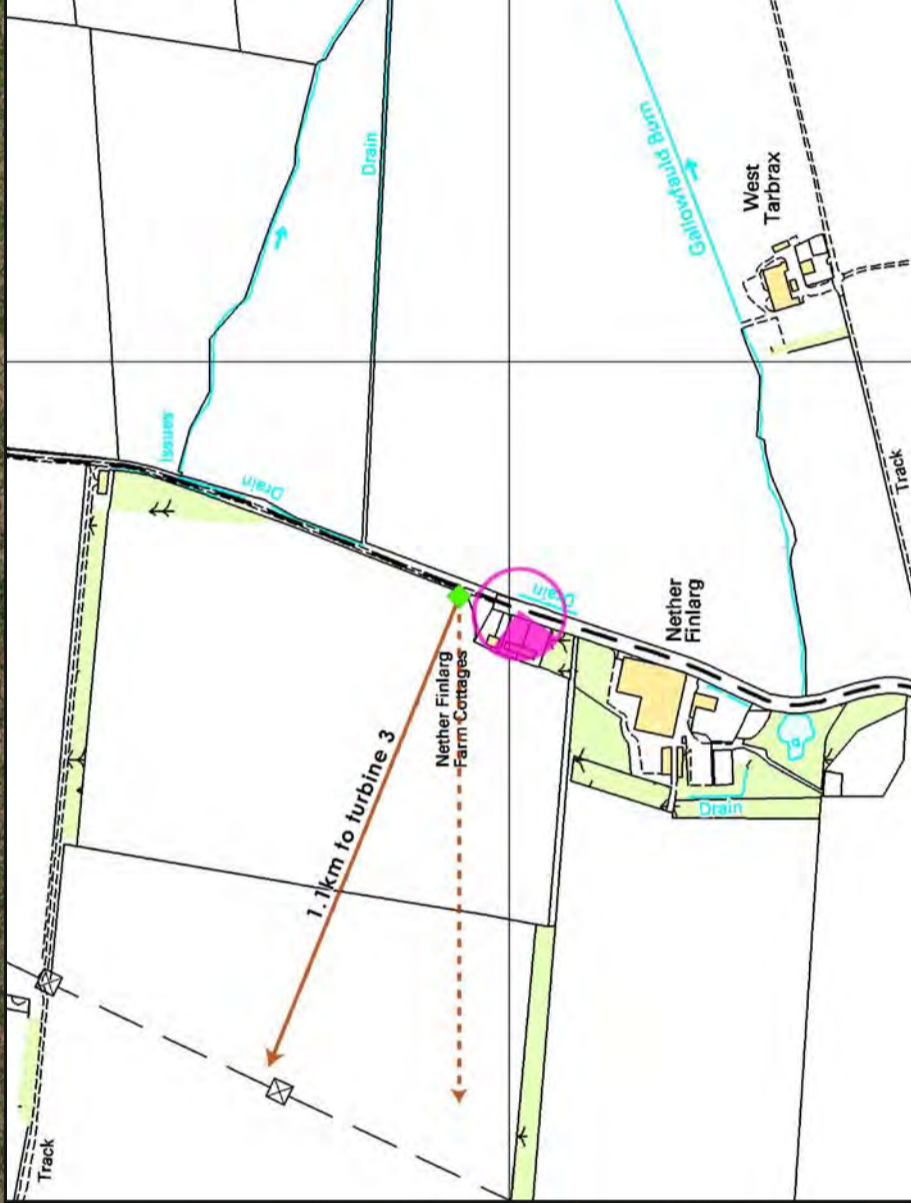
Frawney Wind Farm Figure 6-51a	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	11a	Nether Finlarg farm cottages 1-4	3	24°				
	Easting	342710	Distance (m)	1,029				
	Northing	741982						
	Approximate Viewing Distance : 315mm @ A3							

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Checked by AJ
Approved by TG

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Predicted Photomontage



Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)



0m 250m 500m
Scale 1:7,500 @ A3

AC34

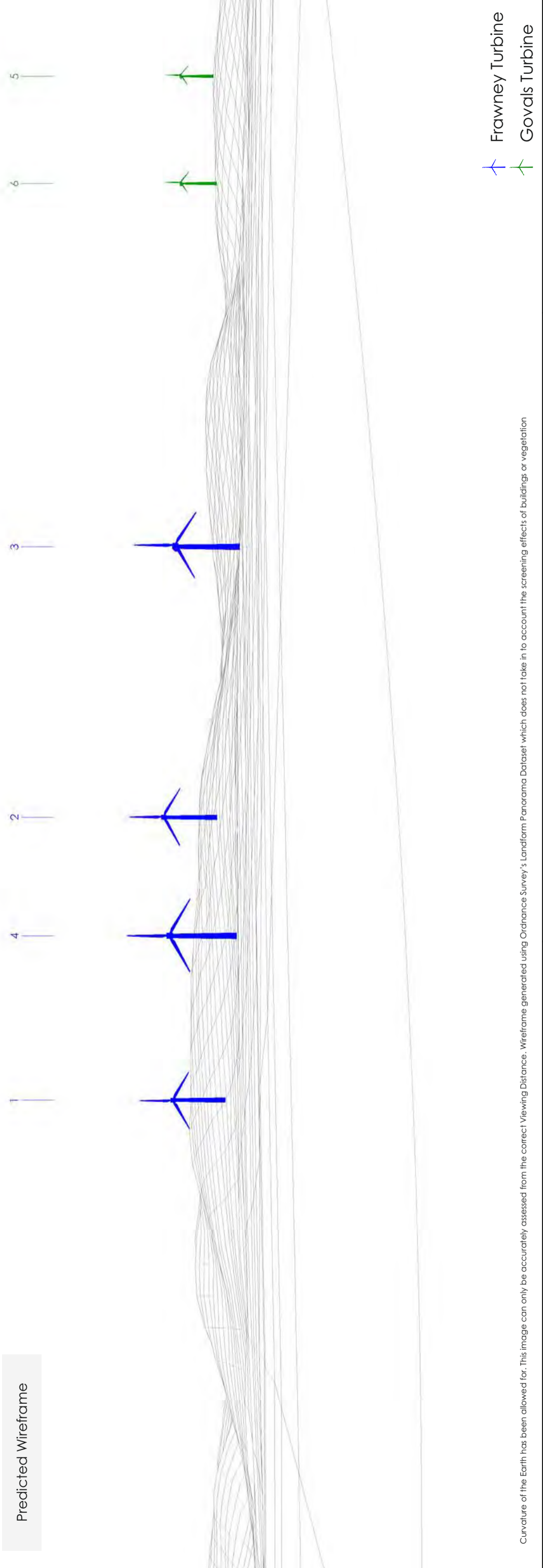
Frawney Wind Farm Figure 6-51b	Polar Energy (Finlarg) Ltd		Receptor		Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	11b	Nether Finlarg Photomontage		3					
	Easting	342767							
	Northing	742048							
	Approximate Viewing Distance : 315mm @ A3								



Drawn by TP
Checked by AJ
Approved by TG

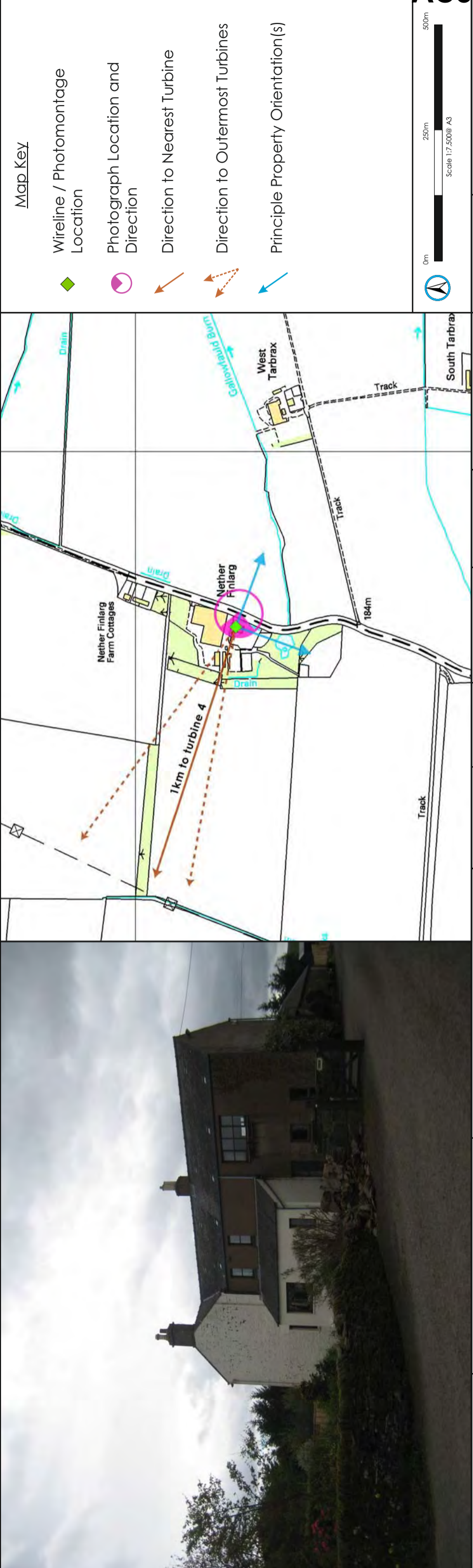
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Predicted Wireframe








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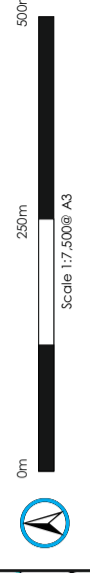
-  Frawney Turbine
-  Govals Turbine



Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)

AC34



Frawney Wind Farm	Receptor		Nearest Turbine	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	12	Nether Finlarg Farm				
	Easting	342665	Distance (m)	1,048		
	Northing	741808				
	Approximate Viewing Distance : 315mm @ A3					
Polar Energy (Finlarg) Ltd						

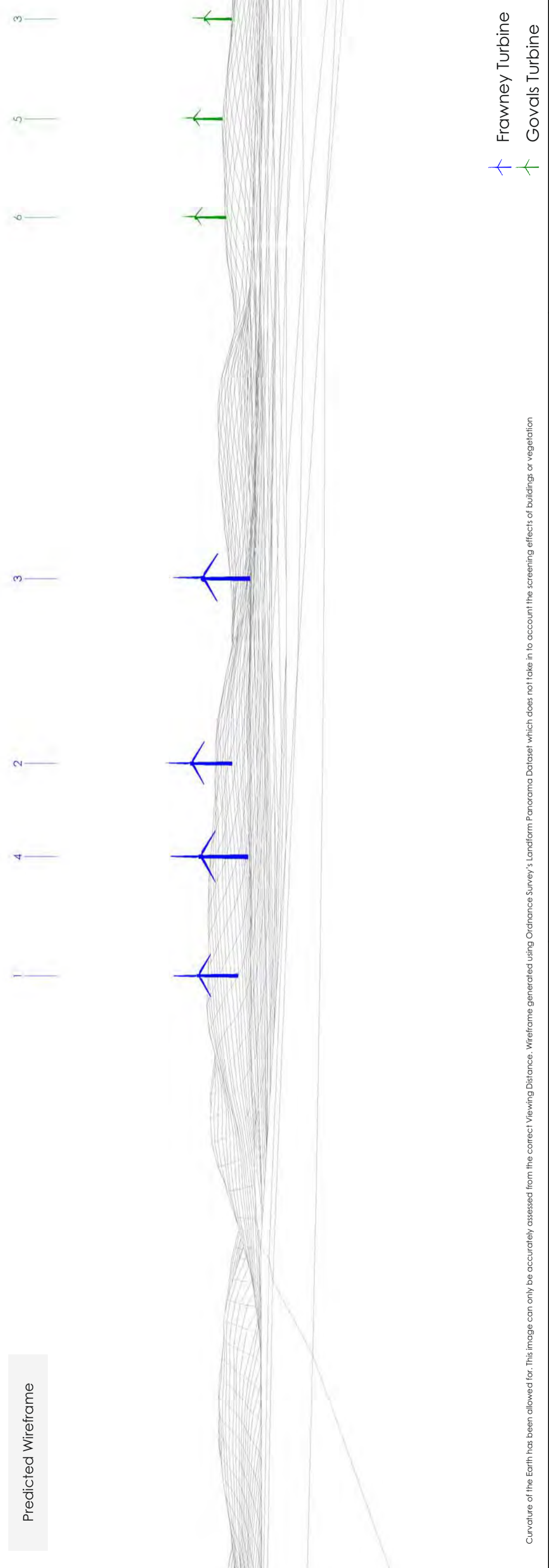


Drawn by TP
Checked by AJ
Approved by TG

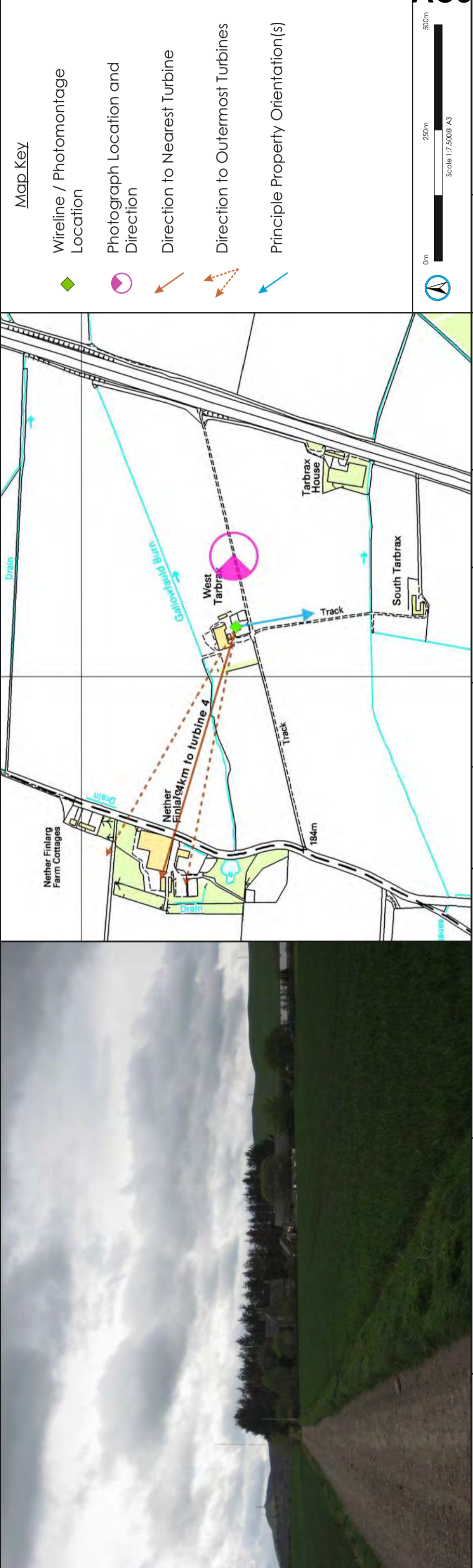
TL 02a
24/03/2014
4604 WF C046a

Figure 6-52

Predicted Wireframe



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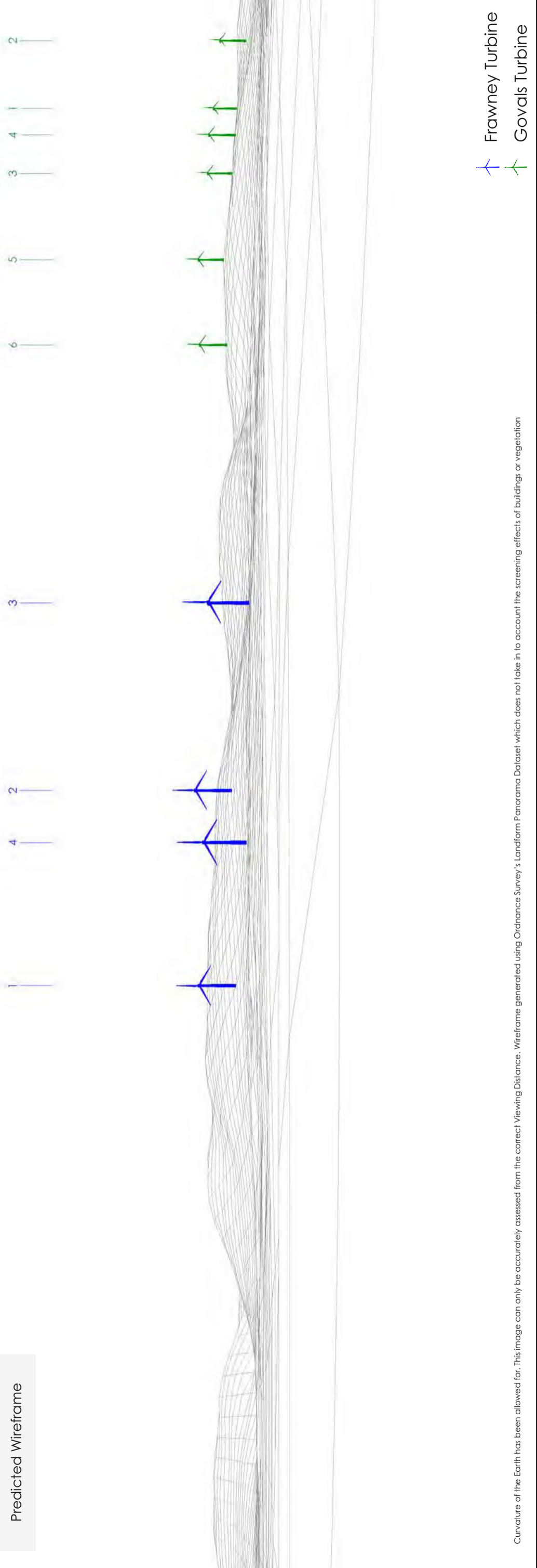
Frawney Wind Farm	Receptor		Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	13	West Tarbrax Farmhouse					
Polar Energy (Finlarg) Ltd	Approximate Viewing Distance : 315mm @ A3						
	Easting	343094					
Figure 6-53	Northing	741705					

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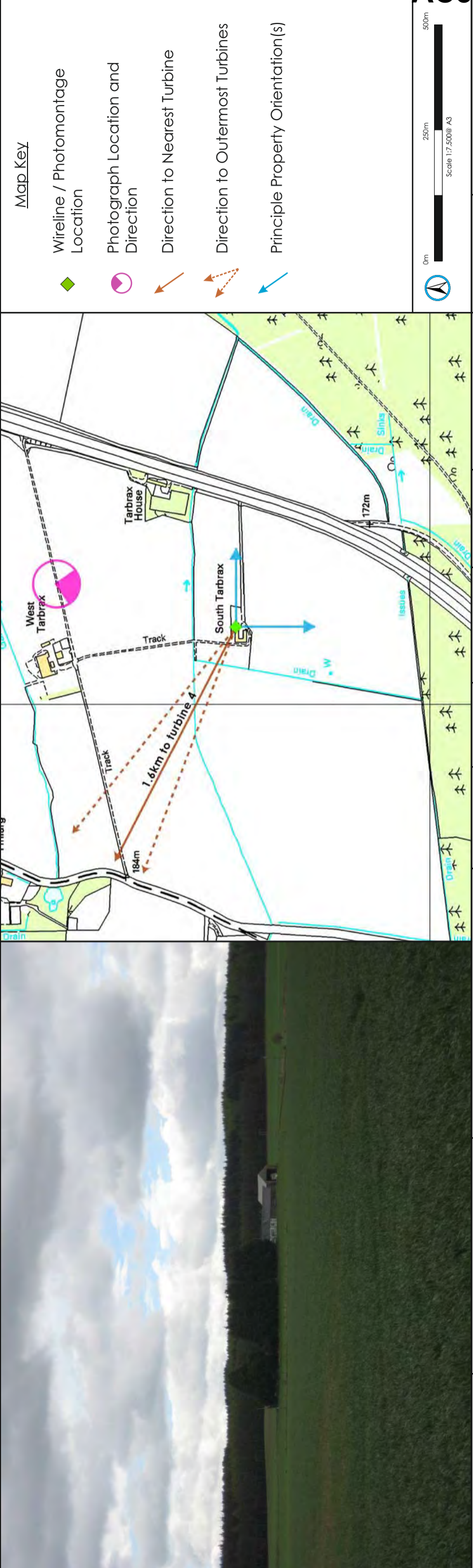
Drawn by TP
Checked by AJ
Approved by TG

TL 02a
24/03/2014
4604 WF C046a

Predicted Wireframe



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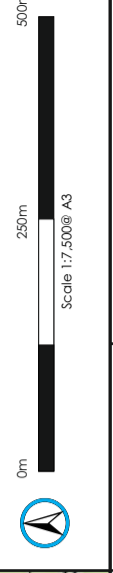


Receptor	Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
14	4	1,664	18°	299°	297°

Frawney Wind Farm	Polar Energy (Finlarg) Ltd	
	Receptor 14	South Tarbrax Farmhouse
Figure 6-54	Eastings	343147
	Northing	741368
Approximate Viewing Distance : 315mm @ A3		

Map Key

- Wireline / Photomontage Location
- Photograph Location and Direction
- Direction to Nearest Turbine
- Direction to Outermost Turbines
- Principle Property Orientation(s)

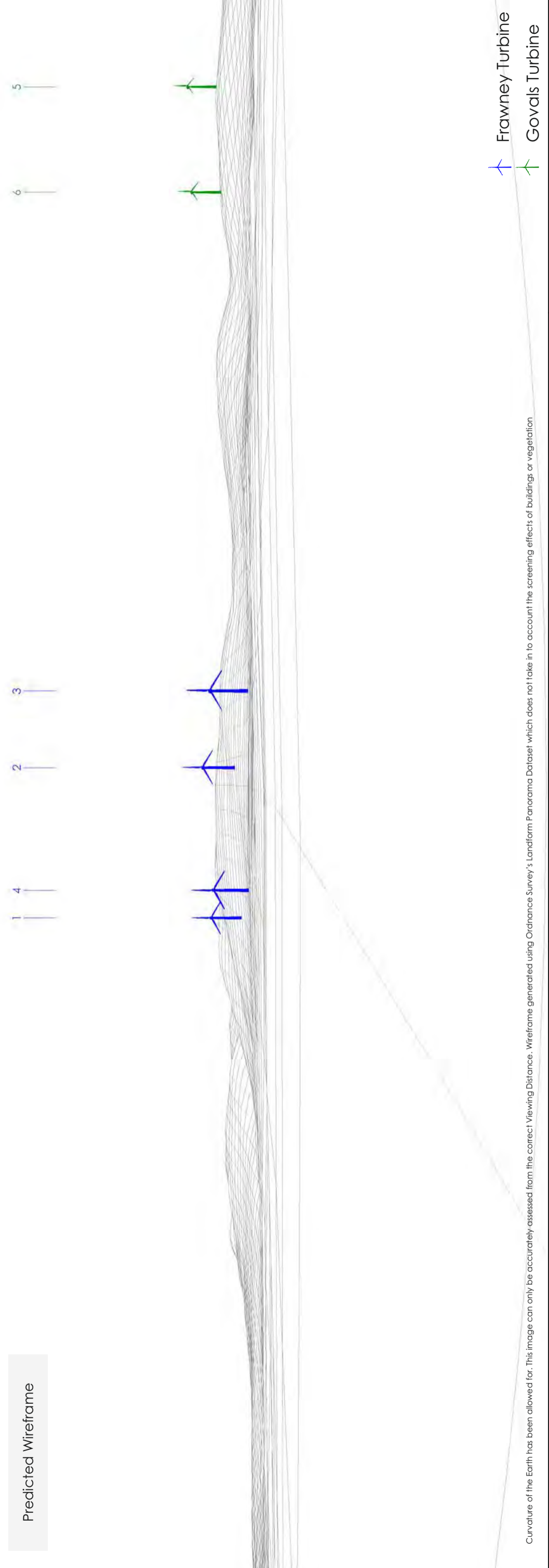


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Drawn by TP
Checked by AJ
Approved by TG

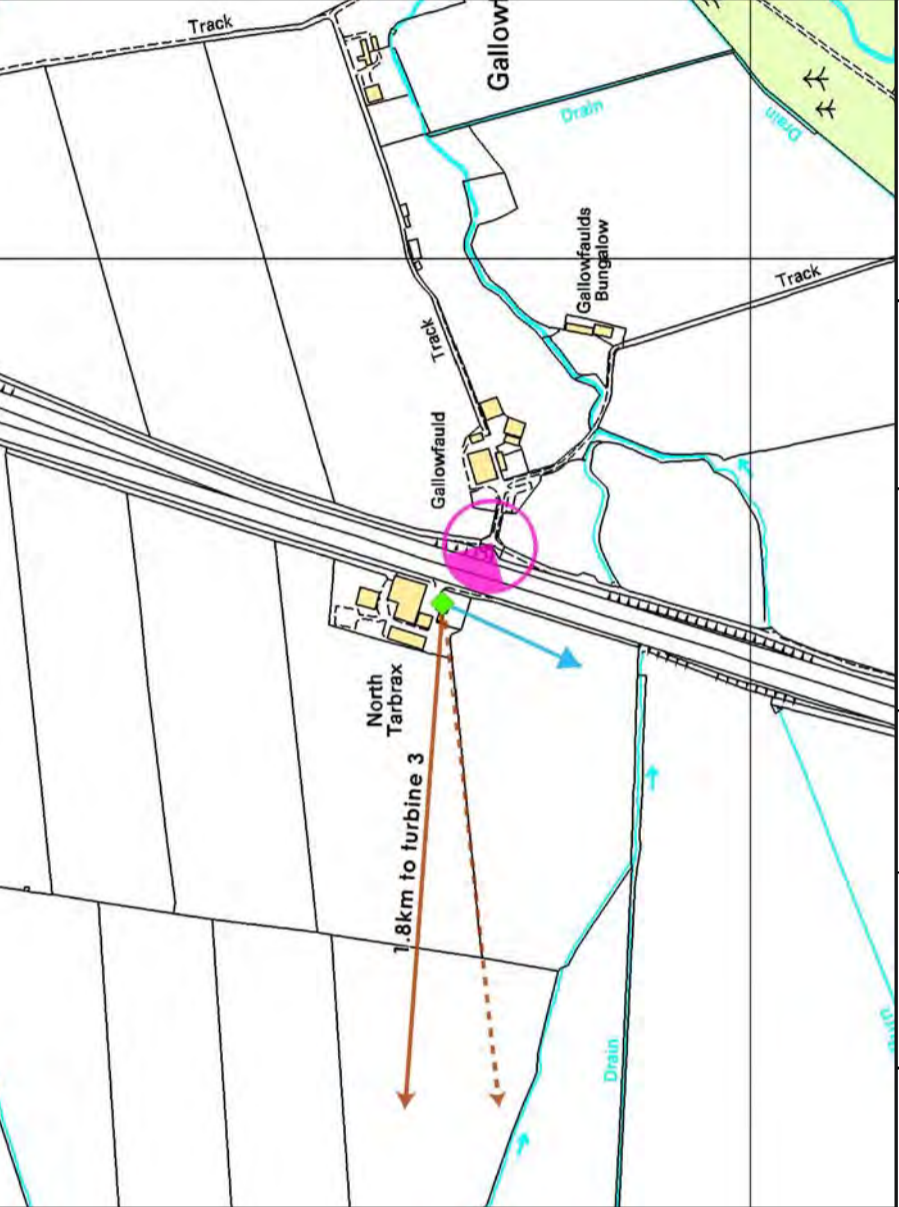
TL 02a
24/03/2014
4604 WF C046a

Predicted Wireframe



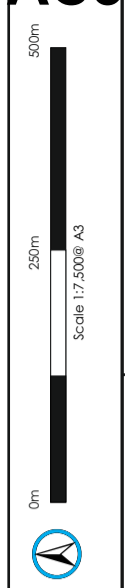
Curvature of the Earth has been allowed for. This image can only be accurately assessed from the correct Viewing Distance. Wireframe generated using Ordnance Survey's Landform Panorama Dataset which does not take in to account the screening effects of buildings or vegetation

-  Frawney Turbine
-  Govals Turbine



Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)



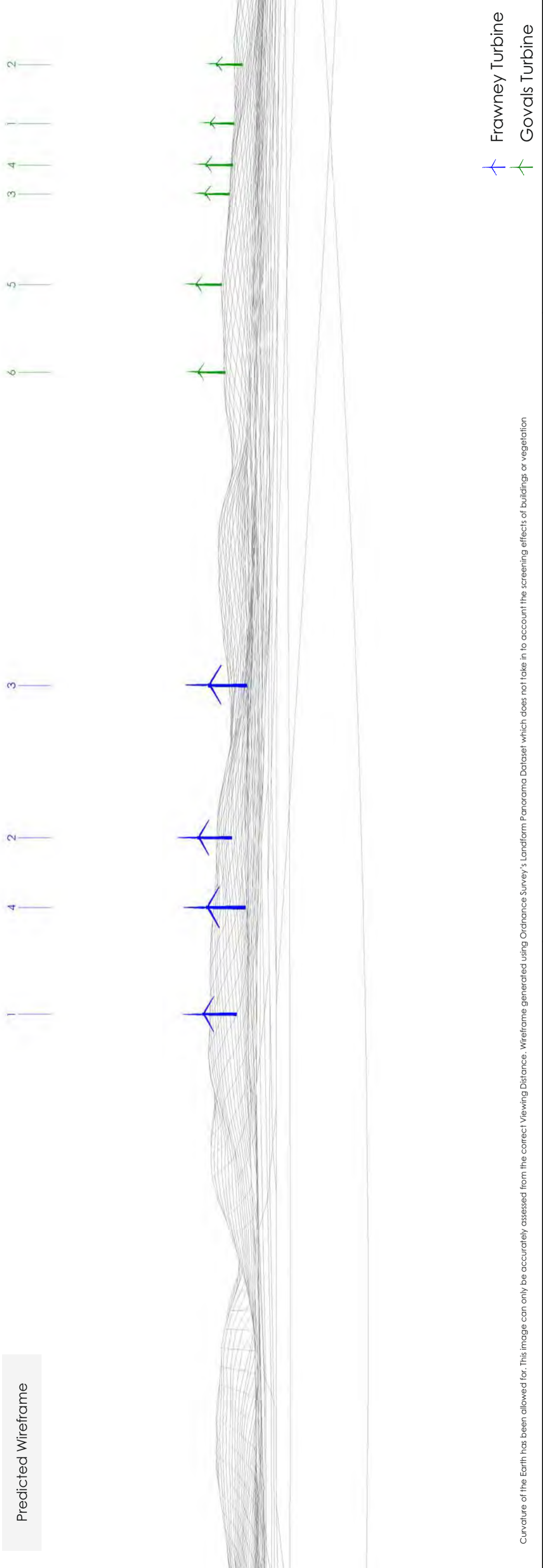
Frawney Wind Farm	Receptor		Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	15	North Tarbrax Farmhouse					
Figure 6-55	Polar Energy (Finlargo) Ltd						
	Easting	343658					
		Northing	742303				
		Approximate Viewing Distance : 315mm @ A3					

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Drawn by TP
Checked by AJ
Approved by TG

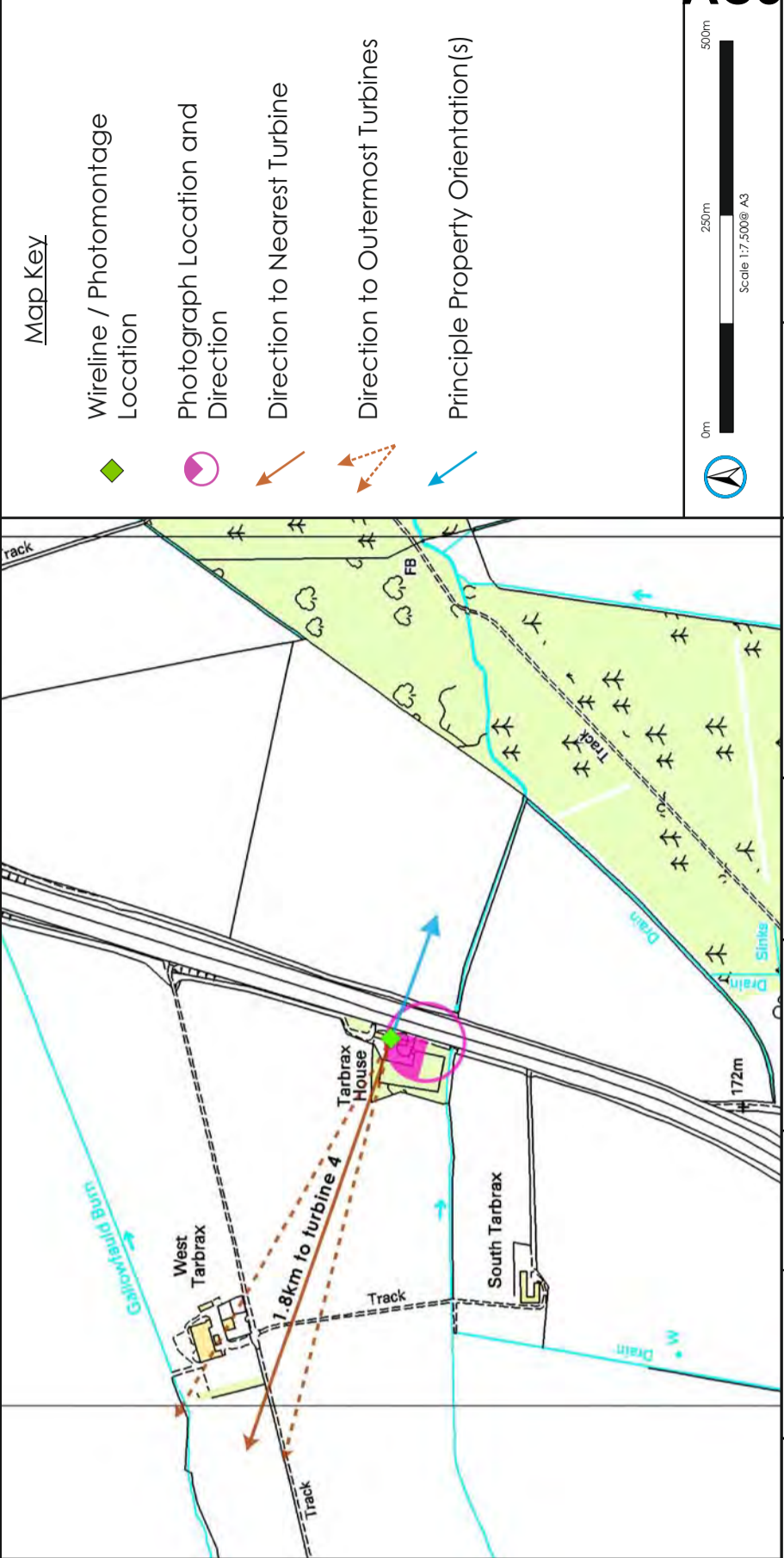
TL 02a
24/03/2014
4604 WF C046a

Predicted Wireframe



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

↑ Frawney Turbine
↑ Govals Turbine



Map Key

- ◆ Wireline / Photomontage Location
- Photograph Location and Direction
- Direction to Nearest Turbine
- Direction to Outermost Turbines
- Principle Property Orientation(s)

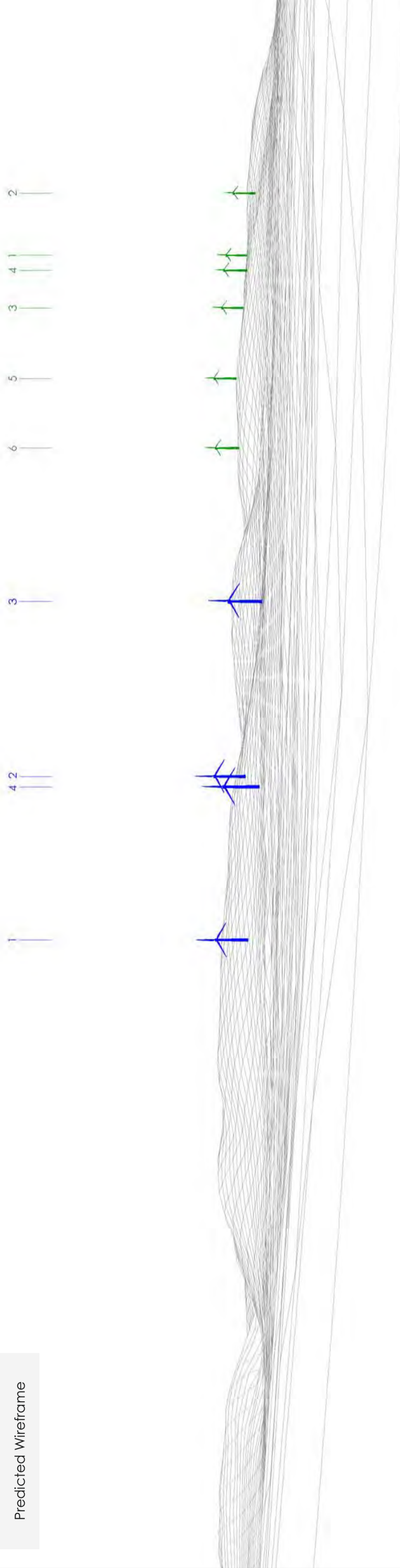
AC34

Frawney Wind Farm	Receptor		Nearest Turbine	Distance (m)	Horizontal Spread	Centre Bearing	Direction Nearest Turbine
	16	Tarbrax House					
	Easting	343422					
	Northing	741518					
	Approximate Viewing Distance : 315mm @ A3						

Drawn by TP
 Checked by AJ
 Approved by TG

TL 02a
 24/03/2014
 4604 WF C046a

Predicted Wireframe








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

-  Frawney Turbine
-  Govals Turbine



Map Key

-  Wireline / Photomontage Location
-  Photograph Location and Direction
-  Direction to Nearest Turbine
-  Direction to Outermost Turbines
-  Principle Property Orientation(s)



0m 250m 500m
Scale 1:7,500 @ A3

Frawney Wind Farm Figure 6-57	Polar Energy (Finlarg) Ltd		Receptor		Direction Nearest Turbine
	17	Inverarity, South Lodge	Nearest Turbine	Distance (m)	
	Easting	343200	4	1,995	310°
	Northing	740853		16°	310°
	Approximate Viewing Distance : 315mm @ A3				

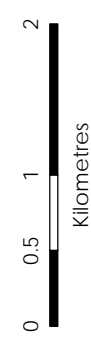


Drawn by TP
Checked by AJ
Approved by TG
TL 02a
24/03/2014
4604 WF C046a

Frawney Wind Farm Polar Energy (Finlarg) Ltd

Figure 7-1
Ecological Designations

- Key**
- Site boundary
 - 5km site buffer
 - Special Area of Conservation
 - Ancient Woodland Inventory
 - Site of Special Scientific Interest



Scale @ A3:
1:50,000

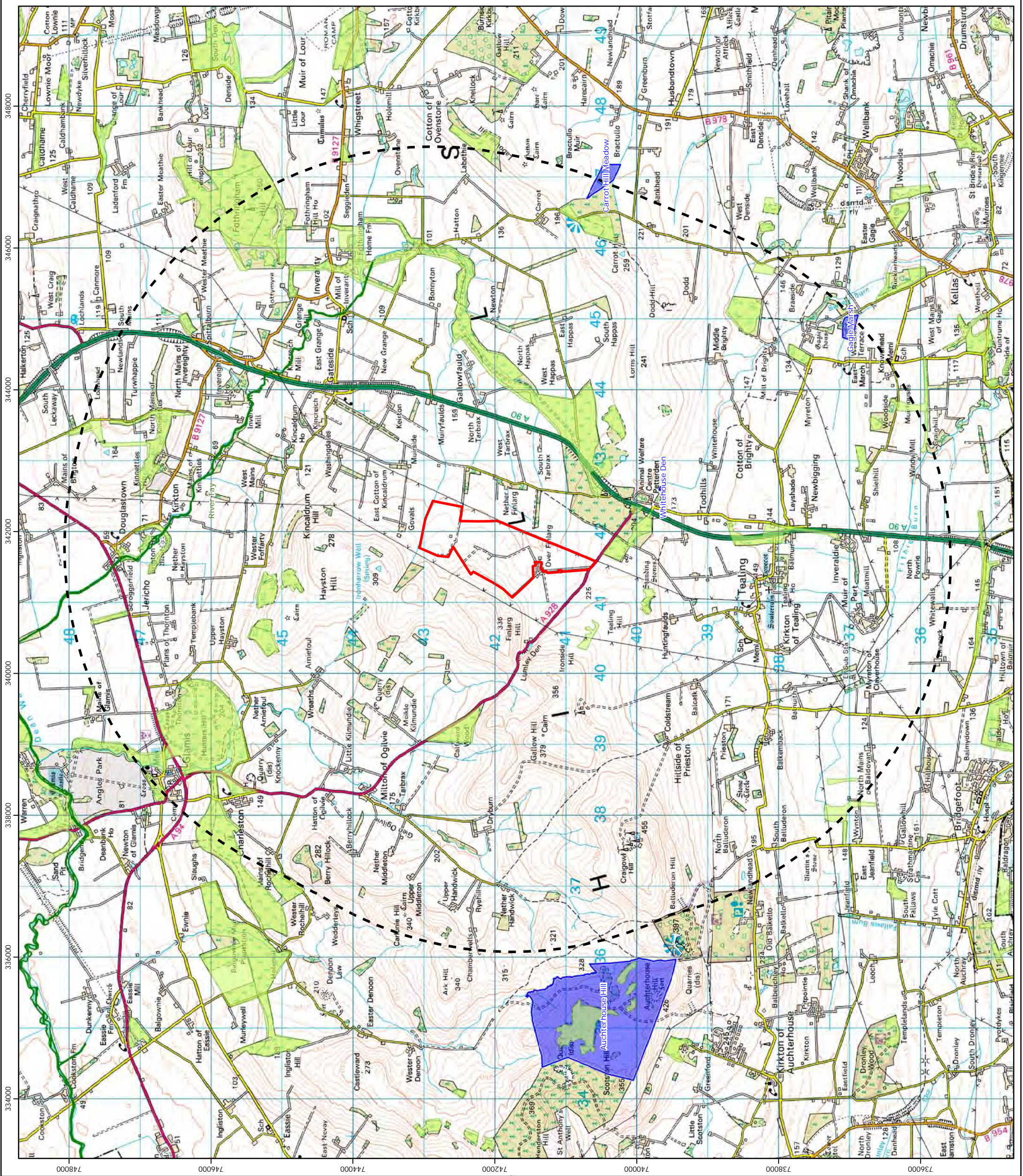


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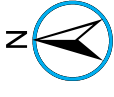
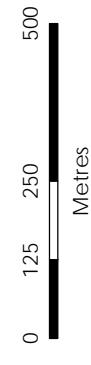
Frawney Wind Farm

Polar Energy (Finlary) Ltd

Figure 7-2
Phase 1 Habitat Survey

Key

- Site boundary
- Survey boundary
- Target note
- Wetland area/Quadrat location
- Site infrastructure
- Temporary construction compound
- Control building and substation
- Crane hardstanding
- New access track
- Upgraded access track
- Turbine foundation
- Turbine location



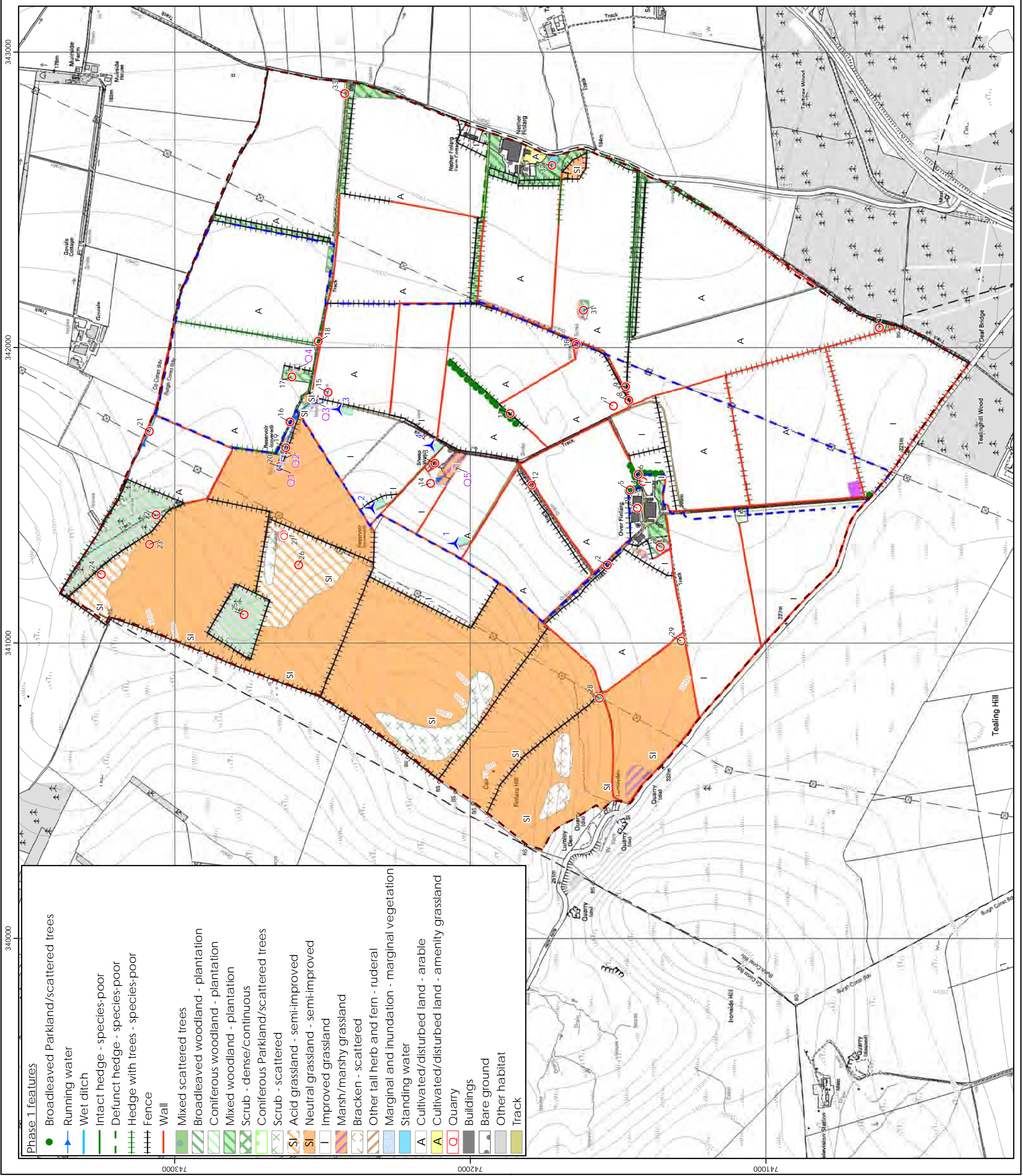
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- #### Phase 1 features
- Broadleaved Parkland/scattered trees
 - Running water
 - Wet ditch
 - Intact hedge - species-poor
 - Defunct hedge - species-poor
 - Hedge with trees - species-poor
 - Fence
 - Wall
 - Mixed scattered trees
 - Broadleaved woodland - plantation
 - Coniferous woodland - plantation
 - Mixed woodland - plantation
 - Scrub - dense/continuous
 - Coniferous Parkland/scattered trees
 - Scrub - scattered
 - Acid grassland - semi-improved
 - Neutral grassland - semi-improved
 - Improved grassland
 - Marsh/marshy grassland
 - Bracken - scattered
 - Other tall herb and fern - ruderal
 - Marginal and inundation - marginal vegetation
 - Standing water
 - Cultivated/disturbed land - arable
 - Cultivated/disturbed land - amenity grassland
 - Quarry
 - Buildings
 - Bare ground
 - Other habitat
 - Track

343000
342000
341000
340000

743000
742000
741000

Figure 7-3
Bat Activity and Transect Route

Key

Site boundary

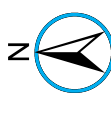
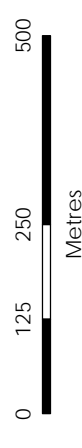
Turbine locations

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

- Northern transect route
- Southern transect route
- North transect route listening point
- South transect route listening point
- Static anabat locations

Bat Records

- Common pipistrelle
- Soprano pipistrelle



Scale @ A3:
1:10,000

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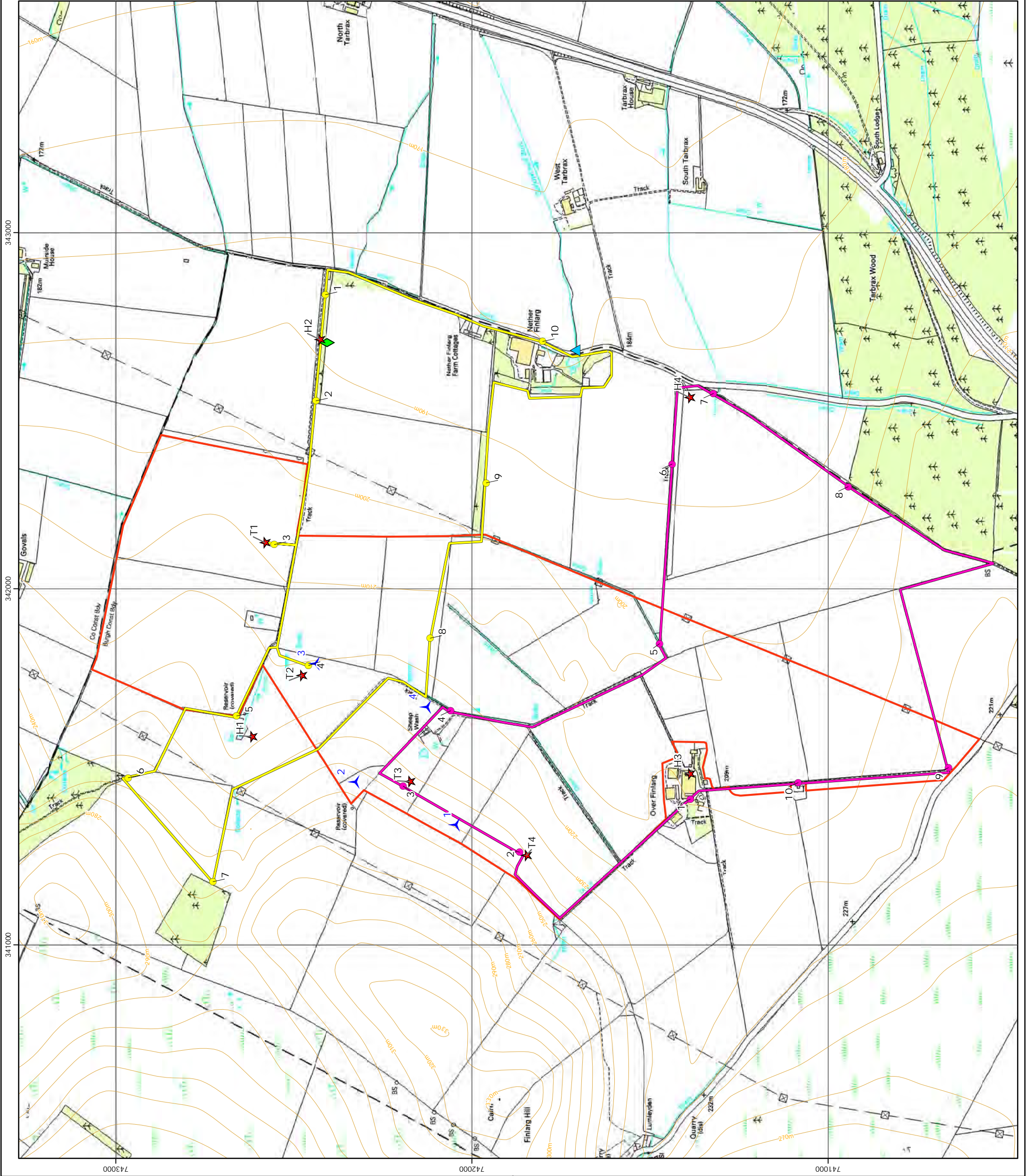
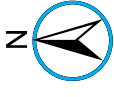
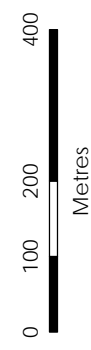


Figure 7-4
Bat Roost Assessment

Key

- Site boundary
- ✈ Turbine Location
- Bat roost assessment locations
- Building
- Tree
- Assessment value
- High
- Moderate
- Low
- Negligible



Scale @ A3:
1:10,000

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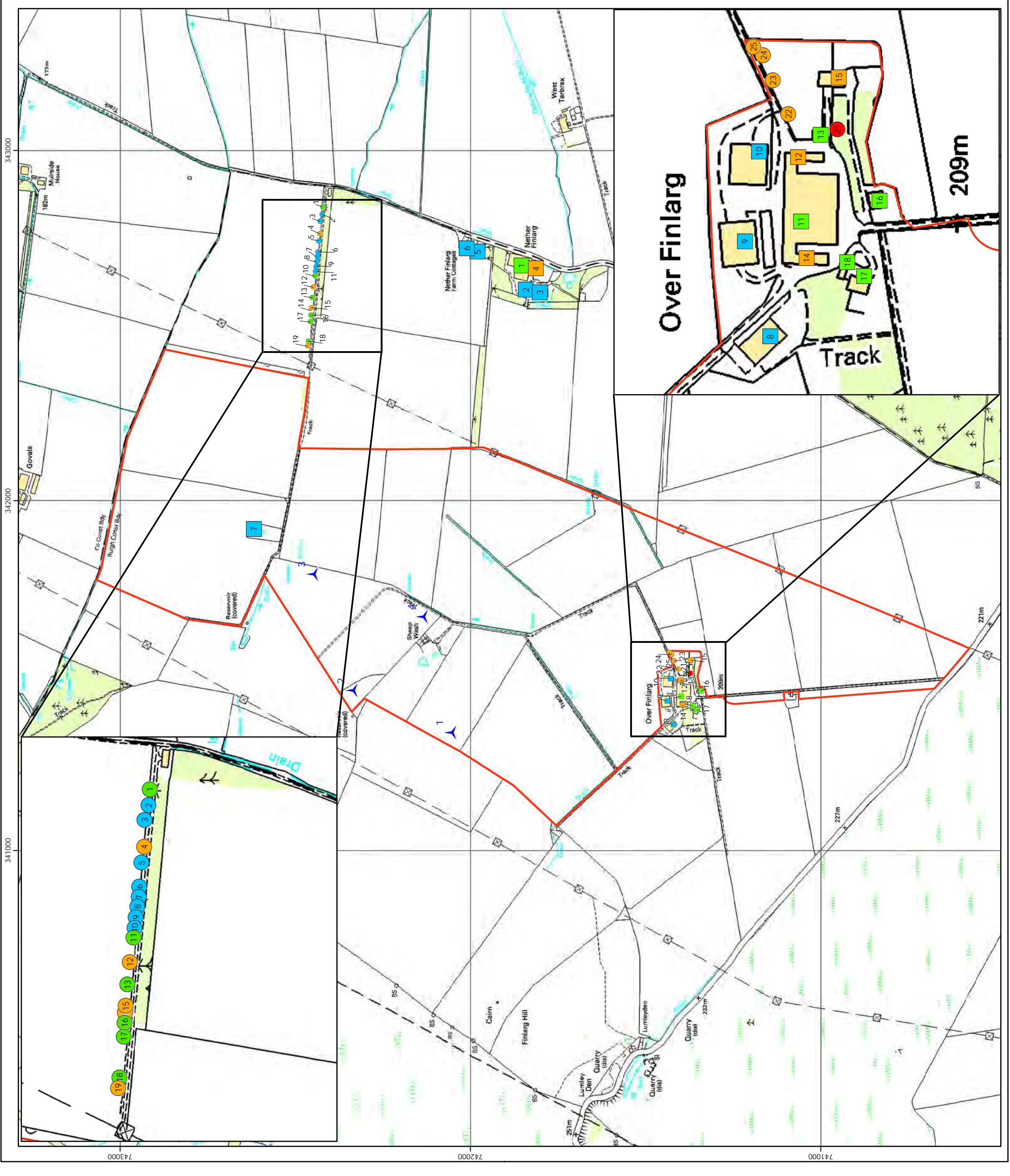
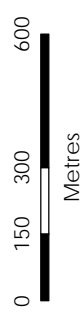


Figure 8-1
Ornithological Vantage Point
Viewsheds and Survey Areas

- Key**
- ▭ Site boundary
 - ✈ Turbine location
 - - - Winter walkover and CBC survey area
 - Vantage Point**
 - ★ 1 - 342483, 742193 (260°)
 - ★ 2 - 341241, 740598 (35°)
 - ★ 3 - 340508, 742060 (28°)
 - VP viewshed**
 - 20m above ground
 - VP1
 - VP2
 - VP3

Generated using Ordnance Survey's Landform Panorama dataset that does not take into account the screening effects of buildings or forestry.

Observer height 1.5m above ground.
Viewshed height modelled 20m above ground.



Scale @ A3:
1:17,000

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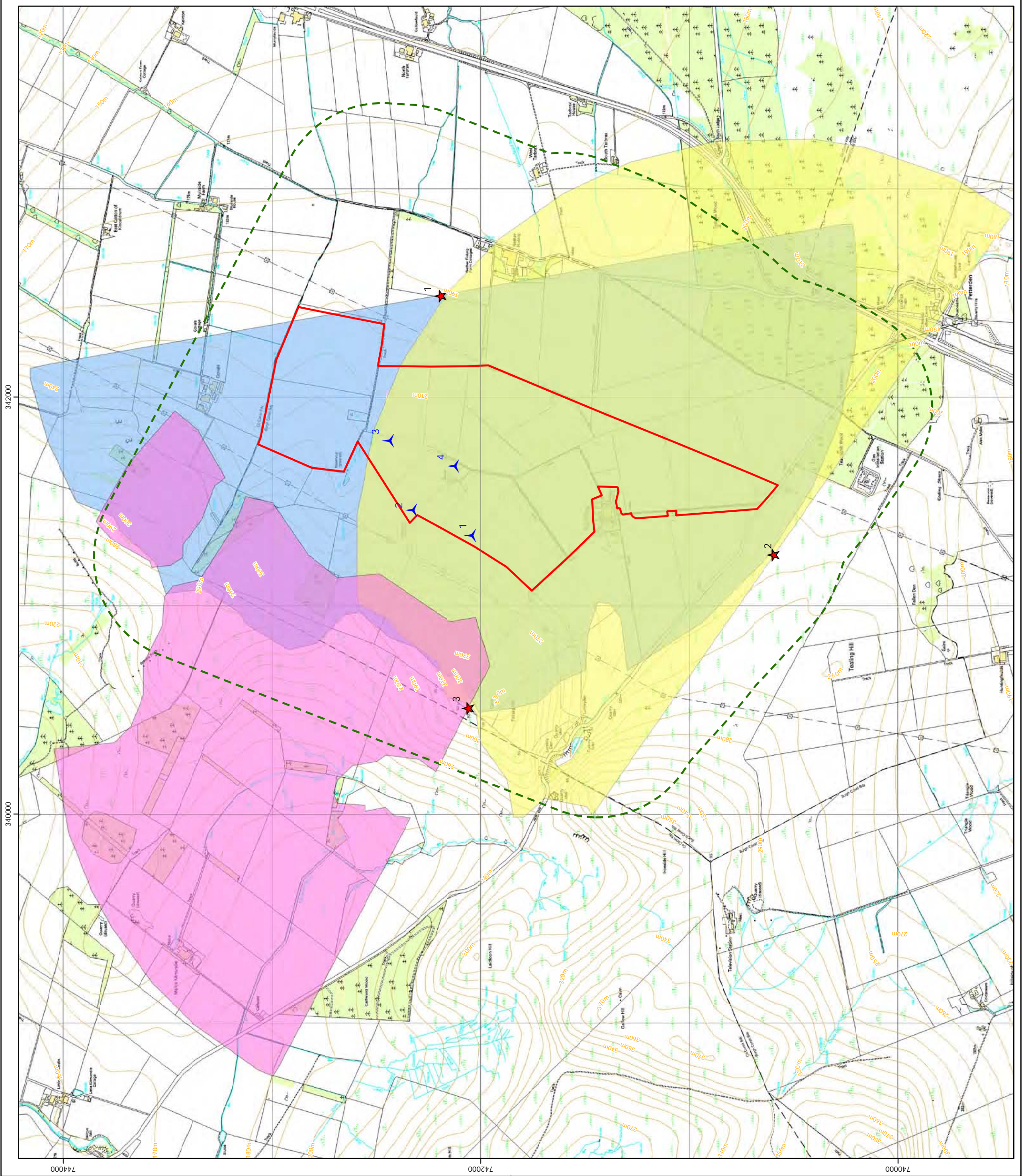
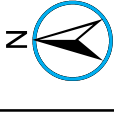
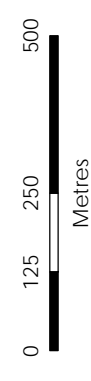


Figure 8-2
Raptor Flightlines
2008 - 2009

Key

- ▭ Site boundary
- ✈ Turbine location
- Vantage Point
- ★ 1 - 342483, 742193 (260°)
- ★ 2 - 341241, 740598 (35°)
- ★ 3 - 340508, 742060 (28°)
- Target species
- Barn owl
- Peregrine
- Height bands
- ⋯ Below 20m height
- ↑ 20 - 125m height
- Above 125m height



Scale @ A3:
1:12,000

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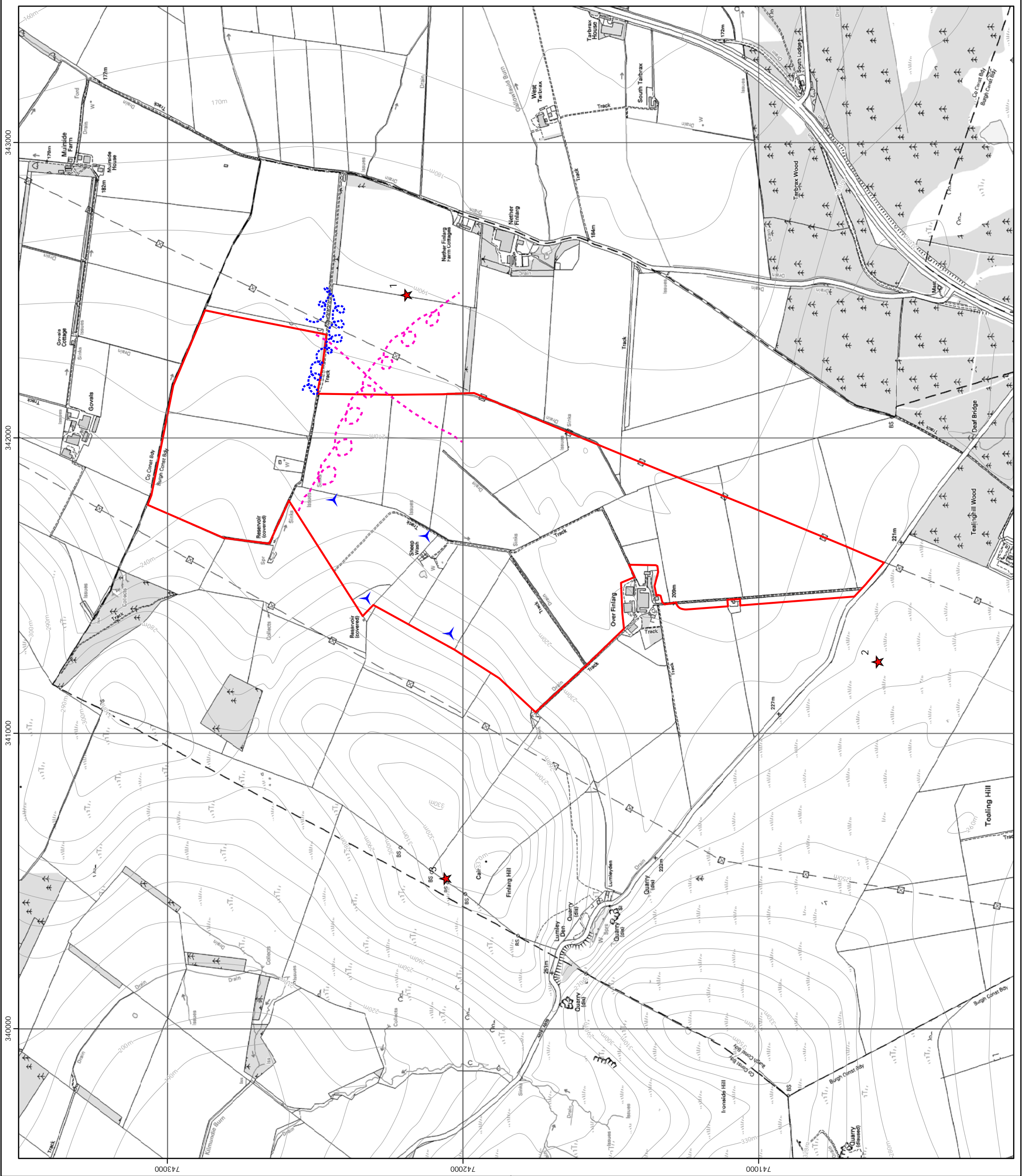


Figure 8-3
Waterfowl and Wader Flightlines
2008 - 2009

Key

- ▭ Site boundary
- ▲ Turbine location

Vantage Point

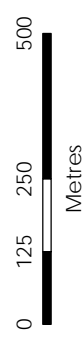
- ★ 1 - 342483, 742193 (260°)
- ★ 2 - 341241, 740598 (35°)
- ★ 3 - 340508, 742060 (28°)

Target Species

- Curlew
- Golden plover
- Greylag goose
- Lapwing
- Oystercatcher
- Pink-footed goose
- Whooper swan

Height bands

- - - - Below 20m height
- 20 - 125m height
- - - - Above 125m height
- ▲ Ground registration

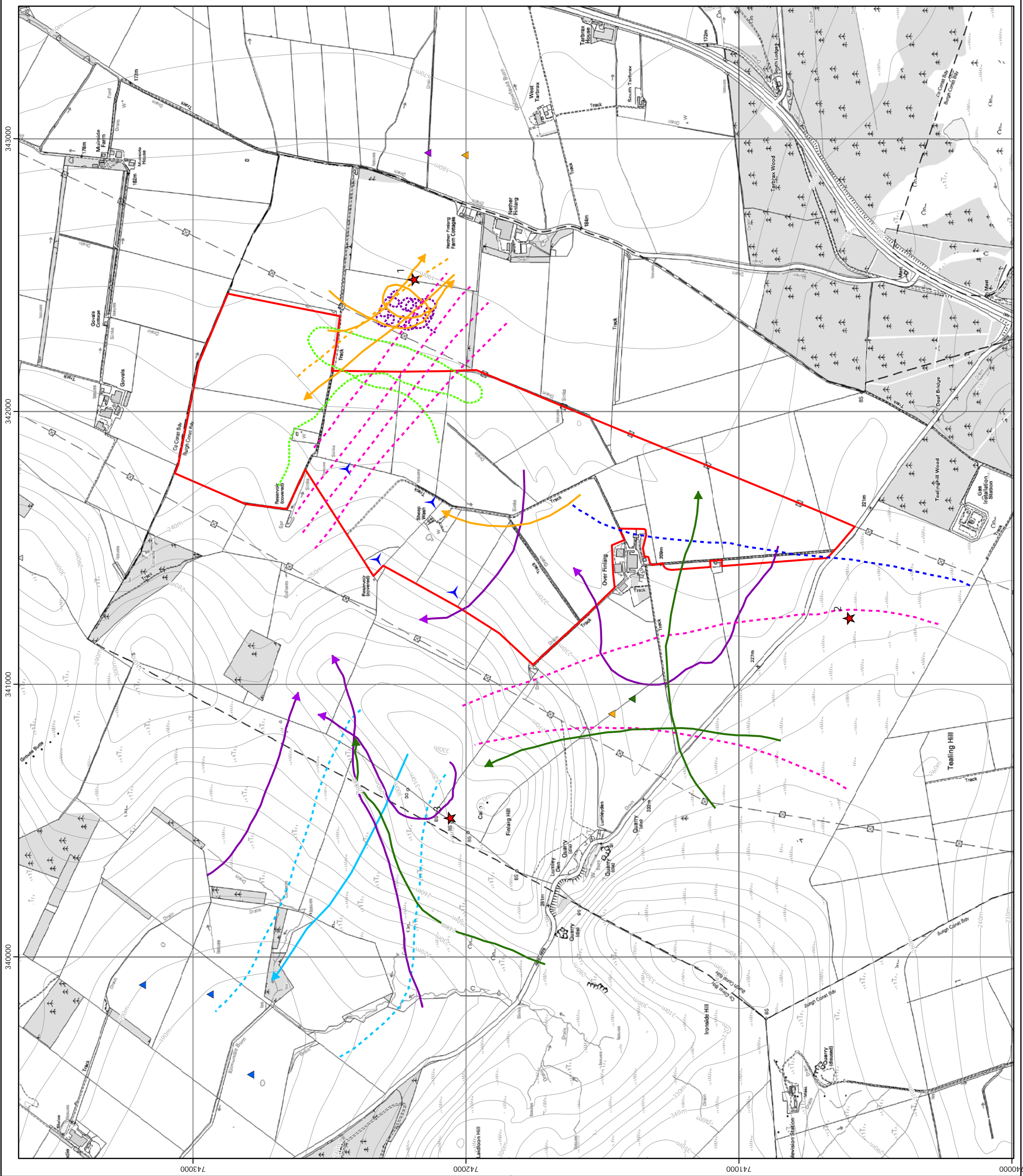


Scale @ A3:
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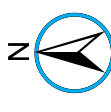
Frawney Wind Farm

Polar Energy (Finlary) Ltd

Figure 9-1
Hydrological Features

- Key**
- Site boundary
 - Site Infrastructure
 - Turbine locations
 - Temporary construction compound
 - Control building and substation
 - Crane hardstanding
 - New access track
 - Upgraded access track
 - Turbine foundation
 - Private Water Supply features
 - Mains
 - Spring
 - Tank
 - Borehole
 - Indicative private water supply piping
 - Pumphouse
 - Hydrology features
 - Drain
 - Indicative underground culvert
 - Watercourse
 - Spring (Non PWS)
 - Manhole/shaft
 - Septic tank
 - Proposed watercourse crossing
 - Waterbody
 - 100m buffer from spring or borehole
 - 250m buffer from spring or borehole
 - Earthworks
 - Infilled dam

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Scale @ A3:

1:10,000

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4603/HY/010C

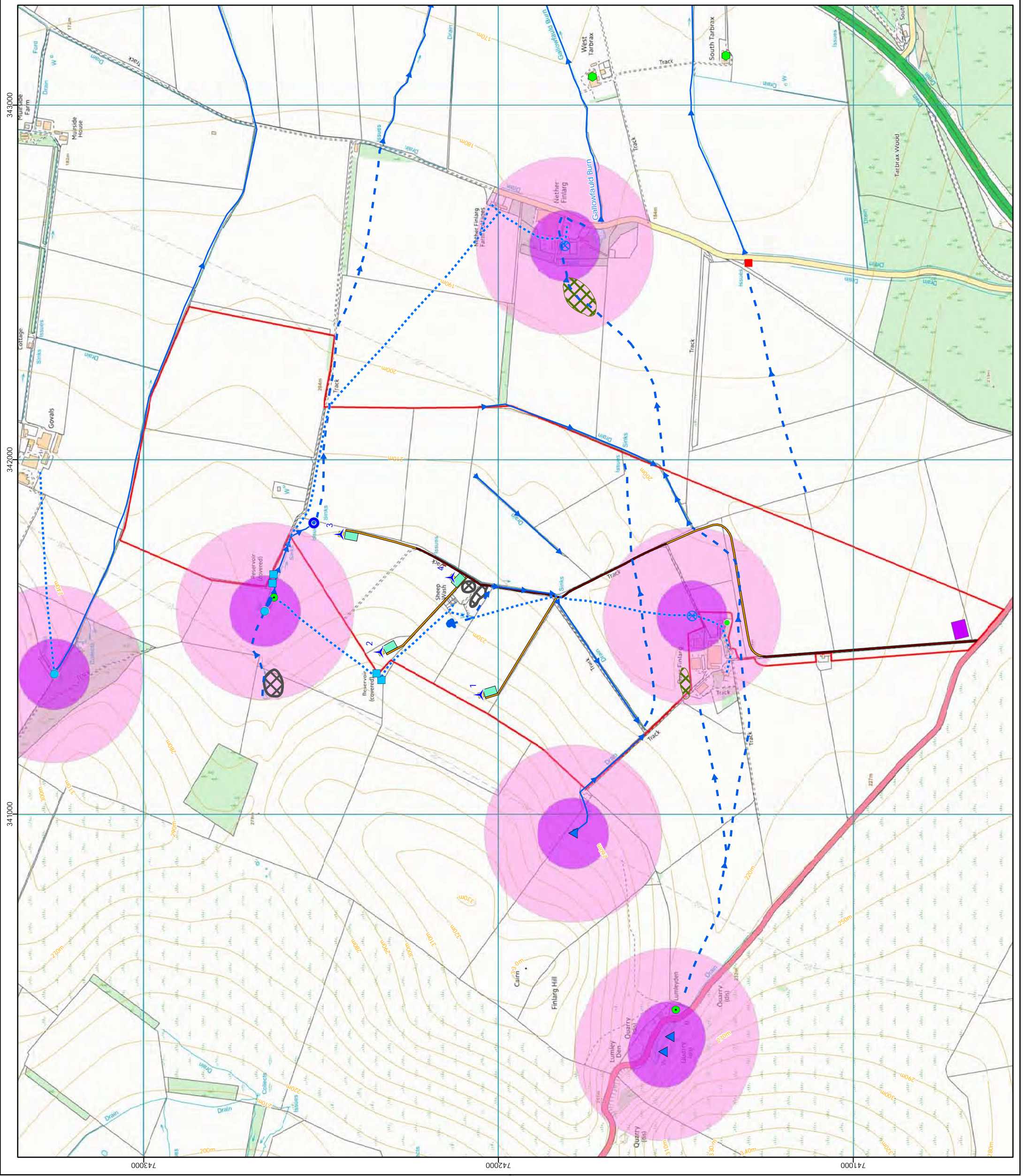
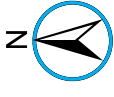
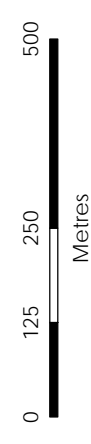


Figure 10-1
Cultural Heritage Features

Key

- Site boundary
- ✈ Turbine locations
- Cultural feature (point)
- Cultural heritage feature (area)

- 1 - Over Finlarg Farmhouse - Farmhouse Category C (s)
- 2 - Frawney Steading - Steading
- 3 - Frewney Steading - Steading
- 4 - Tarbrax School - School
- 5 - Lumleyden - Burials (possible)
- 6 - Nether Finlarg - Mill Dam/Sluice
- 7 - Nether Finlarg - Smithy
- 8 - Govals Quarry - Quarry
- 9 - Govals - Souterain (possible)
- 10 - Govals - Mound (possible structure)
- 11 - Govals - Quarries
- 12 - Nether Finlarg - Quarry
- 13 - Lumleyden - Boundary (stones)
- 14 - South Tarbrax - Inn, Category B Listed



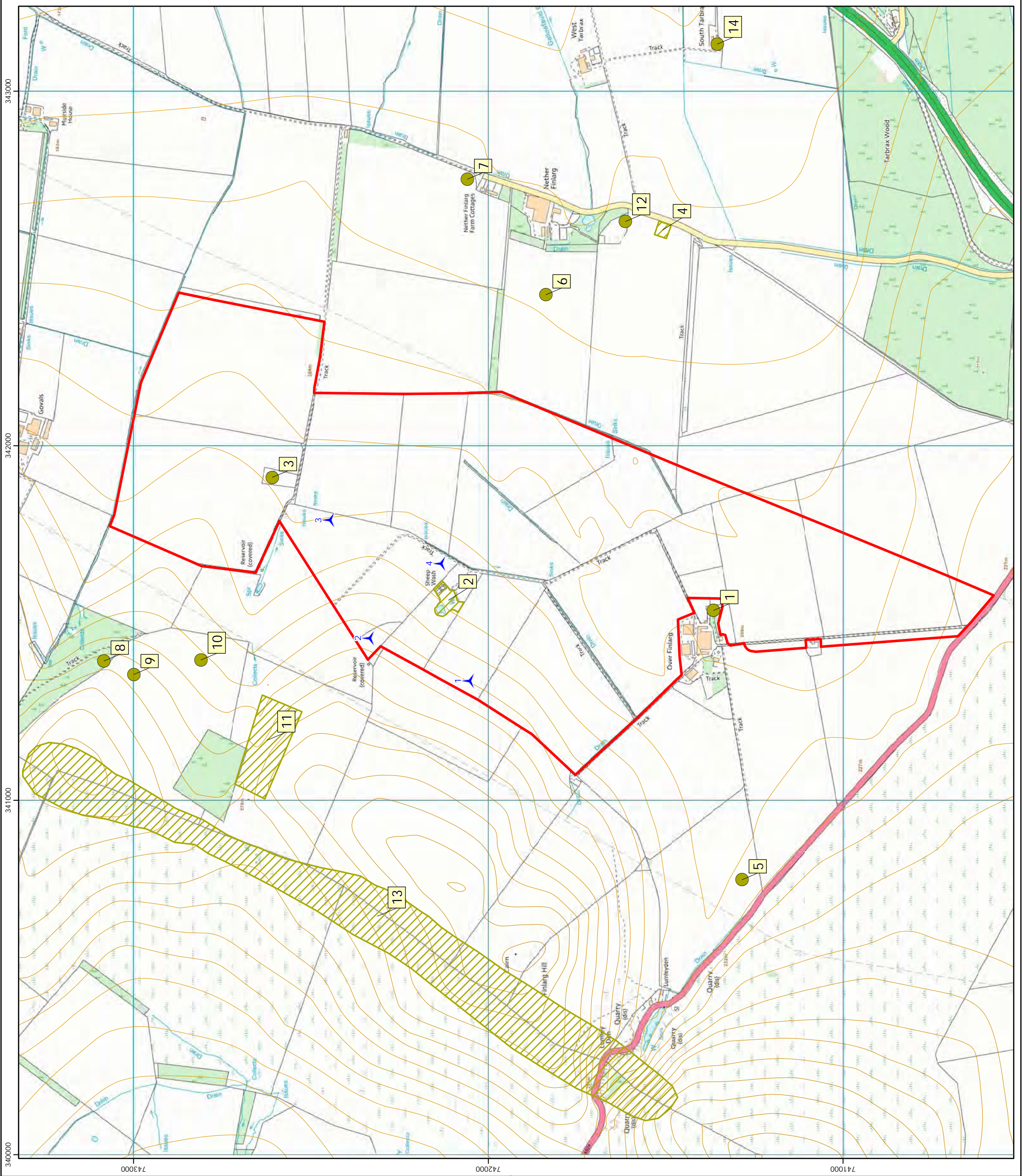
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1:10,000

AC34



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29/05/2014 TL02a
Drawn by: TH Checked by: TH Approved by: TP



343000

342000

341000

340000

743000

742000

741000

Figure 10-2
Cultural Heritage Context

Key

- Site boundary
- + Turbine location
- 5km radial turbine buffers
- Historic Scotland listed building category
 - + A
 - + B
 - + C(S)
- Scheduled Monument
- Garden or Designed Landscape
- Historic Scotland Conservation Areas



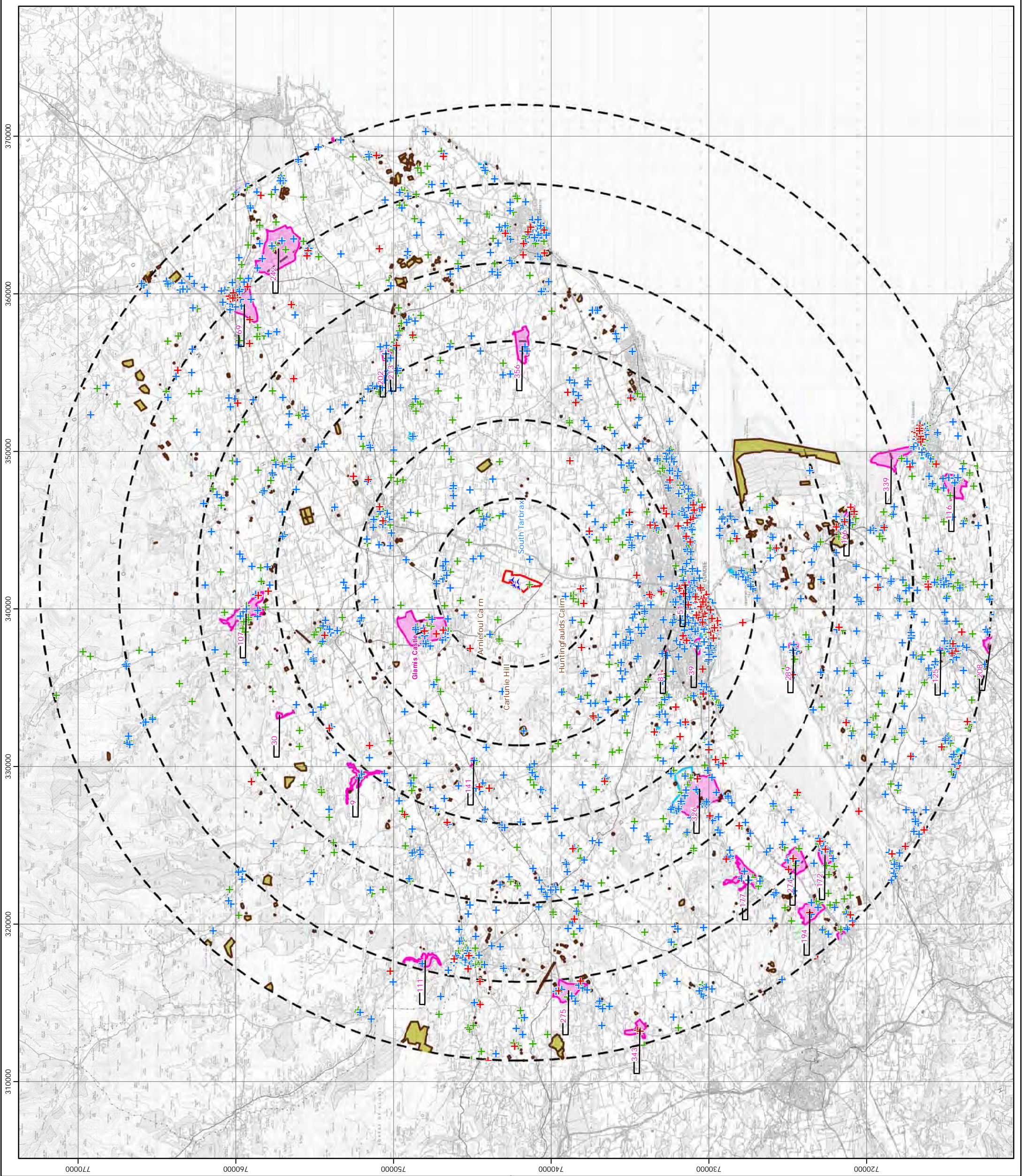
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AC34



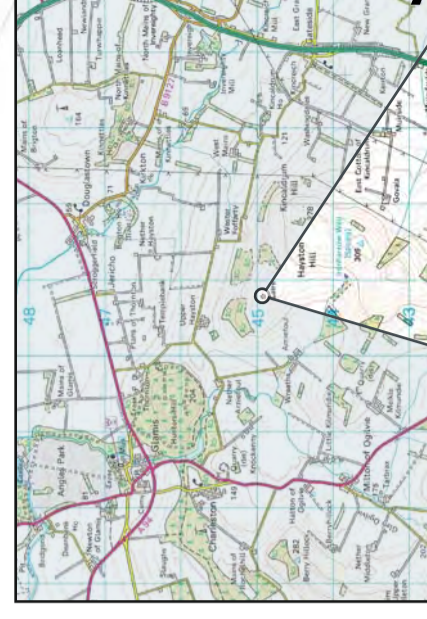
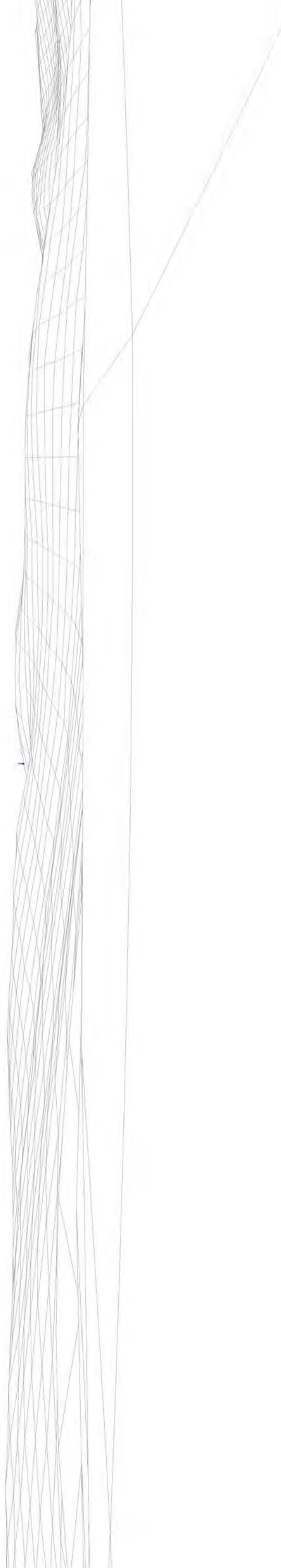
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4603/CH/024C



Predicted Wireframe

Frawney



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Scale 1:100,000@ A3

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Checked by TP 28/04/2014
Approved by TG 4603 CH C017b



Turbine Information
Tip Height 92.5m
Hub Height 57m
Diameter 71m

Wireframe Visibility
Hubs Visible 0
Tips Visible 1
Nearest Turbine 2,682m

Cultural Heritage Viewpoint 1 - Arniefoul Cairn
Grid Reference E340804, N744939
Elevation 234m AOD
Height Above Ground 2m
Horizontal Included Angle 73°

Polar Energy (Finlarg) Ltd

Frawney Wind Farm

Approximate Viewing Distance : 315mm @ A3

Figure 10-3

Predicted Wireframe

Frowney

Frowney
Wind Farm

**Polar Energy
(Finlargo) Ltd**

Approximate Viewing Distance : 315mm @ A3

Cultural Heritage Viewpoint 2 - Huntingfaulds Cairn
Grid Reference E340793, N739794
Elevation 21.6m AOD
Height Above Ground 2m
Horizontal Included Angle 73°

Wireframe Visibility
Hubs Visible 0
Tips Visible 0
Nearest Turbine 2,320m

Turbine Information
Tip Height 92.5m
Hub Height 57m
Diameter 71m



Drawn by JM TL 02a
Checked by JP 28/04/2014
Approved by TG 4603 CH C018b



0km

Scale 1:100,000@ A3

6km

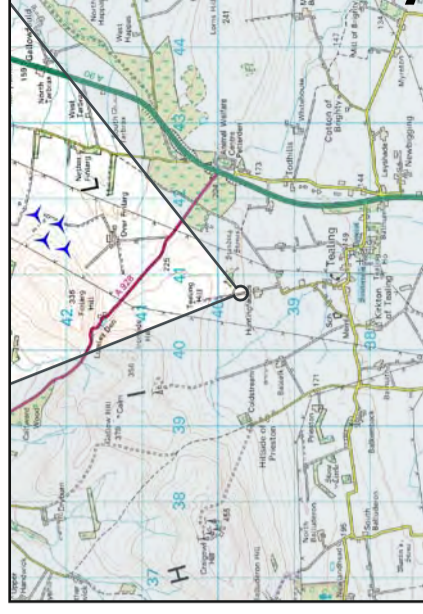
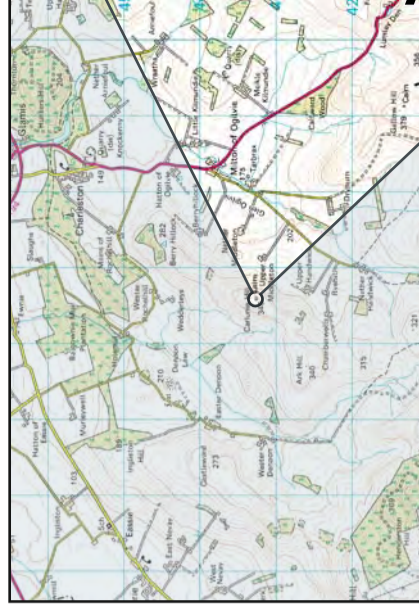
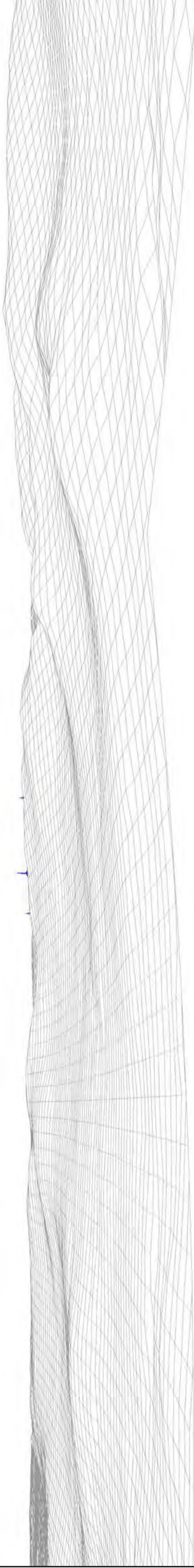


Figure 10-4

Predicted Wireframe

Frawney



0km 6km
Scale 1:100,000@ A3

Frawney
Wind Farm

**Polar Energy
(Finlargo) Ltd**

Approximate Viewing Distance : 315mm @ A3

Cultural Heritage Viewpoint 3 - Carlunie Hill Cairn
Grid Reference E336580, N743260
Elevation 336m AOD
Height Above Ground 2m
Horizontal Included Angle 73°

Wireframe Visibility
Hubs Visible 1
Tips Visible 3
Nearest Turbine 4,908m

Turbine Information
Tip Height 92.5m
Hub Height 57m
Diameter 71m



atmos
CONSULTING

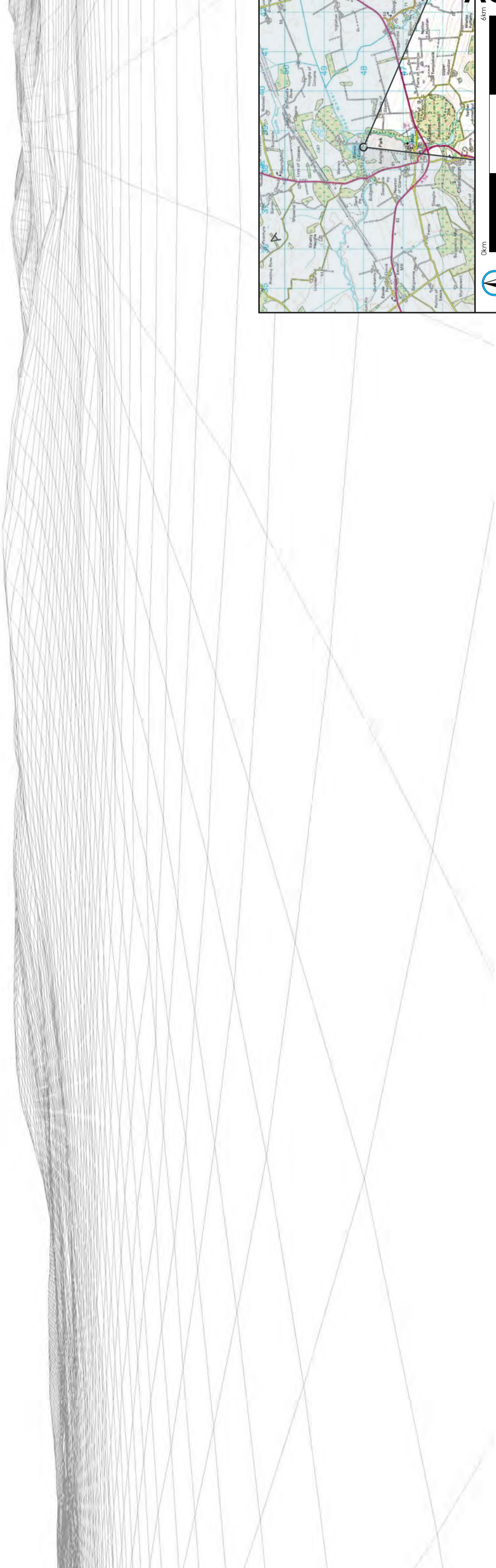
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Figure 10-5

Predicted Wireframe

Frawney



Frawney
Wind Farm

**Polar Energy
(Finlargo) Ltd**

Approximate Viewing Distance : 315mm @ A3

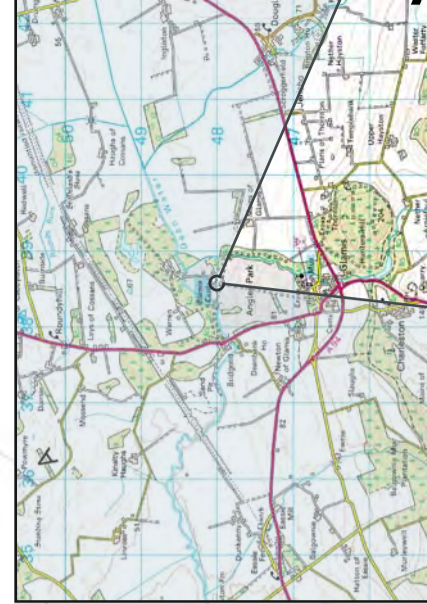
Cultural Heritage Viewpoint 4 - Glamis Castle
Grid Reference E538581, N748006
Elevation 54m AOD
Height Above Ground 42m
Horizontal Included Angle 73°

Wireframe Visibility
Hubs Visible 0
Tips Visible 0
Nearest Turbine 6.361m

Turbine Information
Tip Height 92.5m
Hub Height 57m
Diameter 71m

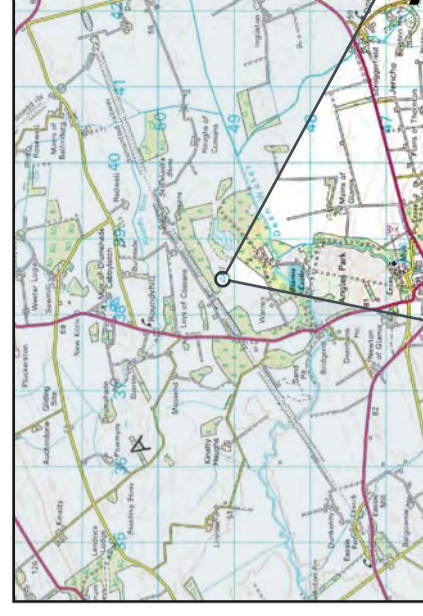
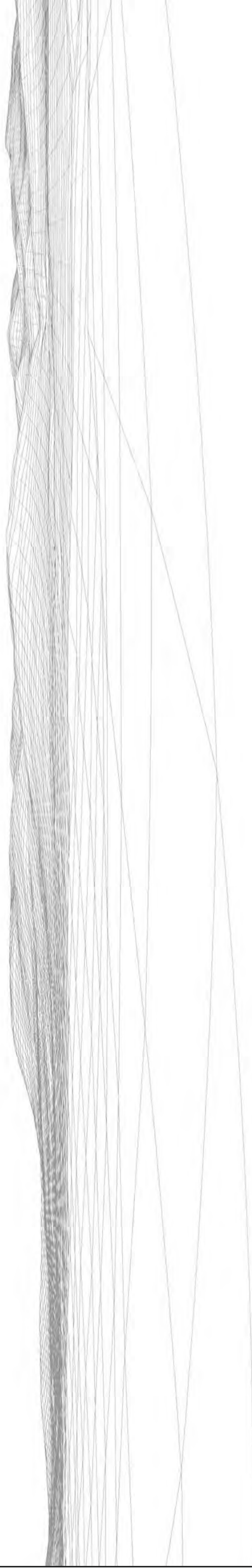


Scale 1:100,000@ A3
0km 6km
Drawn by JM
Checked by TP
Approved by TG 4603 CH C015b
TL 02a
28/03/2013



Predicted Wireframe

Frawney



AC34



Scale 1:100,000 @ A3

atmos
CONSULTING



Turbine Information
Tip Height 92.5m
Hub Height 57m
Diameter 71m

Cultural Heritage Viewpoint 5 - Glamis Castle Garden and Designed Landscape
Grid Reference E338479, N749146
Elevation 66m AOD
Height Above Ground 2m
Horizontal Included Angle 73°
Wireframe Visibility
Hubs Visible 0
Tips Visible 0
Nearest Turbine 7,436m

**Polar Energy
(Finlarg) Ltd**

Frawney
Wind Farm

Approximate Viewing Distance : 315mm @ A3

Figure 10-7

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 11-1
Potential Transport Route

Key

Site boundary

Turbine location

Potential transportation route

Traffic assessment locations

- 1 - Kingsway East – North of A92
- 2 - Kingsway East – South of Longtong Road
- 3 - Kingsway East – East of Pitkerro Road
- 4 - Kingsway East – East of Forfar
- 5 - Dundee – Forfar Road
- 6 - Powrie – North of Duntirane Road (Dundee)
- 7 - A928 at Meikle Kilmundie



Scale @ A3:
1:50,000

AC34



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Site entrance

Landing Port

345000

340000

335000

000017

000527

000017