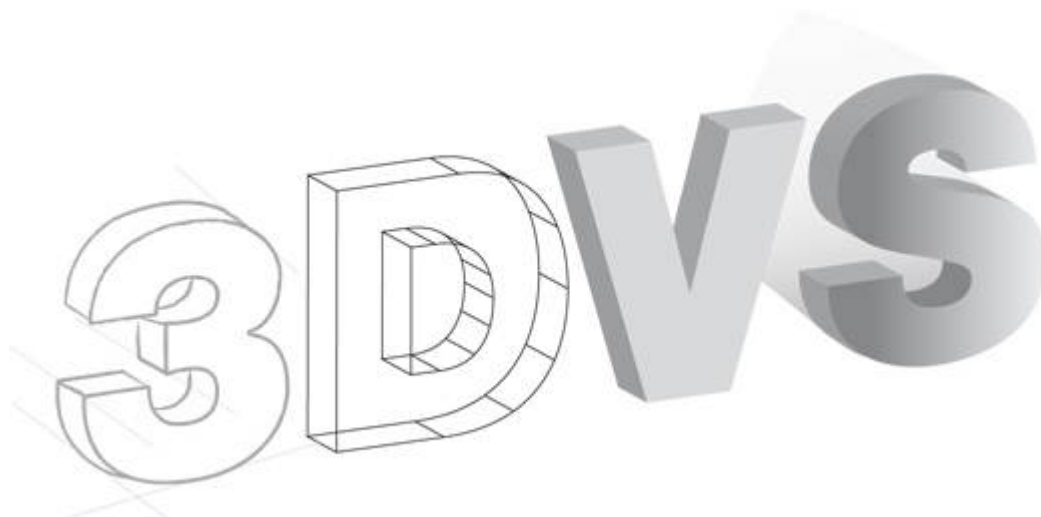




VISUALISATION IMPACT ASSESSMENT REPORT

HUNGER HILL FARM

HAIGH HEAD ROAD

HOYLANDSWAINE

S36 7JJ

THIS REPORT IS PREPARED IN ACCORDANCE WITH THE GUIDELINES IN 'GUIDELINES FOR LANDSCAPE AND VISUAL IMPACT ASSESSMENT. PUBLISHED BY THE LANDSCAPE INSTITUTE & THE INSTITUTE OF ENVIRONMENTAL MANAGEMENT & ASSESSMENT' & 'VISUAL REPRESENTATION OF WINDFARMS: GOOD PRACTICE GUIDE'. PUBLISHED BY SCOTTISH NATURAL HERITAGE.

Visual Impact Assessment.

1. Introduction

3DVS have undertaken this Visual Impact Assessment study on behalf of *David Storrie Associates*, which is intended to form part of an application for the determination of the erection of an Endurance wind turbine at Hunger Hill Farm, Haigh Head Rd, Hoylandswaine. The report identifies the visual impact of this turbine through photography.

2. Site Context.

Grid Reference	
Lat/Lon:	53 32.378 – 001 36.968
OSGB:	SE25633 04764
Landscape Description & Use	Agriculture
Green Belt	Yes
National Park	No
A.O.N.B	No
Planning Authority	Barnsley
Distance from site to nearest residential property owned by customer.	245m
Distance to nearest property not owned by customer.	208m
Distance from nearest commercial property.	156m
Centres of residence	Hoylandswaine, Penistone, Thurlstone
Public Highways	A628, A629.
Public Footpaths/Bridleways etc.	Penistone Boundary Walk, Trans Pennine Trail.

3. Existing Environment.

A desktop study was undertaken to gather information on the existing baseline landscape conditions, location of visual receptors and geographical context to establish the area over which the wind turbine development may have a visual impact. In addition to the desktop study, site survey work was undertaken to verify the findings of the data collection, to identify specific landscape features and to undertake a detailed visual analysis. Photographs were taken from viewpoints from potential visual receptors.

4. Terrain/Landscape/Site Context.

The proposed site is situated in Green Belt. The vicinity is agricultural. It is in a prominent position, being some 128m to the northwest of the OS trig point at 264m AOD (Barometric Reading GPS) with the local terrain falling away moderately in all directions. There are residential properties to the east. Hoylandswaine is to the northeast, Penistone to the south and Thurlstone to the southwest. There are two transmitters to the southeast of the site at: 1 SE25804 04560 and 2 SE25927 – 04510 approx 484m to the southeast. There is also a single Proven Wind turbine to the east, OS ref unknown. Spicer Hill Wind Farm is 4.6km to the west.

5. Methodology for Assessment of Landscape Resource and Visual Impacts.

The assessment of the visual impacts were conducted in accordance with current guidance or adapted, namely The Landscape Institute and Institute of Environmental Management and Assessment *Guidelines for Landscape and Visual Impact Assessment*, (Second Edition) 2002, as described below.

In defining the landscape visual impact Tables 1, 2 & 3 below have been used as guides.

Table 1. Sensitivity Classification

Sensitivity of Landscape Resource	
Landscape of particularly distinctive, character susceptible to relatively Small changes e.g. National Park	High
Landscape with relatively ordinary characteristics reasonably tolerant of changes	Medium
Landscape with few features of value or interest, potentially tolerant of Significant change.	Low

Note on Table 1, specifically A.O.N.B, National Parks, SSSI and World Heritage sites etc.

This report addresses the visual impact of the proposed site from the viewpoint of an individual or individuals looking towards the site from various viewpoints or 'visual receptors', it does NOT assess the 'physical' impact on the Land e.g. Flora/Fauna, Geology, terrain and land use, therefore the objective terminology used in this report is of a different meaning, and RELATES to visual impact.

For example:

The proposed site may be in a National Park, by definition a high sensitivity landscape. However the site from a particular viewpoint, say a road or footpath may be masked or hidden by trees, from a 'visual' reception point of view this would be classed as 'slight' as the turbine is not in full view to the 'visual' receptor. The same criteria are applied to any properties that may have visual reception to the site.

Issues on the physical change to the landscape (as above) should be addressed by other reports.

Table 2. Magnitude Classification.

Magnitude of Change	
Substantial change in landscape characteristics over an extensive area, ranging to very intensive change over a limited area. Permanent, long term.	High
Moderate change in landscape component over a wide area and/or moderate change in localised area.	Moderate
Discernable but slight change in any landscape component. Short term, temporary	Slight
Virtually imperceptible change. Insignificant scale to affect the integrity of the landscape component	Negligible

Table 3. Impact Significance.

	Low Sensitivity	Medium Sensitivity	High Sensitivity
Substantial Magnitude	Moderate Impact	Substantial Impact	Substantial Impact
Moderate Magnitude	Slight Impact	Moderate Impact	Substantial Impact
Slight Magnitude	Slight Impact	Slight Impact	Moderate Impact
Negligible Magnitude	Negligible Impact	Slight Impact	Slight Impact

Table 4 provides a summary of predicted visual impact upon completion of installation and construction

3DVS Environmental Impact Visualisation Report

Table 4. Predicted Visual Impact over the next 5 years.

Activity	Effect upon landscape resource	Sensitivity	Magnitude	Significance of visual impact.
Increase in traffic due to construction works and erection of plant	Loss of a small area of grassland	LOW	LOW	SLIGHT
Initial Operation Stage	Continuation of existing conditions – Loss of small area of grassland	LOW	LOW	SLIGHT
Continued full time operation	Continuation of existing conditions – Loss of small area of grassland.	LOW	LOW	SLIGHT

Table 5. Predicted Visual Impacts Upon Completion of Construction.

Activity	Effect upon Visual Impact	Sensitivity	Magnitude	Significance of visual impact.
Increased visibility of the site due to the operation of the single wind turbine	Near distance views.			
	Location 1	Moderate	Moderate	Moderate
	Location 2	Slight/Moderate	Slight/Moderate	Slight/Moderate
	Location 3	Moderate	Moderate	Moderate
	Location 4	Slight/Moderate	Slight/Moderate	Slight/Moderate
	Location 5	Slight/Moderate	Slight/Moderate	Slight/Moderate
	Location 6	Slight/Moderate	Slight/Moderate	Slight/Moderate
	Middle Distance Views.			
	Location 7	Moderate	Moderate	Moderate
	Location 8	Moderate	Moderate	Moderate
	Far distant views.	N/A	N/A	N/A

6. Methodology for Assessment of Visual Impact.

Visual impact is the result of a change in view from receptors such as residential property, public rights of way, land with public access and roads. Residential properties are considered the most sensitive receptors to changes in view whereas road users are the least sensitive as their experience is transient. The magnitude of impact is assessed according to the scale of the effect, which will depend largely upon the size and type of the development and the distance of the receptor/s from the site. The significance of visual impact depends upon the sensitivity of the receptor and the magnitude and duration of the effect

Technical Processes Used in Producing this Report.

1. All location photographs and the Turbine position were logged on site using a GARMIN GPS. The accuracy of positions is +/- 1m.
2. Locations were logged on site as OSGB 10 figure co-ordinates. These were then converted back to Latitude – Longitude bearings so that the positions could be accurately marked on the Google Earth Aerial view and the relevant OS Maps.
3. Original Marker Distances on the GPS were cross referenced with the distances from Google Earth and OS Maps for accuracy. Both, co-ordinate sets, elevation and distance from the Turbine position are clearly marked on the images. Terrain Cross Profiles were produced from OS digital maps 1:50.000/1:25000 vertical exaggeration is approximately x 2.
4. The visualisations were produced using 3D STUDIO MAX and Photoshop. This was done by placing the photographs into 3DS Max, placing a 'virtual camera' in the scene at the correct distance from the turbine and then superimposing the turbine into the scene. Scale height calculations were done to ensure total accuracy of turbine height against distance.
5. Final images were then rendered out, saved as .jpg files and then post processed in Photoshop, re-sizing of image for printing purposes.

Note: Consideration is given to all possible visual receptors within the range 0 to 5000m during the desktop study. However, it would be impractical to examine all visual vantage points for a project of this size and we accept that the turbine could be seen from other locations.

Table 6. Sensitivity of Visual Receptors.

Sensitivity of Visual Receptor.	
Residential properties less than 1 km from the development with direct views from ground floor and first floor windows towards the development. Public Rights of Way less than 1 km from the development with direct views.	HIGH
Residential properties over 1 km from the development or with more restricted views towards the development. Public Rights of Way more than 1 km from the development, or with restricted views. Local side roads and lanes. Sporting and recreational facilities, allotments.	Medium
Offices, commercial developments and industrial sites. Main roads and rail routes.	Low

Table 7. Classification of Magnitude of Visual Receptors.

Magnitude of Impact (Scale).	
The majority of viewers affected/major changes over a large proportion of the view.	Substantial
Many of the potential viewers affected/ major changes over a smaller proportion of the view/moderate change in view/partial view.	Moderate
Few viewers affected / minor change in view/glimpsed view.	Slight
Indiscernible change in the view.	Negligible

Table 8. Significance of Impact (Relationship Between Sensitivity and Magnitude).

	Low Sensitivity	Medium Sensitivity	High Sensitivity
Substantial Magnitude	Moderate	Substantial	Substantial
Moderate Magnitude	Slight	Moderate	Substantial
Slight Magnitude	Slight	Slight	Slight
Negligible Magnitude	Neutral	Neutral	Slight

The photomontage images have been produced to predict the proposed views of the site post construction. Photograph Locations 1 to 8 were taken using a Fuji SD2950 digital camera with a 50mm lens. The images are comparable to those observed by the human eye. The photomontages were produced using 3d Studio Max an industry standard visualisation package, part of the Autodesk AutoCAD group and PhotoShop. Photographs 1 to 8 were taken from publicly accessible viewpoints, to illustrate the site on completion.

7. Visual Baseline Conditions.

A visual analysis was undertaken in March when weather conditions and visibility were considered to be acceptable.

The Zone of Theoretical Visibility (ZTV) is defined as the area from within which the proposed development would be visible (assuming an eye level of 1.6 m above ground level). The ZTV and potential visual receptors are shown in Part 2 of this report.

For a project of this size 3DVS do not employ DTM's (Digital Terrain Models) or DEM's (Digital Elevation Models). This practice is the domain of Utility Scale Windfarms.

8. Visual Receptors.

The local authority has not asked for any specific locations to be considered.

There were a number of possible visual receptors identified from the desk top study.

These were:

Penistone
Hoylandswaine
A628
A629
Barnsley Boundary
Minor roads to the east and north of the site.

All of the above sites were visited on the day.

A total of 8 visual receptors were chosen and photographs taken looking towards the site of the Turbine for assessment on how they might be visually affected by the erection of the proposed turbines.

The receptors are situated between 127m and 1593m away from the site. All photographs were taken from publicly accessible viewpoints.

Near Distant Views (inside 1000m)

Location 1
Location 2
Location 3
Location 4
Location 5
Location 6

Middle Distance Views (Between 1000m & 2500m).

Location 7
Location 8

Distant Views (Between 2500m & => 5000m.)

An assessment of possible points was made and the following sites visited; Ingbirchworth, Silkstone, Thurlstone, Millhouse Green.

Whilst the proposed turbine is prominent views to the site from these areas and distances would be zero/slight due to distance and changes in local topography.

9. Predicted Visual Impacts.

A summary of the visual impacts from the above receptors, using the methodology described in Section 6 is summarised in Section 11. The receptor locations are shown in Part 2 of this report. (GIS Image & Shaded relief OS Map). Terrain Cross Profiles with a vertical exaggeration of approx X2 are also supplied in Part 2 of this report.

The description of the views and the potential impact on individual receptors is summarised as follows below:

Location 1

Public footpath, viewing point, Trig Point to the southeast of the site. Proposed Turbine is 127m away and will be clearly seen.

Location 2

This photograph location was chosen to establish the visual impact to the properties to the east of the site. The properties have viewpoints with a south western aspect. Subtended Angle Analysis was calculated for this point and only part of the turbine will be seen.

Location 3

A629 looking north towards the site from the end of the public footpath. The residential property seen to the left of the photograph will have a direct view to the site. However angle of view at that point will limit the amount of turbine seen. Traffic moving in an easterly direction along the A629 will have a transient view to the site.

Location 4

Junction of Renald Lane, Firs Lane and Public footpath. Turbine is seen as an isolated structure.

Location 5

Renald Lane/Gadding Moor Rd. View looking south to the site. Turbine is on the skyline to traffic moving south. Note other vertical structures in the vicinity.

Location 6.

Penistone Boundary Walk (Cross Lane). Proposed turbine is seen on the Skyline. There are no residential properties with views to the site from this point.

Location 7.

Viewpoint to demonstrate any views from Penistone Grammar School. Turbine along with other vertical structures nearby will be seen. There will be no significant changes in the visual amenity at this point.

Location 8.

Residential properties along Wentworth Rd. The proposed turbine will be seen as a thin rotating construction. The view is dominated by the Transmitter mast to the east of the site.

10. Summary of Predicted Visual Impact.

Fundamental change at the site will result from the erection of the turbine as a new vertical structure in the landscape.

Cumulative impact is classed as 'combined' with no increase in visual 'harm' to the area.

11. Conclusion.

1. This is an application for 1 Turbine which is narrow in construction profile.
2. The proposed site is located in a prominent position 127m from an OS Trig point.
3. Visual impact varies depending on distance.
4. Properties at location 2 have indirect views to the site.
5. There are no views from Ingbirchworth, Silkstone and Thurlstone.
6. There is no substantial visual impact to Penistone Grammar School.
7. The area in the vicinity of the proposed turbine has 2 transmitters and 1 other Turbine.

The proposed site stands in a prominent position. However the main centre of population (Penistone) will not be affected by any significant changes in visual amenity.

Visual Impact is seen as moderate overall.

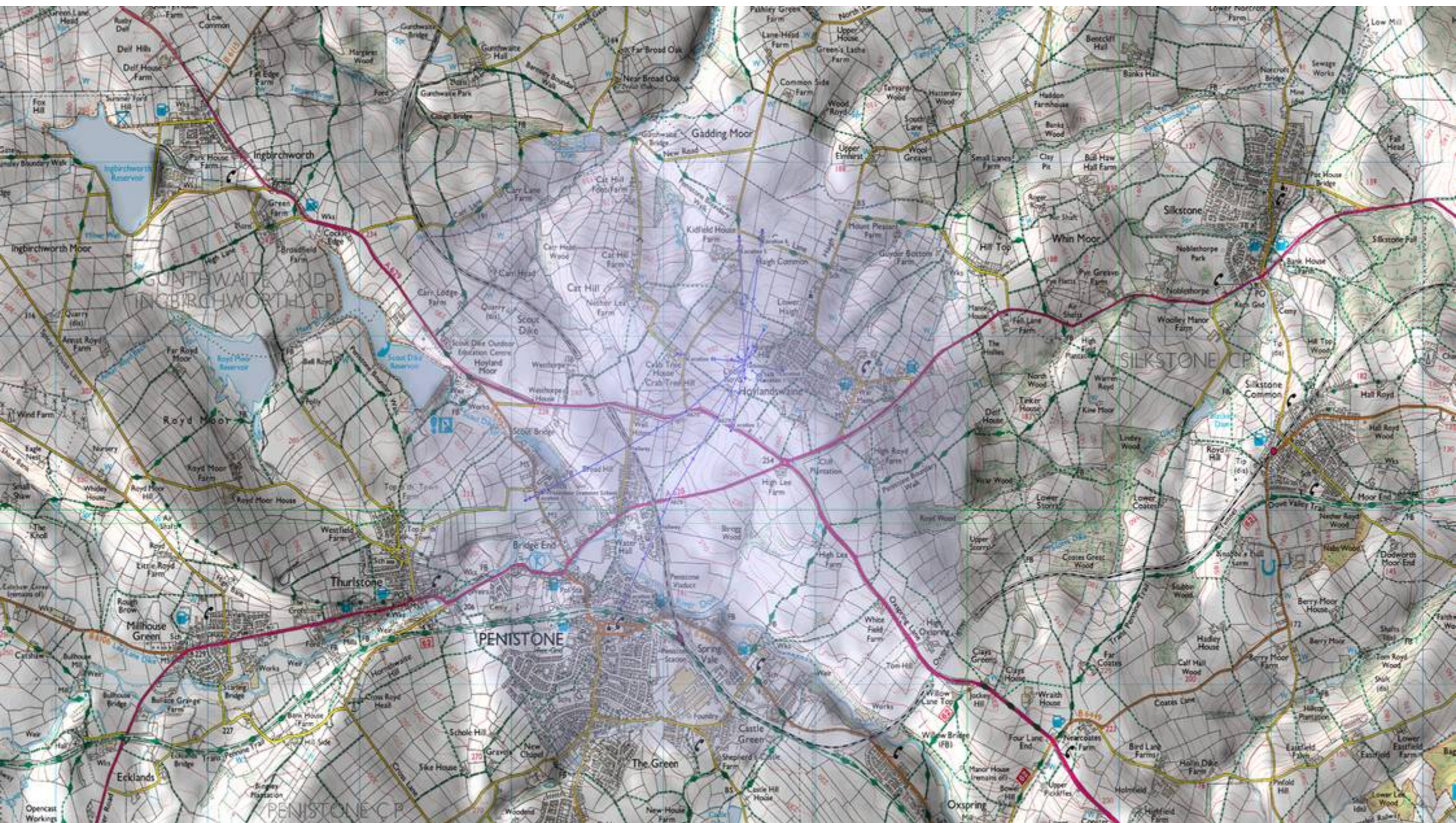


Google earth

Imagery Date: 5/31/2009 2002

53° 32' 09.92" N 1° 37' 26.09" W elev. 229 m

Eye alt 5.60 km





Location 1. OSGB: SE25633 - 04764. Lat/Lon: 53 32.334 - 001 36.882 Distance to Turbine = 127m. 267m AOD (GPS). View looking northwest.
50mm lens. 100ASA. exp = 1/280th sec, f3.6



Location 2. OSGB: SE25760 - 04801. Lat/Lon: 53 32.353 - 001 36.766. Distance to Turbine = 227m. 255m AOD (GPS) View looking west/northwest.
50mm lens. 100ASA. exp = 1/300th sec, f3.8



Location 3. OSGB: SE25458 - 04507. Lat/Lon: 53 32.196 - 00137.041. Distance to Turbine = 350m. 244m AOD (GPS). View looking north.
50mm lens. 100ASA. exp = 1/380th sec, f3.8



Location 4. OSGB: SE25155 - 04886 Lat/Lon: 53 42.401 - 001 37.314. Distance to Turbine = 383m. 244m AOD (GPS). View looking east.
50mm lens. 100ASA. exp = 1/350th sec, f3.8



Location 5. OSGB: SE25509 - 05503. Lat/Lon: 53 32.733 - 001 36.990 Distance to Turbine = 660m. 251m AOD (GPS). View looking south.
50mm lens. 100ASA. exp = 1/420th sec, f3.8



Location 6. OSGB: SE25649 - 05561. Lat/Lon: 53 32.764 - 001 36.863 Distance to Turbine = 722m. 200m AOD (GPS). View looking south.
50mm lens. 100ASA. exp = 1/400th sec, f3.8



Location 7. OSGB: SE24172 - 04086 Lat/Lon: 53 31.972 - 001 38.207 Distance to Turbine = 1593m (1.6km). 214m AOD (GPS). View looking northeast.
50mm lens 100ASA. exp = 1/420th sec, f3.8



Turbine.

Location 8. OSGB: SE24772 - 03521. Lat/Lon: 53 31.666 - 001 37.667. Distance to Turbine = 1564m (1.6km). 200m AOD (GPS). View looking northeast.
50mm lens. 100ASA. 1/400th sec, f3.8

Terrain Profile: Location 1 to Turbine

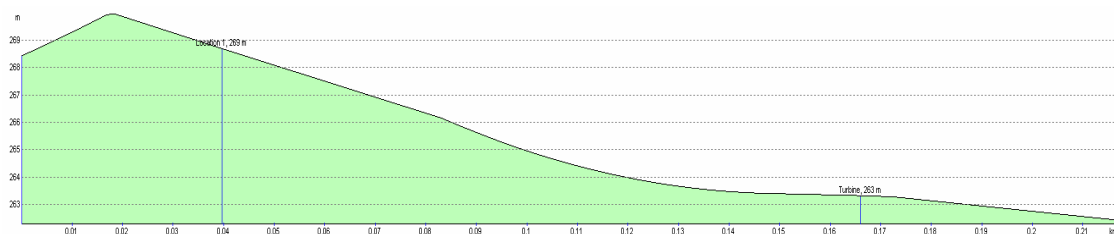
Summary

Profile Distance: 217 m

Total Ascent: 0 m

Total Descent: 6 m

Elevation Profile



Waypoints

Leg	Name / Position / Elevation	Bearing	Distance	Ascent	Descent	Comments
0	WP2901 SE 25664 04740 268 m					
1	Location 1 SE 25633 04764 269 m	307°T	39.7 m	0 m	0 m	Location 1 Distance to Turbine = 127m. 267m AOD (GPS). Profile running northwest.
2	Turbine SE 25537 04846 263 m	310°T	126 m	0 m	5 m	Turbine. 264m AOD (GPS).
3	WP2904 SE 25497 04877 262 m	308°T	50.9 m	0 m	0 m	
Totals:			217 m	0 m	6 m	

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Terrain Profile: Location 2 to Turbine

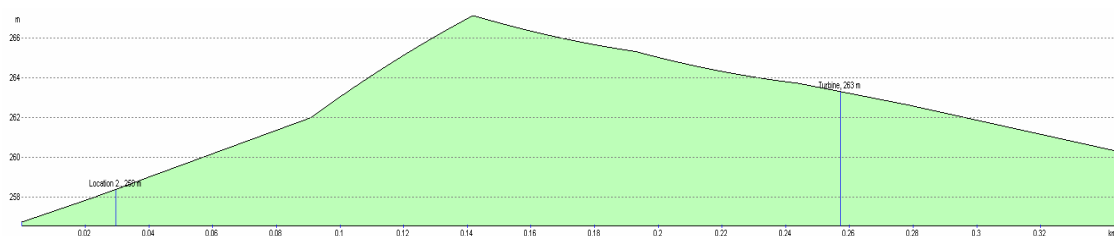
Summary

Profile Distance: 344 m

Total Ascent: 9 m

Total Descent: 7 m

Elevation Profile



Waypoints

Leg	Name / Position / Elevation	Bearing	Distance	Ascent	Descent	Comments
0	WP3001 SE 25789 04797 257 m					
1	Location 2. SE 25760 04801 258 m	277°T	29.7 m	0 m	0 m	Location 2. Distance to Turbine = 227m. 255m AOD. Profile running west/northwest.
2	Turbine SE 25537 04846 263 m	281°T	228 m	7 m	2 m	Turbine. 264m AOD (GPS).
3	WP3004 SE 25452 04862 260 m	281°T	86.6 m	0 m	0 m	
Totals:			344 m	9 m	7 m	

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Terrain Profile: Location 3 to Turbine

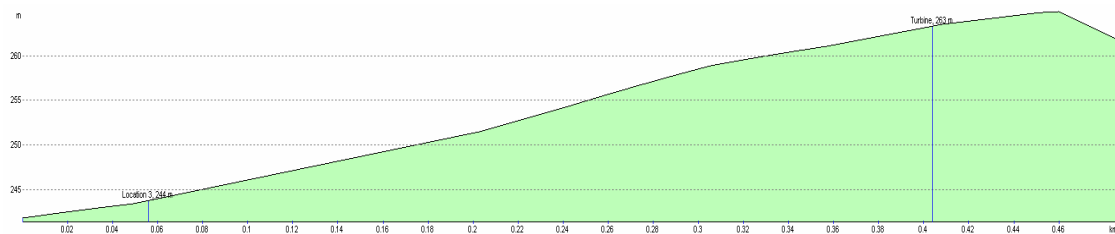
Summary

Profile Distance: 486 m

Total Ascent: 22 m

Total Descent: 1 m

Elevation Profile



Waypoints

Leg	Name / Position / Elevation	Bearing	Distance	Ascent	Descent	Comments
0	WP3101 SE 25447 04452 242 m					
1	Location 3 SE 25458 04507 244 m	011°T	55.8 m	0 m	0 m	Location 3. Distance to Turbine = 350m. 244m AOD (GPS). Profile running north.
2	Turbine SE 25537 04846 263 m	013°T	348 m	20 m	0 m	Turbine. 264m AOD (GPS).
3	WP3104 SE 25559 04925 262 m	016°T	82 m	0 m	0 m	
Totals:			486 m	22 m	1 m	

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Terrain Profile: Location 4 to Turbine

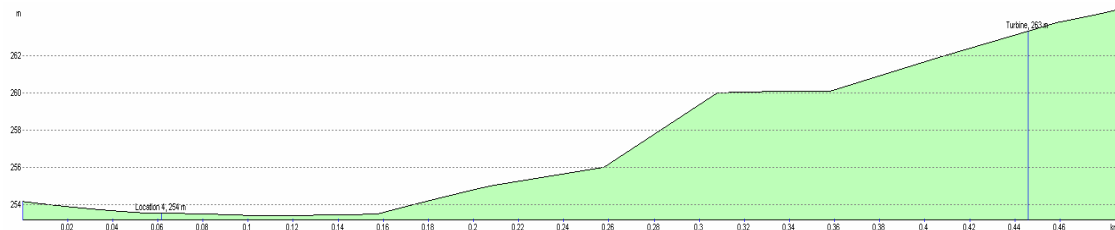
Summary

Profile Distance: 486 m

Total Ascent: 11 m

Total Descent: 1 m

Elevation Profile



Waypoints

Leg	Name / Position / Elevation	Bearing	Distance	Ascent	Descent	Comments
0	WP3201 SE 25095 04897 254 m					
1	Location 4 SE 25155 04886 254 m	100°T	61.6 m	0 m	0 m	Location 4. Distance to Turbine = 383m. 251m AOD (GPS). Profile running east.
2	Turbine SE 25537 04846 263 m	096°T	384 m	10 m	0 m	Turbine. 264m AOD (GPS).
3	WP3204 SE 25577 04842 264 m	095°T	40.1 m	0 m	0 m	
Totals:			486 m	11 m	1 m	

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Terrain Profile: Location 5 to Turbine

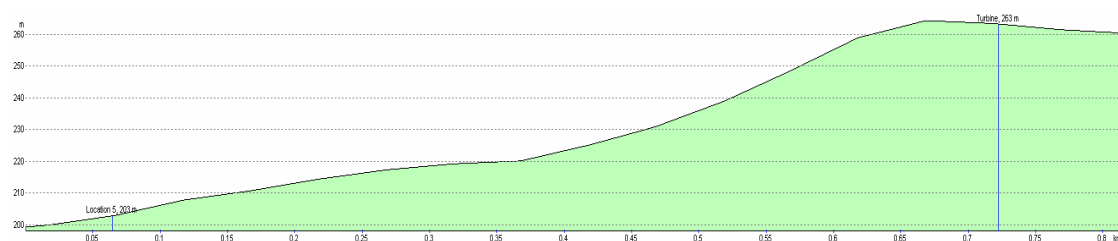
Summary

Profile Distance: 814 m

Total Ascent: 65 m

Total Descent: 4 m

Elevation Profile



Waypoints

Leg	Name / Position / Elevation	Bearing	Distance	Ascent	Descent	Comments
0	WP3301 SE 25502 05567 199 m					
1	Location 5 SE 25509 05503 203 m	174°T	64.7 m	0 m	0 m	Location 5. Distance to Turbine = 660m. 200m AOD (GPS). Profile running south.
2	Turbine SE 25537 04846 263 m	177°T	658 m	61 m	1 m	Turbine. 264m AOD (GPS).
3	WP3304 SE 25539 04755 260 m	178°T	91.2 m	0 m	0 m	
Totals:			814 m	65 m	4 m	

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Terrain Profile: Location 6 to Turbine

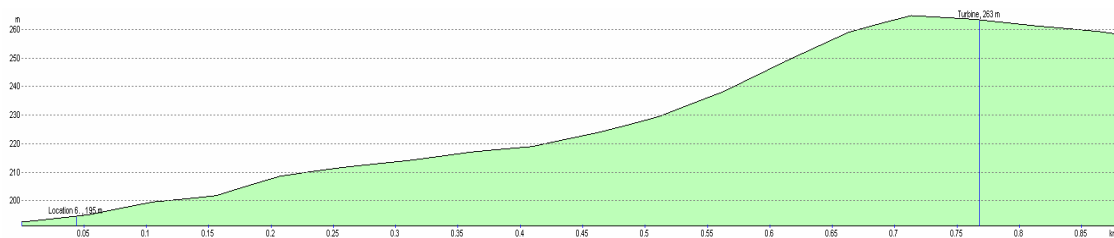
Summary

Profile Distance: 879 m

Total Ascent: 70 m

Total Descent: 6 m

Elevation Profile



Waypoints

Leg	Name / Position / Elevation	Bearing	Distance	Ascent	Descent	Comments
0	WP3401 SE 25654 05605 193 m					
1	Location 6. SE 25649 05561 195 m	187°T	44.1 m	0 m	0 m	Location 6. Barnsley Boundary Walk. Distance to Turbine = 722m. 193m AOD (GPS). Profile running south.
2	Turbine SE 25537 04846 263 m	189°T	724 m	70 m	1 m	Turbine. 264m AOD (GPS).
3	WP3404 SE 25517 04737 258 m	190°T	111 m	0 m	5 m	
Totals:			879 m	70 m	6 m	

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Terrain Profile: Location 7 to Turbine

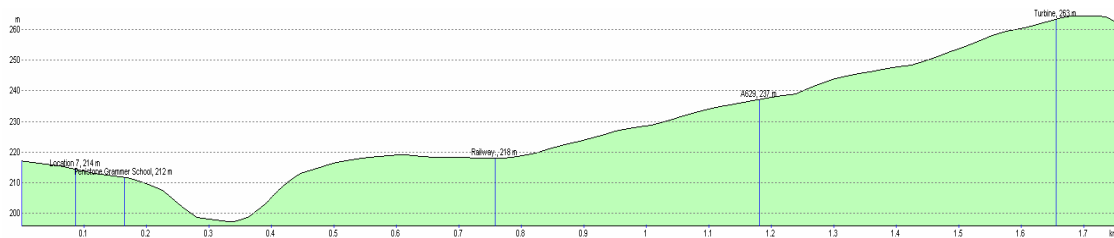
Summary

Profile Distance: 1.75 km

Total Ascent: 67 m

Total Descent: 22 m

Elevation Profile



Waypoints

Leg	Name / Position / Elevation	Bearing	Distance	Ascent	Descent	Comments
0	WP3501 SE 24092 04052 217 m					
1	Location 7 SE 24172 04086 214 m	067°T	86.7 m	0 m	0 m	Location 7. Distance to Turbine = 1593m (1.6km) 214m AOD (GPS). Profile running northeast to turbine.
2	Penistone Grammer School SE 24245 04115 212 m	068°T	78.2 m	0 m	0 m	Penistone Grammer School.
3	Railway. SE 24780 04370 218 m	064°T	593 m	21 m	15 m	Railway.
4	A629 SE 25154 04565 237 m	062°T	423 m	19 m	0 m	A629
5	Turbine SE 25537 04846 263 m	053°T	475 m	26 m	0 m	Turbine. 264m AOD (GPS).

Leg	Name / Position / Elevation	Bearing	Distance	Ascent	Descent	Comments
6	WP3507 SE 25609 04912 262 m	047°T	98.3 m	0 m	0 m	
Totals:			1.75 km	67 m	22 m	

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Terrain Profile: Location 8 to Turbine

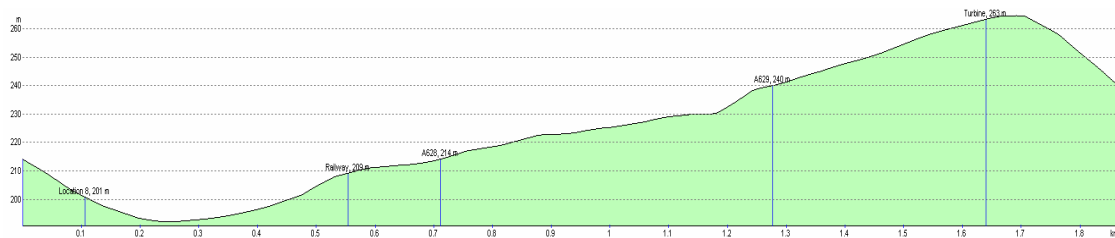
Summary

Profile Distance: 1.87 km

Total Ascent: 72 m

Total Descent: 46 m

Elevation Profile



Waypoints

Leg	Name / Position / Elevation	Bearing	Distance	Ascent	Descent	Comments
0	WP3601 SE 24717 03430 214 m					
1	Location 8 SE 24772 03521 201 m	031°T	106 m	0 m	13 m	Location 8. Distance to Turbine = 1564m (1.6km). 200m AOD (GPS). Profile running north/northeast.
2	Railway SE 24975 03920 209 m	027°T	448 m	17 m	9 m	Railway.
3	A628 SE 25042 04062 214 m	025°T	158 m	5 m	0 m	A628
4	A629 SE 25359 04530 240 m	034°T	565 m	26 m	0 m	A629.
5	Turbine SE 25537 04846 263 m	029°T	363 m	23 m	0 m	Turbine. 264m AOD (GPS).
6	WP3607	034°T	226 m	0 m	23 m	

Leg	Name / Position / Elevation	Bearing	Distance	Ascent	Descent	Comments
	SE 25664 05032 240 m					
Totals:			1.87 km	72 m	46 m	

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