

Chapter 4 - LVIA

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PURPOSE AND UNDERSTANDING OF THESE FIGURES:

These map-based Figures provide information on the baseline conditions within the 30 km Study Area that has been used for this Landscape and Visual Impact Assessment. They must be viewed in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the preparation of visualisations contained in Technical Appendix 4.2.

For ease of reference, the Reverse Zone of Theoretical Visibility (ZTV) is shown on Figure 4.3. The shaded areas indicate parts of the Study Area which would experience no visibility of the Development. The same is illustrated in Figure 4.7, page 5/5 and the means of understanding each of the ZTV diagrams is further explained on Figures 4.5 - 4.10.

Figure 4.1 illustrates the location of statutory landscape designations defined by planning policy and Development Plans. These provide evidence of the value placed on various parts of the Study Area for landscape and/ or visual characteristics and which may be subject to particular development control or planning policies. Non-statutory classifications, such as tourist routes and visitor attractions within the Study Area are also mapped on this figure. These give an indication of the wider value of the Study Area to society although these classifications may not equate to any statutory protection.

Landscape and Seascape Character Areas (LCAs and SCAs) are presented separately on Figure 4.2. These are defined by published documents: the Northern Ireland Landscape Character Assessment for Northern Ireland (NILCA) defines areas of distinct, recognisable or common character; the Northern Ireland Regional Seascape Character Assessment (NIRSCA) defines similar areas along the coast; The Northern Ireland Regional Landscape Character Assessment (NIRLCA) defines broader areas of similar character and has been more recently updated than the NILCA. LCAs are further analysed by site survey and, where they are not deemed to be of relevance to this Development, this is indicated on the figure.

Figure 4.3 illustrates the location of Provisional Viewpoints that were used to gain an initial understanding of the visual characteristics of the Development within the Study Area. It also illustrates the location of final Viewpoints that were shortlisted via the viewpoint selection process to provide a representative sample of viewers (visual receptors) and types of views of the Development across the Study Area and, most importantly, to demonstrate potential views of the Development rather than to show the screening effect of landscape features. A full and detailed description of the viewpoint selection process is provided in Technical Appendix 4.4 and should be referred to in conjunction with this Figure.

Figure 4.4 illustrates the locations of other wind farms and single turbines that are considered to form the 'Cumulative Baseline' for this LVIA which comprises existing, consented and proposed (in-planning) wind farms and single turbines which are likely to be visible from the selected Viewpoints (see Figures 4.11 – 4.30). A full description of the Cumulative Baseline is provided in Technical Appendix 4.5.



UNSHINAGH WIND FARM

FIGURES 4.1 - 4.4

BASELINE ASSESSMENT FIGURES

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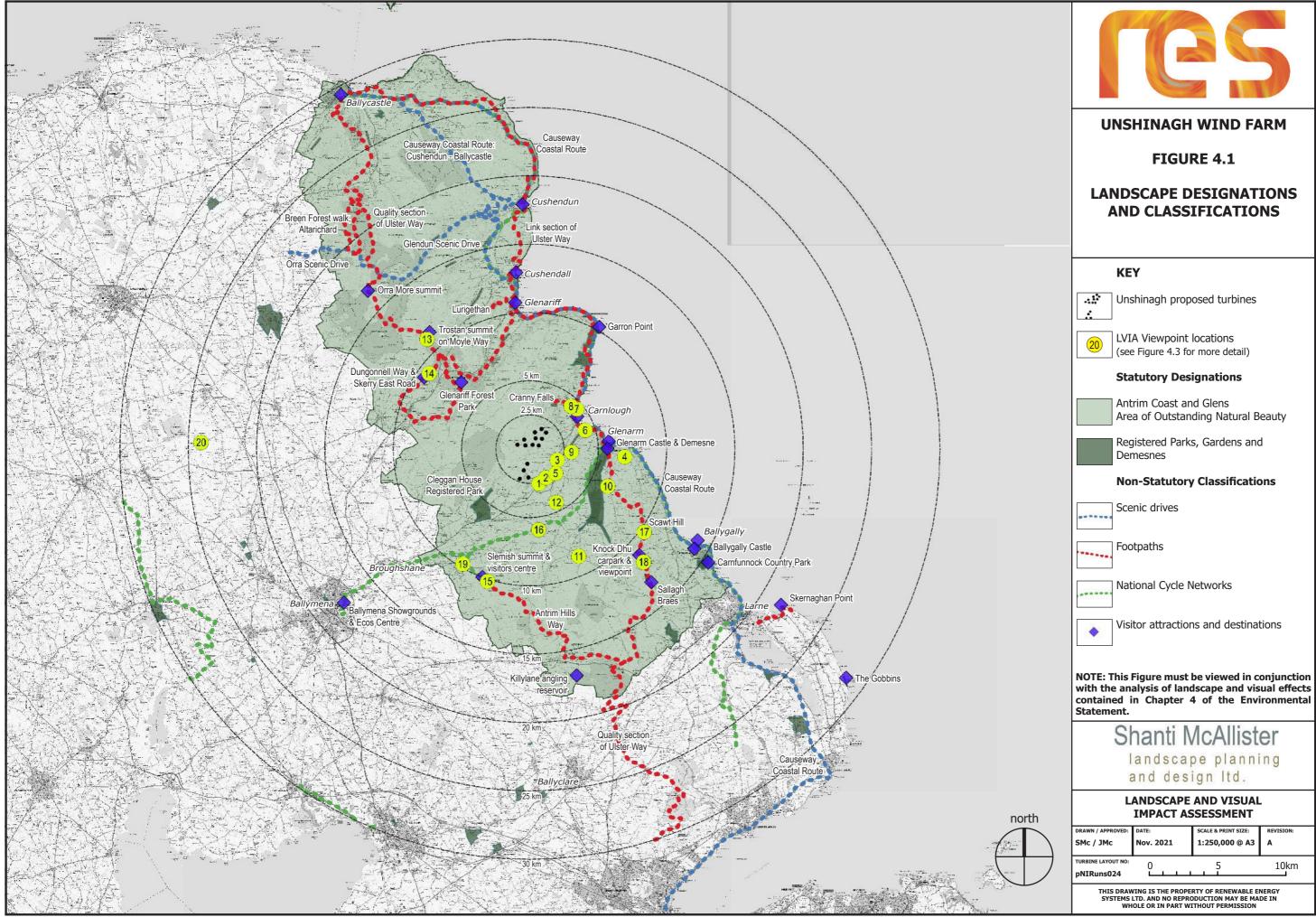
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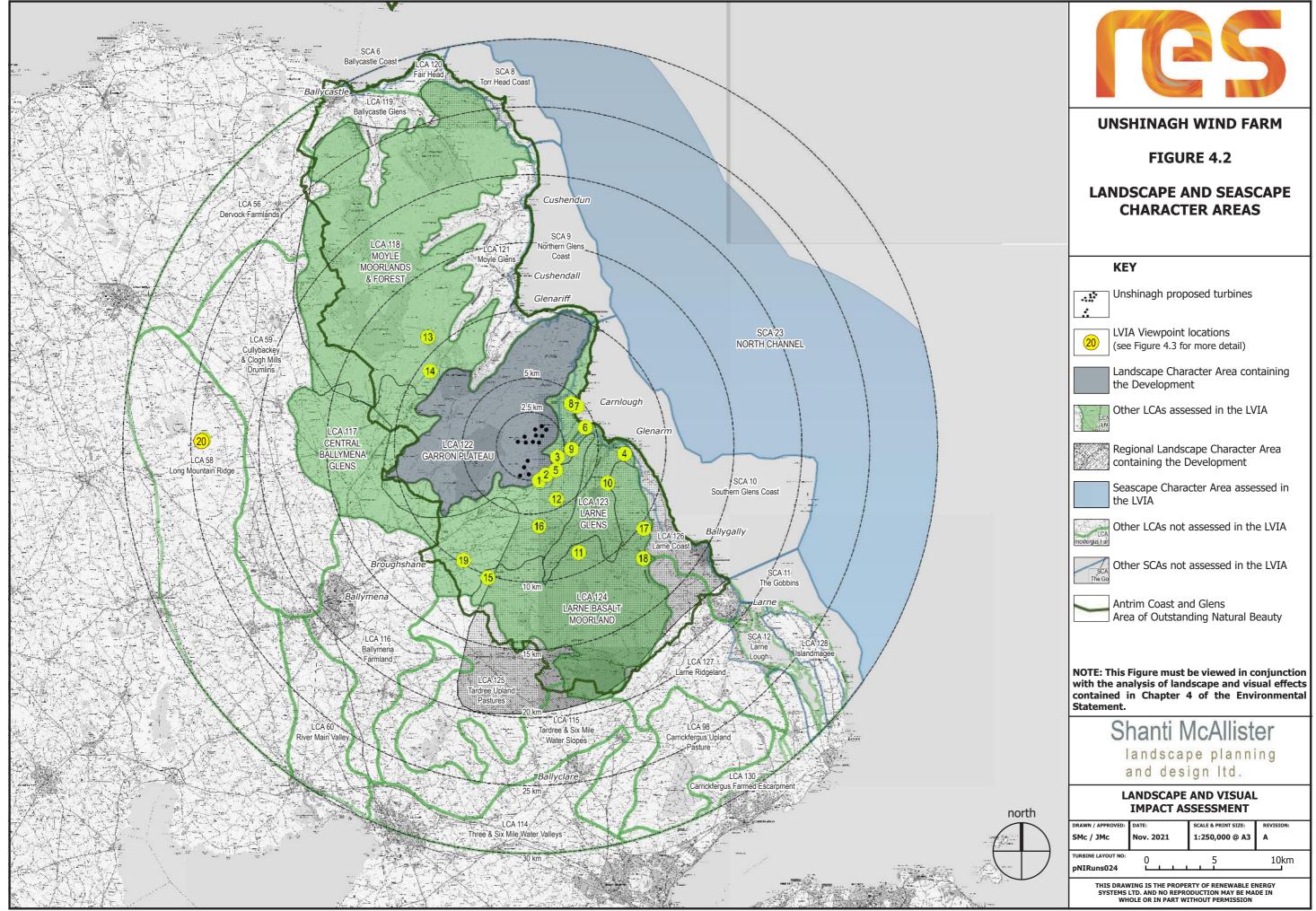
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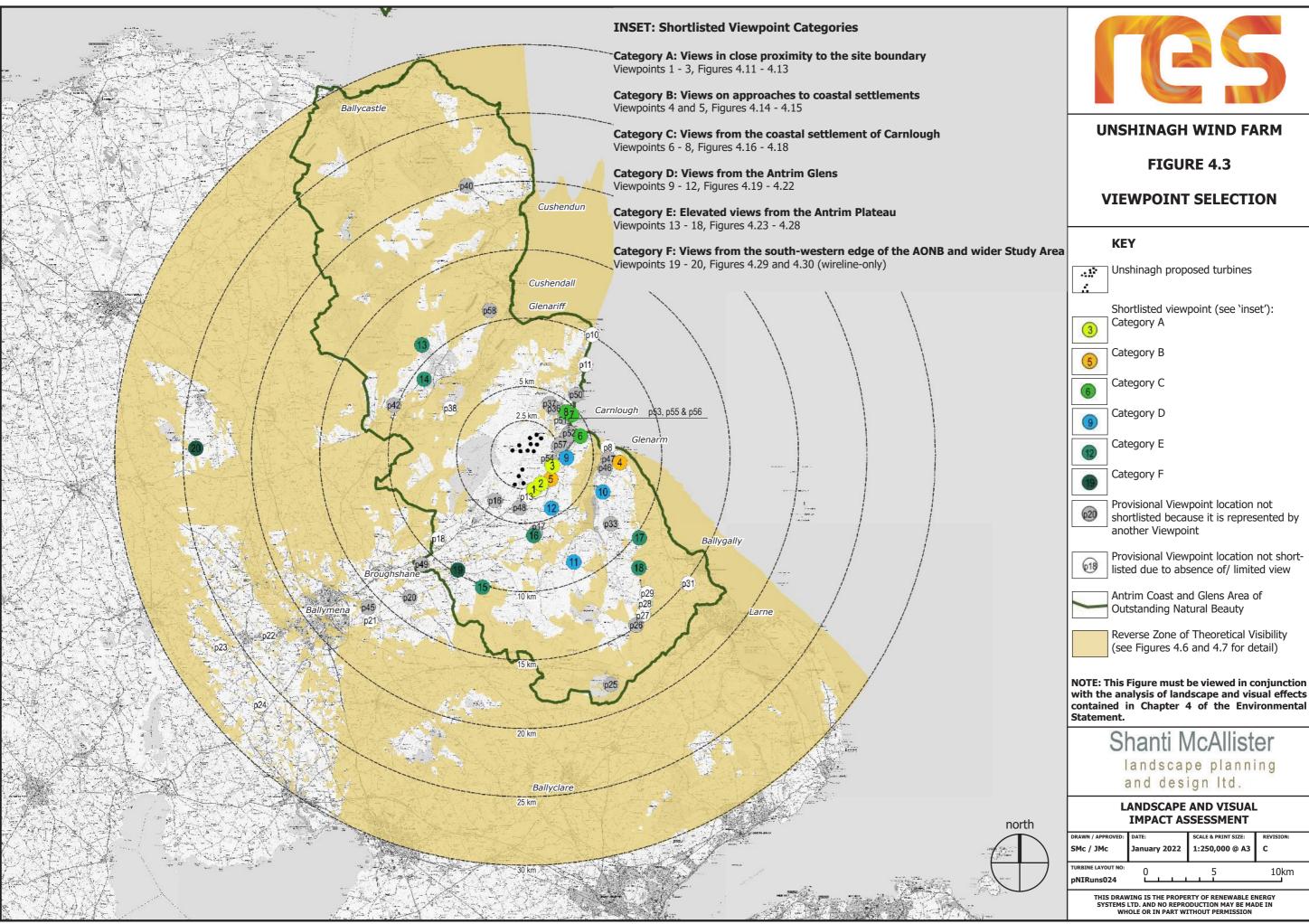
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UNSHINAGH WIND FARM

FIGURE 4.3

VIEWPOINT SELECTION

ea		KEY
	15 	Unshinagh proposed turbines
		Shortlisted viewpoint (see 'inset'): Category A
	(3)	
	(5)	Category B
	6	Category C
	9	Category D
	12	Category E
	•	Category F
	<u>@</u>	Provisional Viewpoint location not shortlisted because it is represented by another Viewpoint
	©18	Provisional Viewpoint location not short- listed due to absence of/ limited view
		Antrim Coast and Glens Area of Outstanding Natural Beauty
		Reverse Zone of Theoretical Visibility (see Figures 4.6 and 4.7 for detail)
		This Figure must be viewed in conjunction e analysis of landscape and visual effects

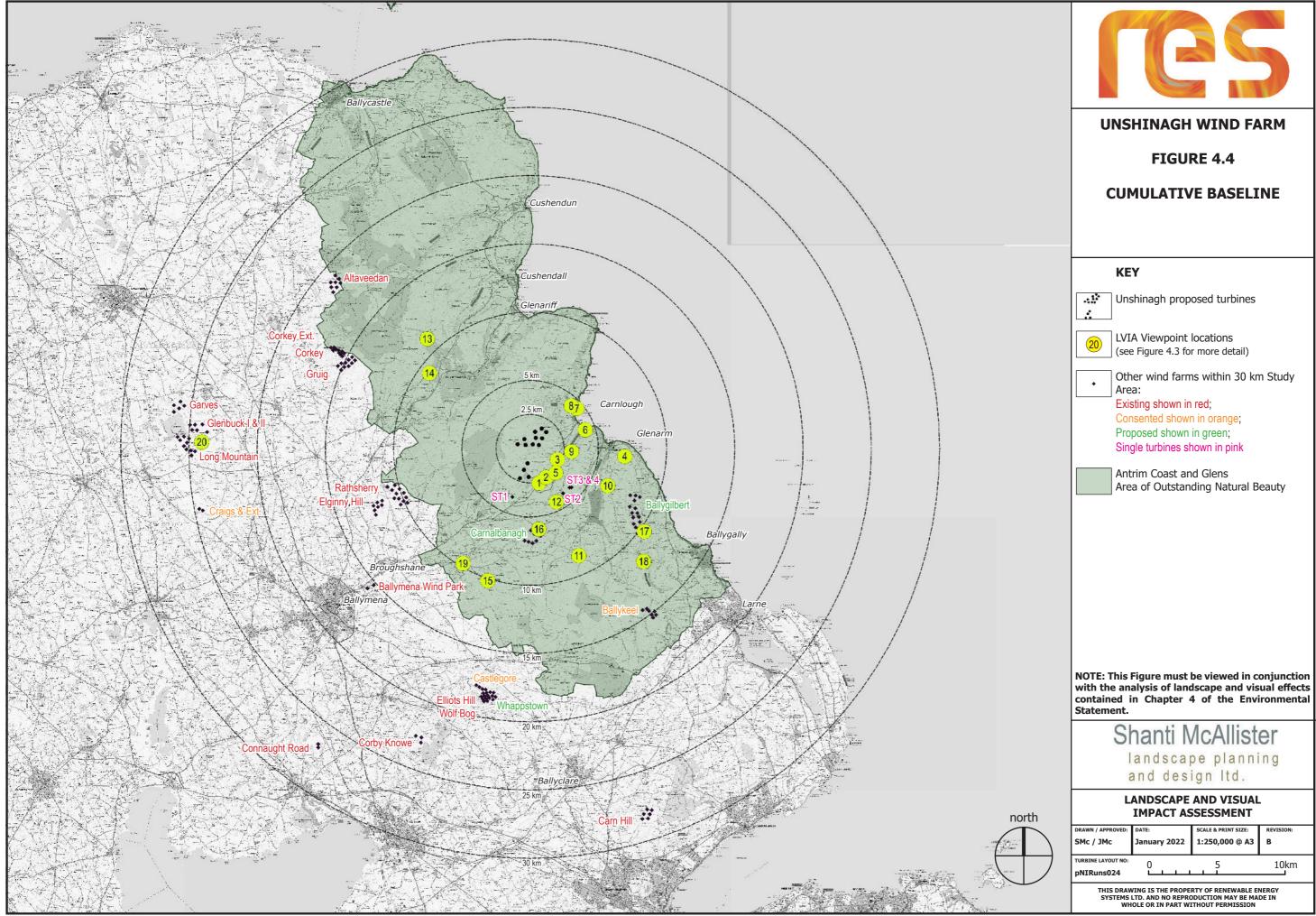
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PURPOSE AND UNDERSTANDING OF THESE FIGURES:

These map-based figures provide information on the baseline conditions within the 30 km Study Area that has been used for this Landscape and Visual Impact Assessment. They must be viewed in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the LVIA that is described in Technical Appendix 4.2.

A Zone of Theoretical Visibility (ZTV) is a map-based diagram showing where the Development and other wind farms in the Cumulative Baseline would theoretically be visible from within the Study Area. They are created using computer-generated contour data and are useful in providing an initial indication of visibility within the Study Area that allows for more detailed assessment in the field. They do not illustrate actual visibility because they do not take account of above-ground features such as vegetation or buildings, or contour variations between 50 m intervals. A number of ZTV scenarios are assessed in this LVIA and categories of theoretical visibility are indicated using different colours, for example, areas with theoretical visibility of all the proposed turbines would be indicated by one colour, and areas with visibility of lesser numbers of turbines would be indicated by contrasting colours. The coverage of these areas is expressed as a percentage of the overall Study Area.

Blade tip visibility illustrates any parts of the Study Area where at least one blade tip would theoretically be visible without taking account of screening provided by contour variations or land cover elements such as trees and hedgerows. It shows the highest potential levels of theoretical visibility but not necessarily the most realistic because blade tips may be counted even where they protrude only a small amount above a skyline and this type of visibility will change continuously as the turbines rotate. This approach is in accordance with the SNH recommendation to err on the side of over-representation of potential effects. Hub height ZTV diagrams represent a more realistic illustration because they show theoretical visibility of all points of the turbines to the hub/ nacelle, and therefore also include the upper parts of the turbine blades as a minimum. Reverse ZTV diagrams are used as a clear means of illustrating the parts of the Study Area where no turbines would be visible; 15 km and 30 km reverse blade tip ZTVs can be found in Figure 4.8.

The Study Area for this Development includes a large proportion of open sea and the ZTV diagrams, confirmed via site analysis, indicate that visibility of the Development from much of the coastal part of the Study Area would be screened by rising ground between the coast and the uplands on which the Development would be located. Sea-based visibility is largely restricted to open water where the number of visual receptors, and perception of the Development, are likely to be minimal. Therefore, ZTV diagrams have been produced to illustrate only land-based visibility on the basis of 15 km and 30 km radii using both blade tip and hub height calculations. These can be found in Figures 4.6 and 4.7.



UNSHINAGH WIND FARM

FIGURES 4.5 - 4.10

ZONE OF THEORETICAL VISIBILITY DIAGRAMS

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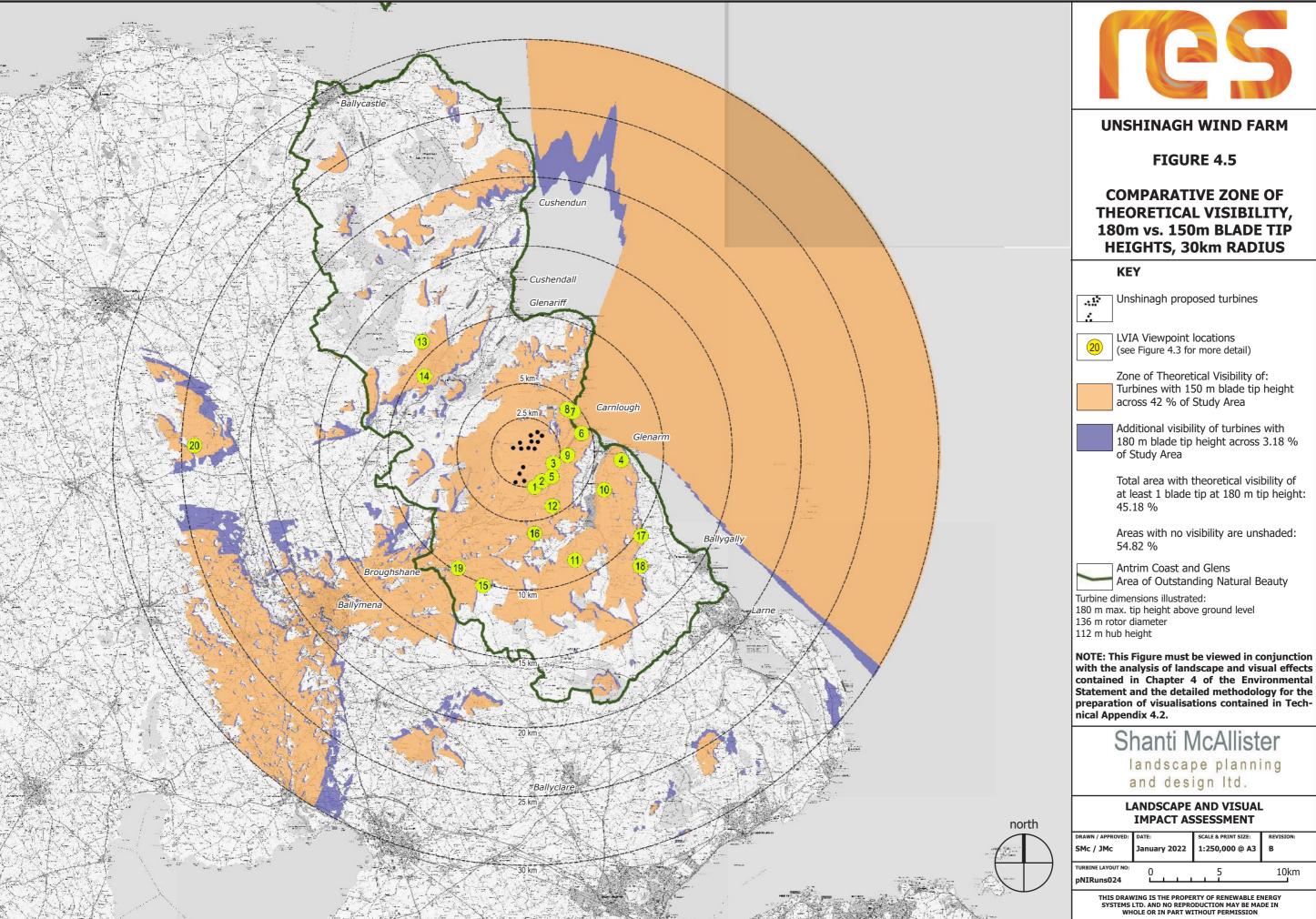
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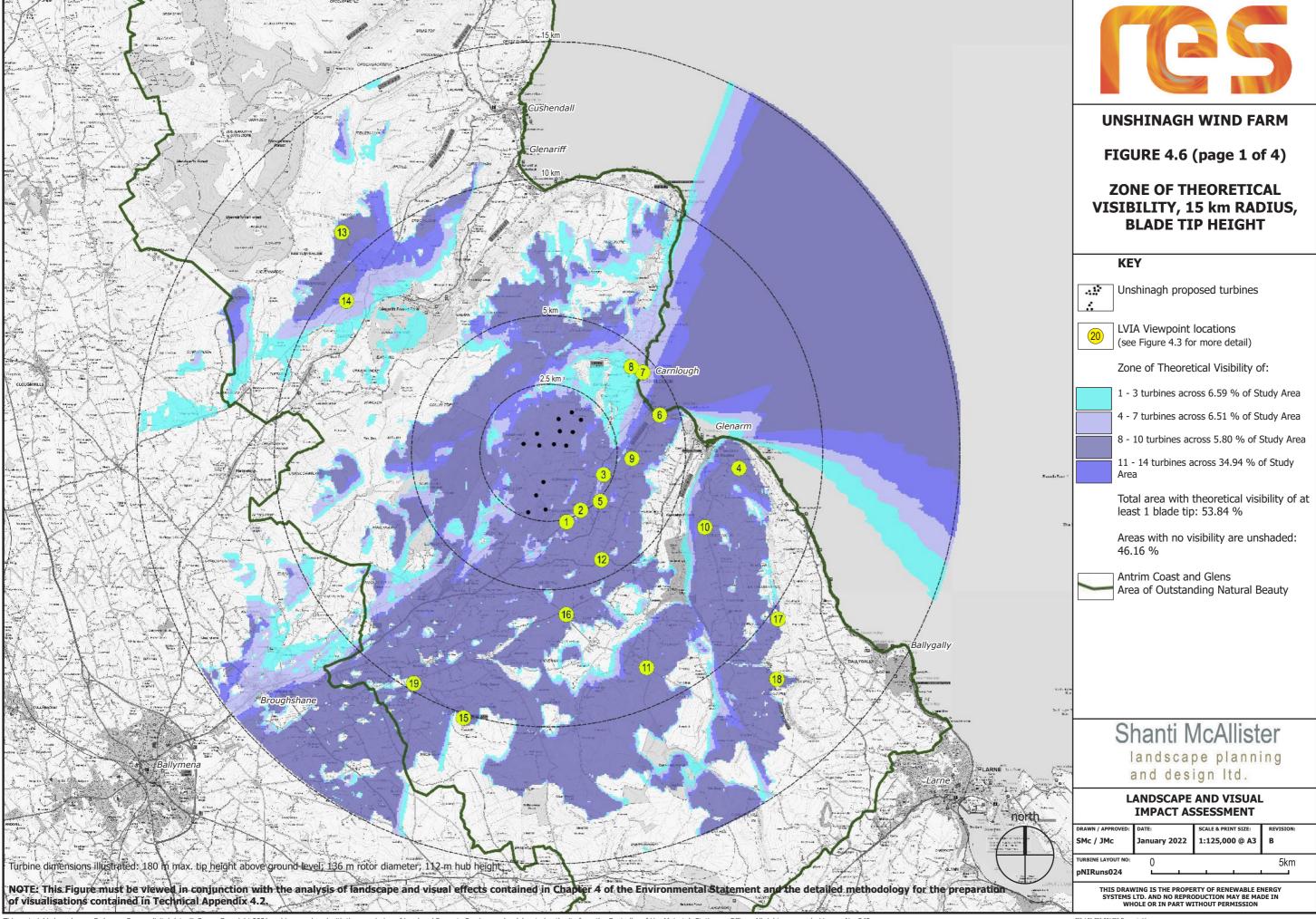
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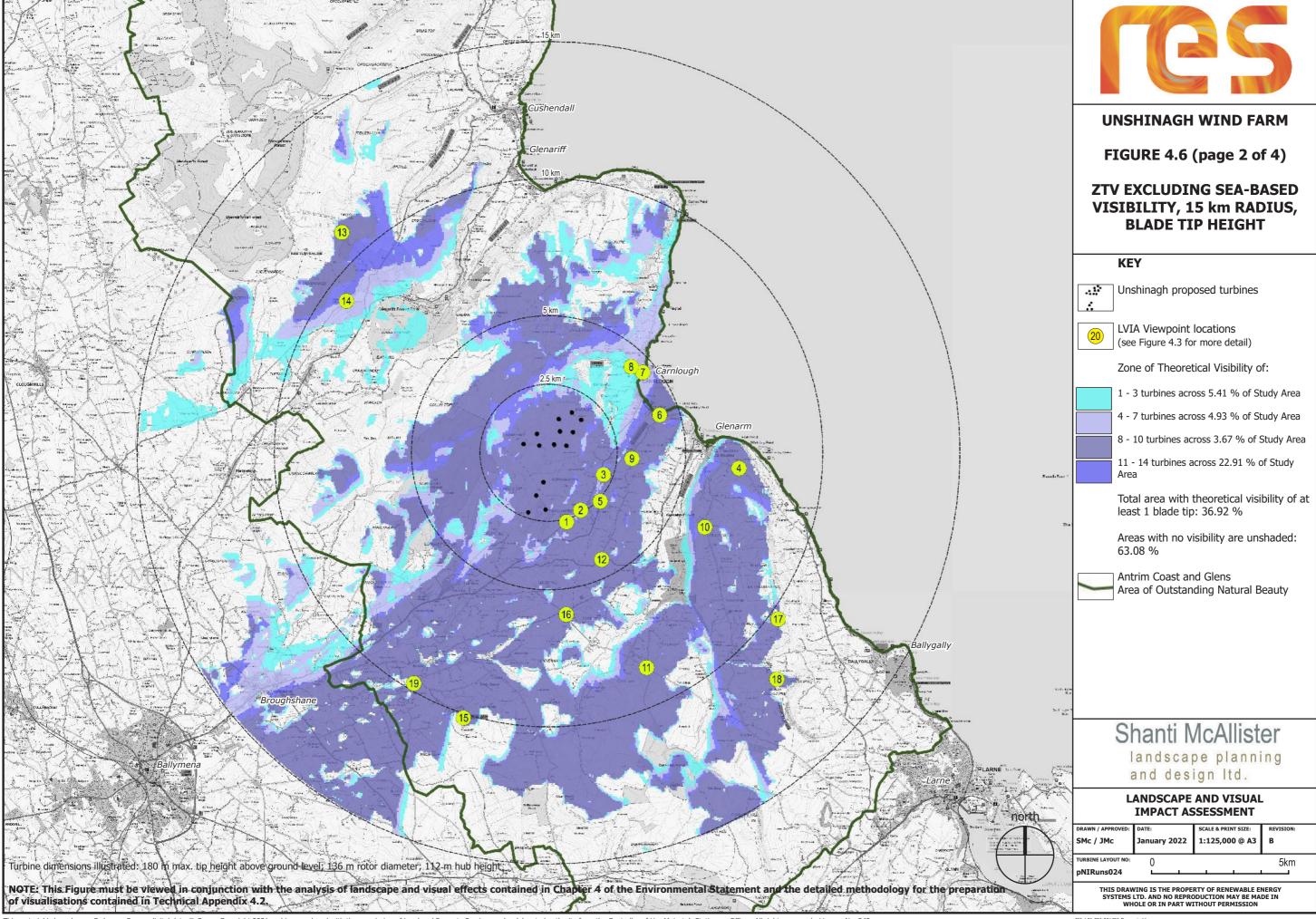
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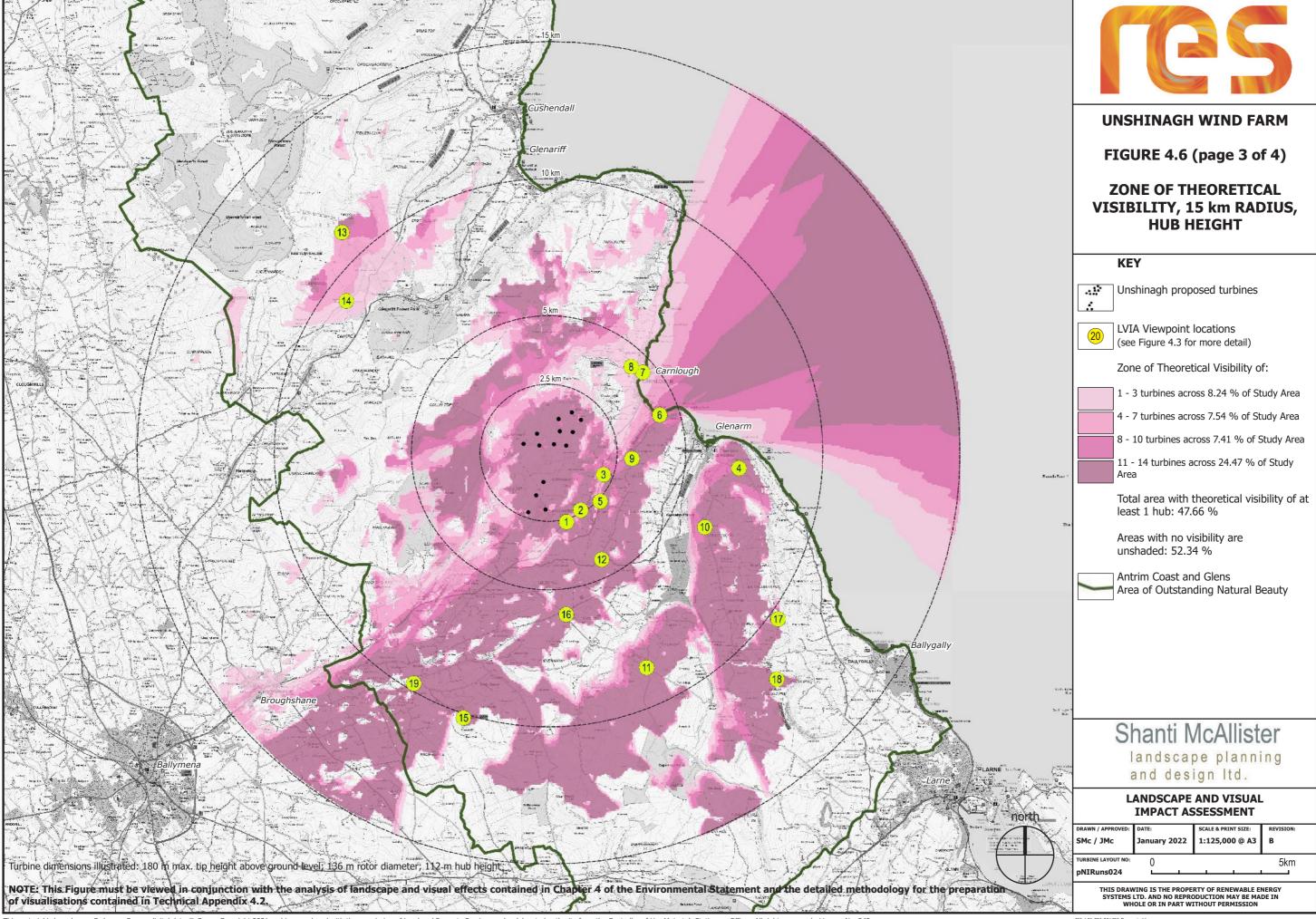
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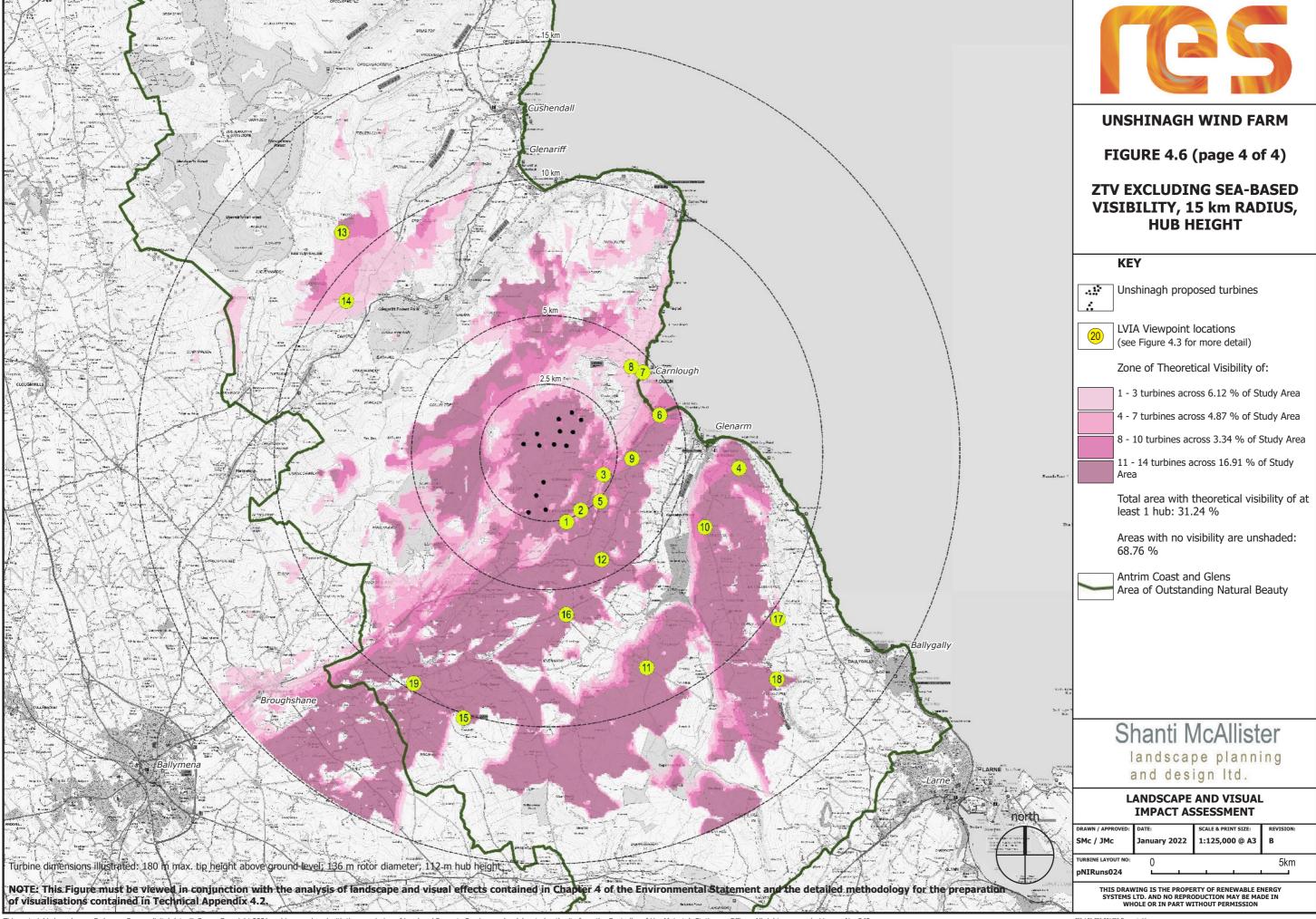
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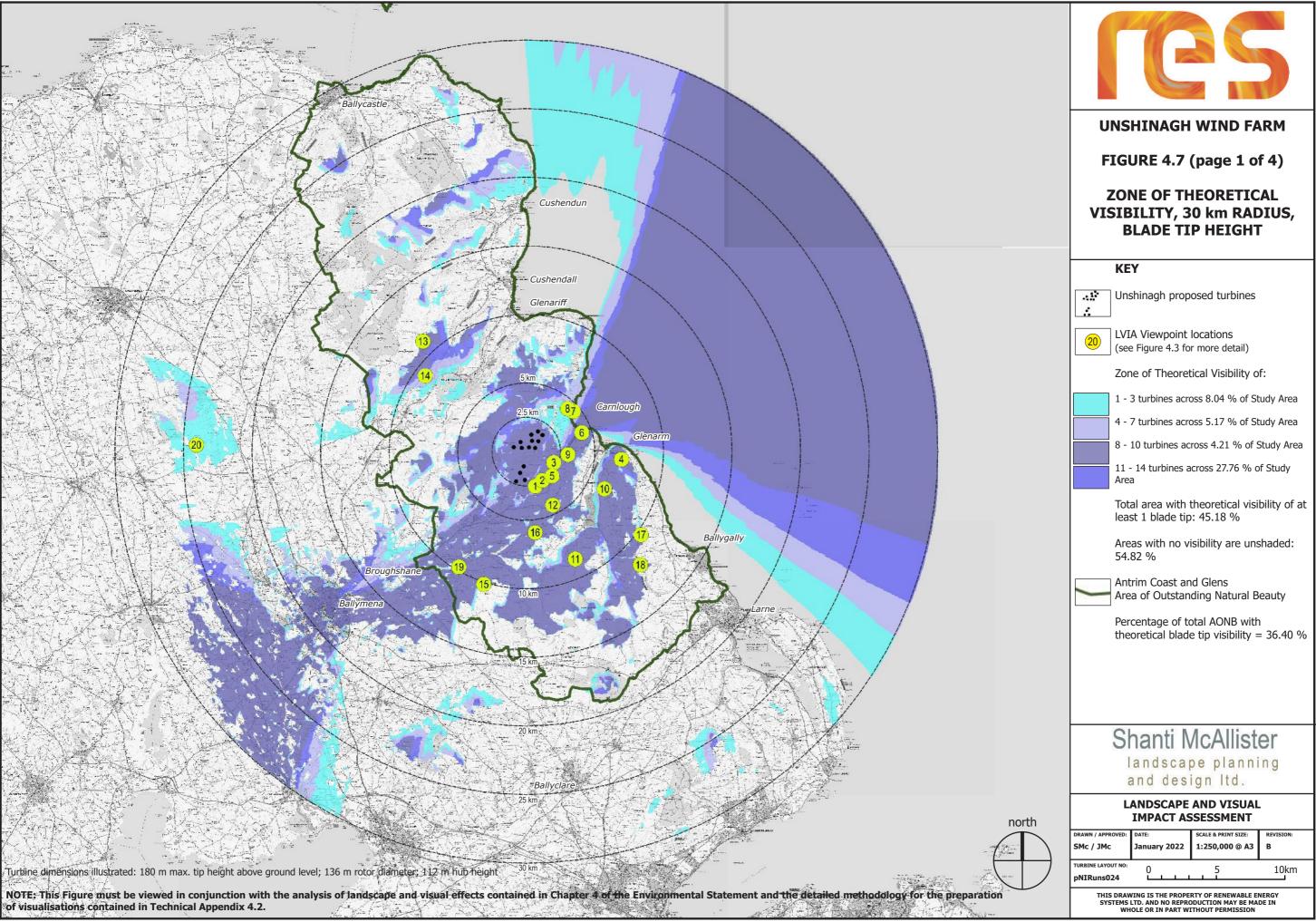


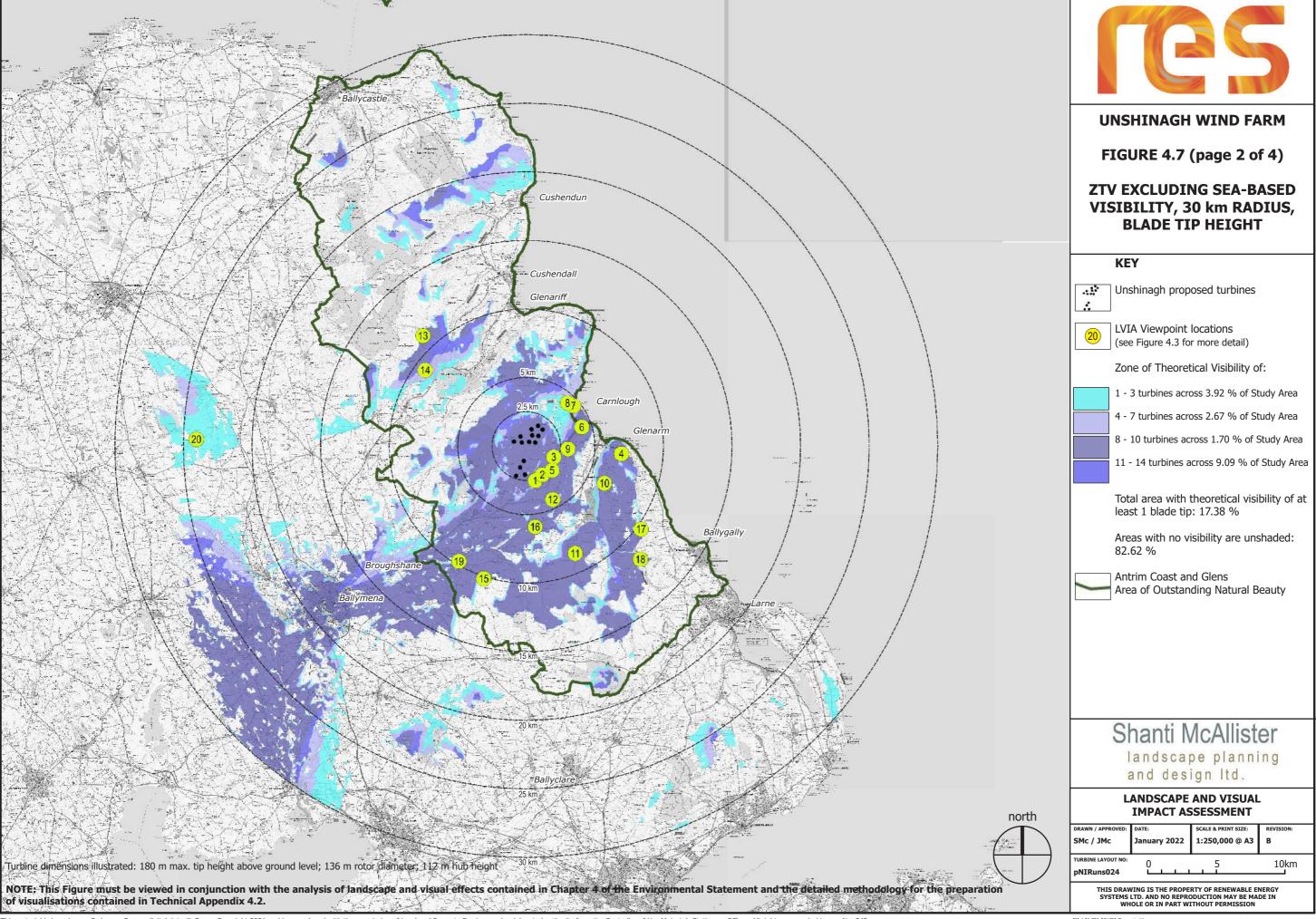


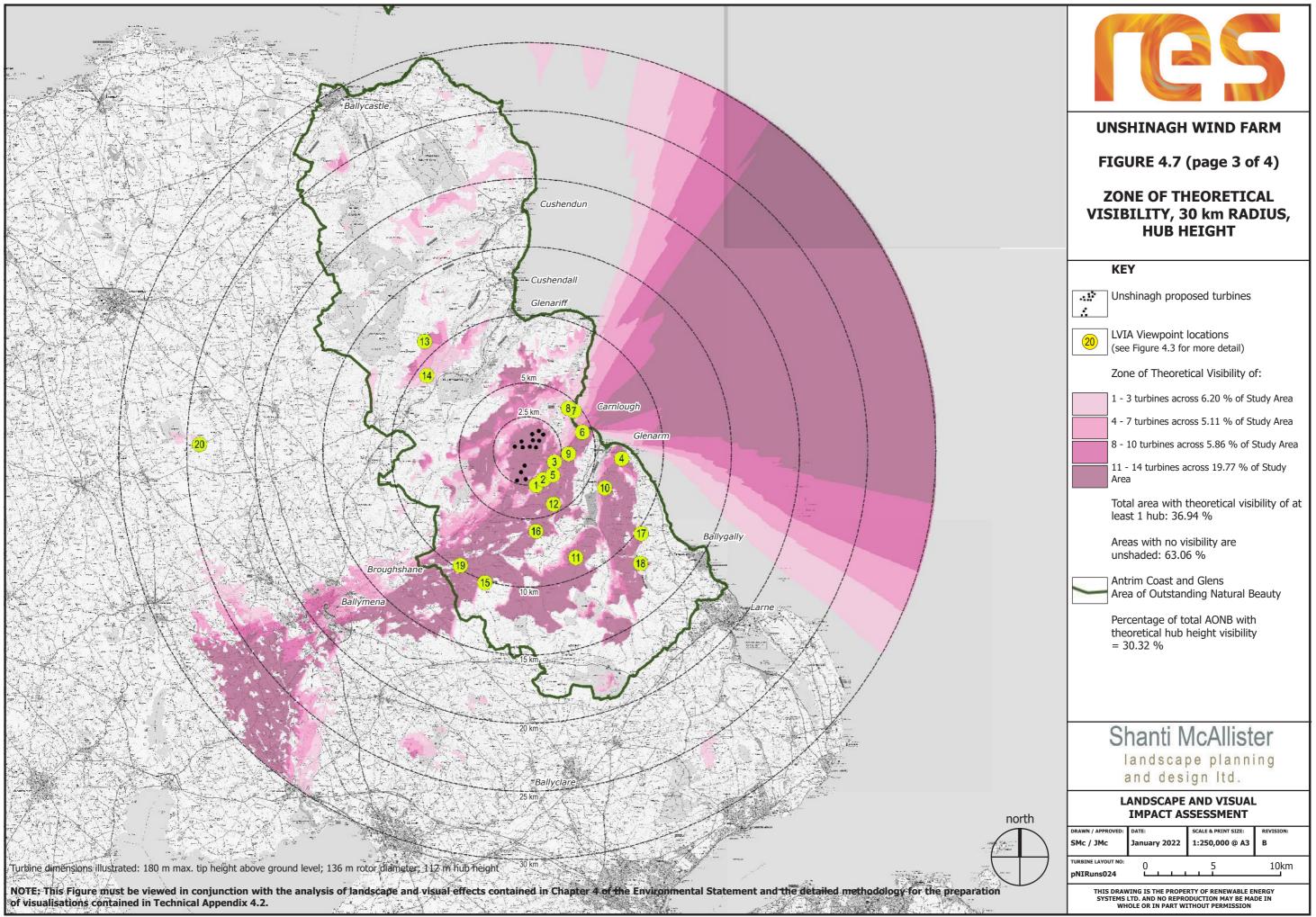


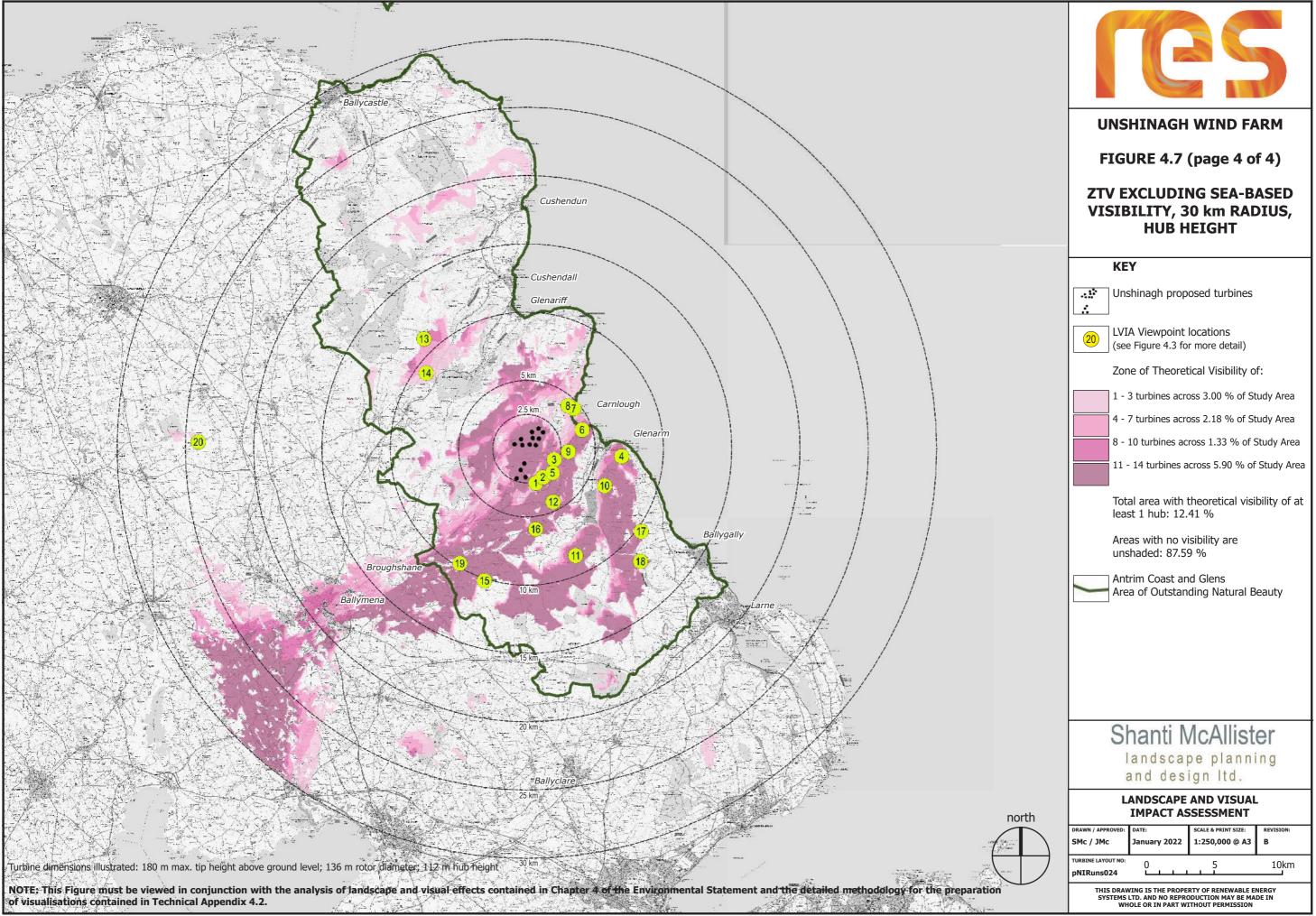


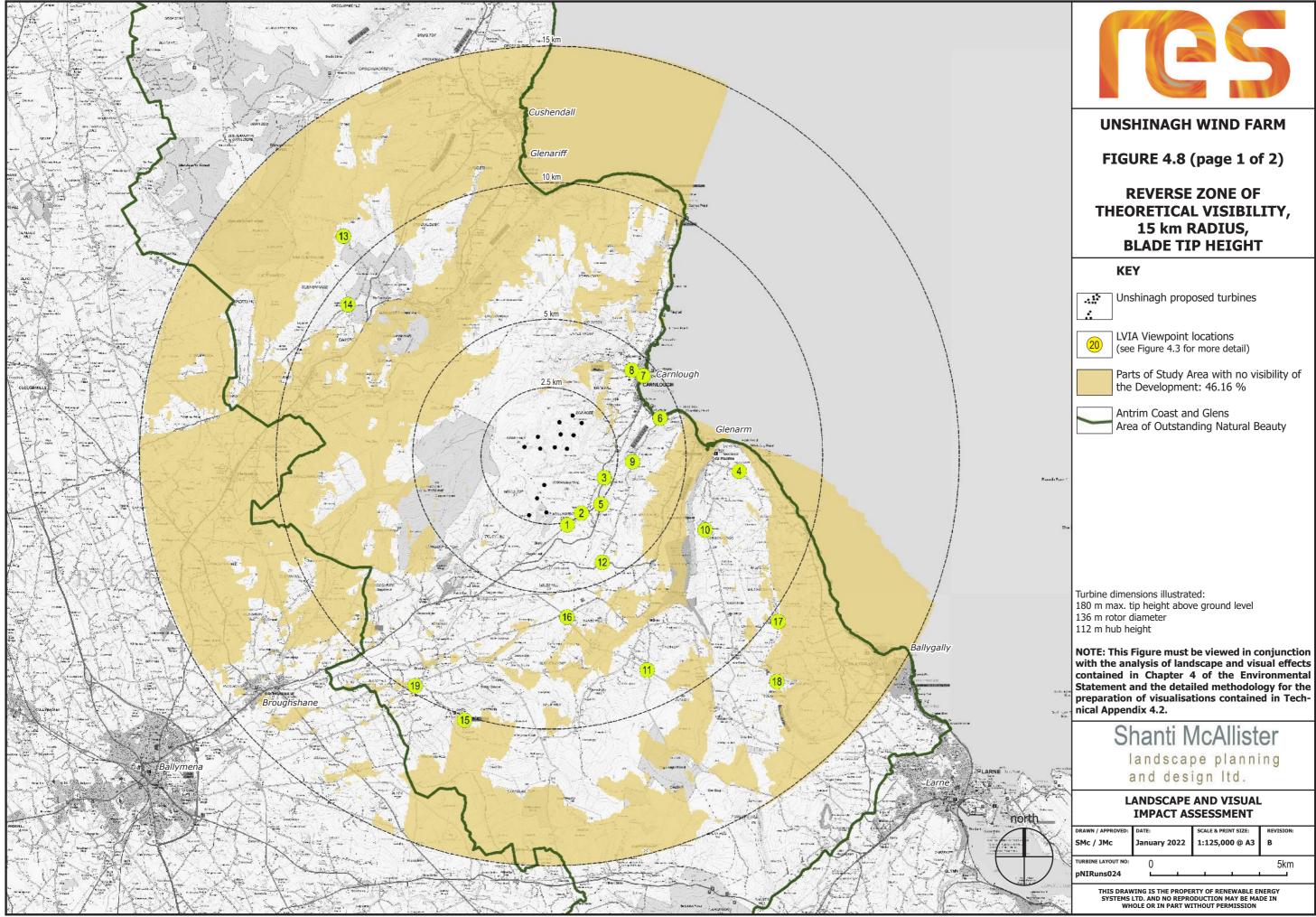


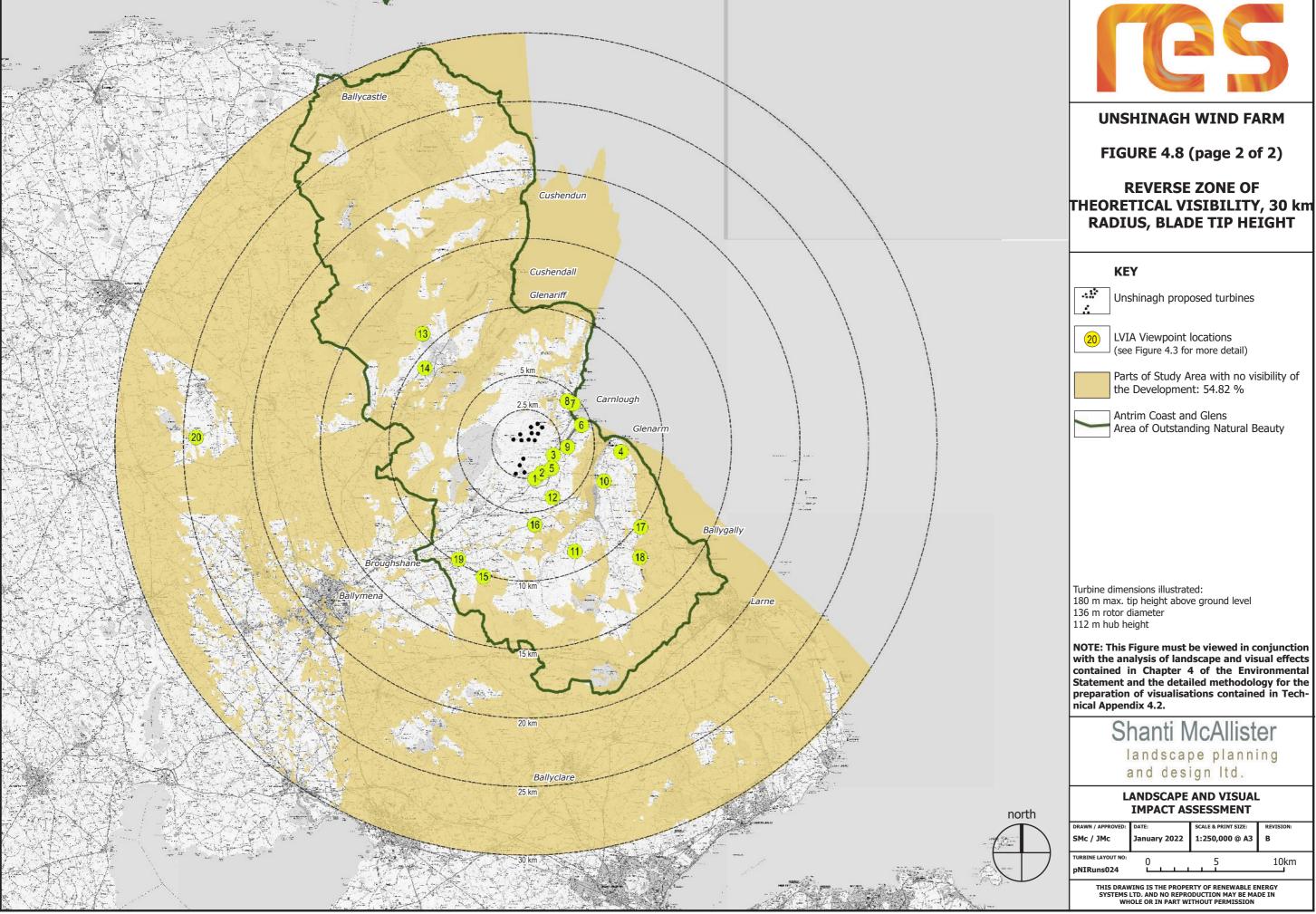


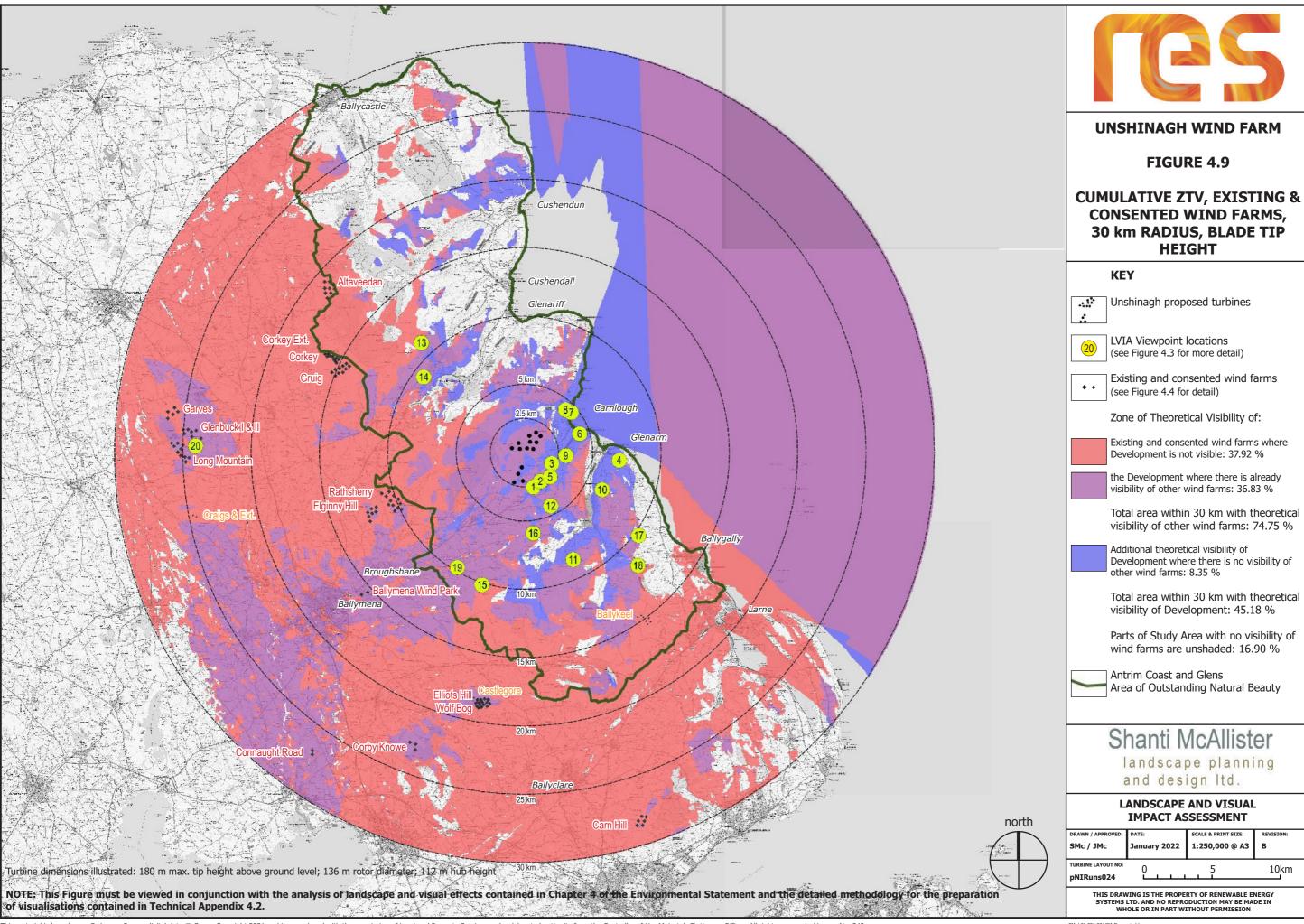




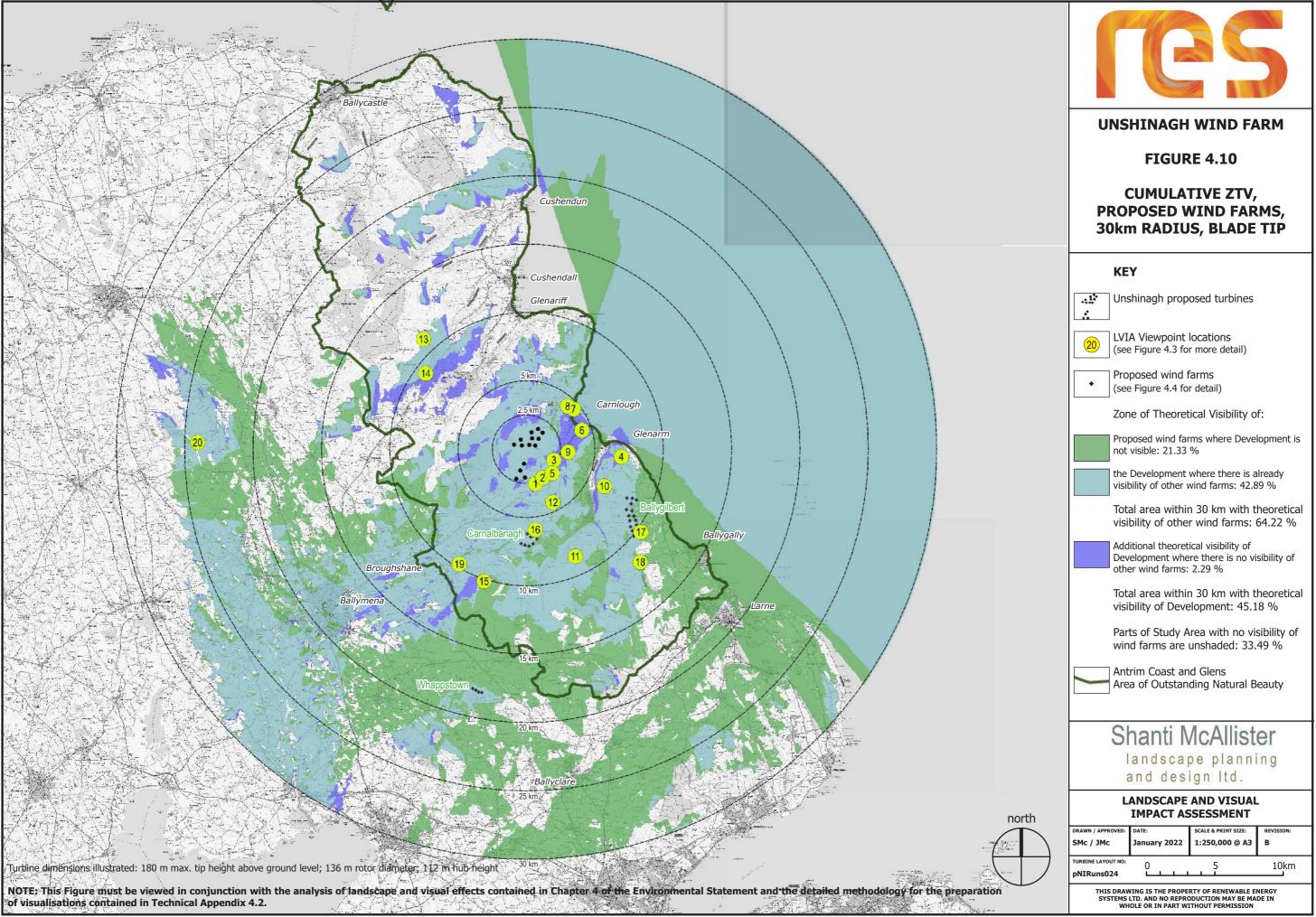








10km



PURPOSE AND UNDERSTANDING OF THESE FIGURES:

These Figures are intended to accompany the detailed written descriptions of the final 20 Viewpoints that have been included to represent views of the Development from various parts of the Study Area. They include computer-generated wirelines and photomontages for Viewpoints 1 - 19 and a wireline-only visualisation of Viewpoint 20 because it is located in excess of 20 km from the Development and the turbines are therefore unlikley to be easily discernible. The purpose of these figures is to help the assessor establish visual effects by providing a 'snapshot' of what the Development would look like from various parts of the Study Area. They must always be viewed in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the LVIA that is described in Technical Appendix 4.2 as well as a visit to all of the viewpoints in appropriate weather conditions. Detailed descriptions of the final Viewpoints are an integral part of the Visual Impact Assessment section of Chapter 4, LVIA. Viewpoint locations are shown on Figure 4.3 and all other map-based Figures for ease of reference. Wirelines are not intended to be visually representative images but they are generally accepted as an illustrative digital imaging tool. They provide a good indication of the location of the Development within the landscape and its relationship with other wind farms and single turbines in the Study Area. If these limitations are recognised, visualisations can be accepted as adequate representations for the purpose of the LVIA. The methodology for producing these visualisations is described in detail in Technical Appendix 4.2 and conforms with relevant parts of the best practice guidance documents listed in Technical Appendix 4.1.

On the wireline diagrams the turbine blades are displayed at an angle of 0°, i.e. the uppermost blade is always shown pointing directly upwards, in order to demonstrate the highest possible level of visibility. Randomn blade angles are shown on the photomontages because this is more realistic. All cumulative wind farms, including any which may appear within the view but which are located beyond the field of view that it is possible to illustrate on A3-sized figures, are also labelled on the wireline. However, only existing wind farms and single turbines are shown on the photomontages (i.e. those that are already present within the photographs). This is in accordance with best practice guidance.

In many scenarios wind farms are visible as elements of wide angle views which can only be appreciated if viewers turn their heads from side to side or move through the landscape. Wirelines and photomontages show the turbines in accurate proportion to other visual elements. However, the overall scale of the view is reduced by the practical need to illustrate the view on a single sheet of paper that allows as many people as possible to have fair and easy access to the published Environmental Statement. Features that are of note in wider views, but which are beyond the angle that can be illustrated in the viewpoint figures, such as other wind farms, are included in the detailed written descriptions of viewpoints in the LVIA report and considered in the assessment of effects.

Visualisations are prepared in accordance with the SNH best practice guidance as far as practical and SNH's best practice guidance recommends that the following information on the limitations of visualisations is included in all LVIA methodologies:

"Visualisations of wind farms have a number of limitations which you should be aware of when using them to form a judgement on a wind farm proposal. These include:

- A visualisation can never show exactly what the wind farm will look like in reality due to factors such as: different lighting, weather and seasonal conditions which vary through time and the resolution of the image;
- The images provided give a reasonable impression of the scale of the turbines and the distance to the turbines, but can never be 100% accurate;
- A static image cannot convey turbine movement, or flicker or reflection from the sun on the turbine blades as they move;
- The viewpoints illustrated are representative of views in the area, but cannot represent visibility at all locations;
- To form the best impression of the impacts of the wind farm proposal these images are best viewed at the viewpoint location shown;
- The images must be printed at the right size to be viewed properly (The visualisations in this LVIA should be printed at A3); You should hold the images flat at a comfortable arm's length. If viewing these images on a wall or board at an exhibition, you should stand at arm's length from the image presented to gain the best impression.
- It is preferable to view printed images rather than view images on screen. If you do view images on screen you should do so using a normal PC screen with the image enlarged to the full screen height to give a realistic impression. Do not use a tablet or other device with a smaller screen to view the visualisations described in this guidance."



UNSHINAGH WIND FARM

FIGURES 4.11 - 4.30

VIEWPOINT FIGURES

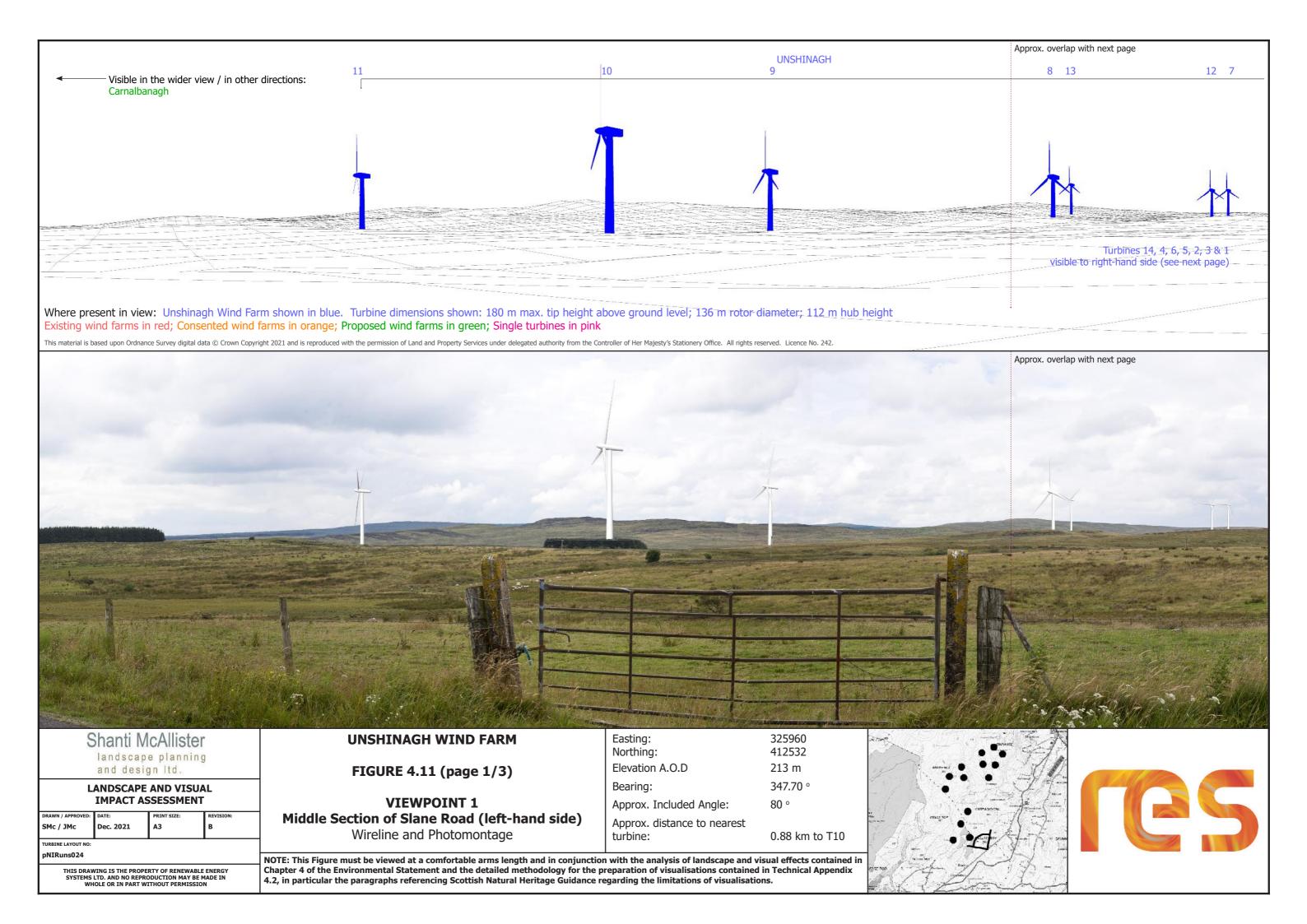
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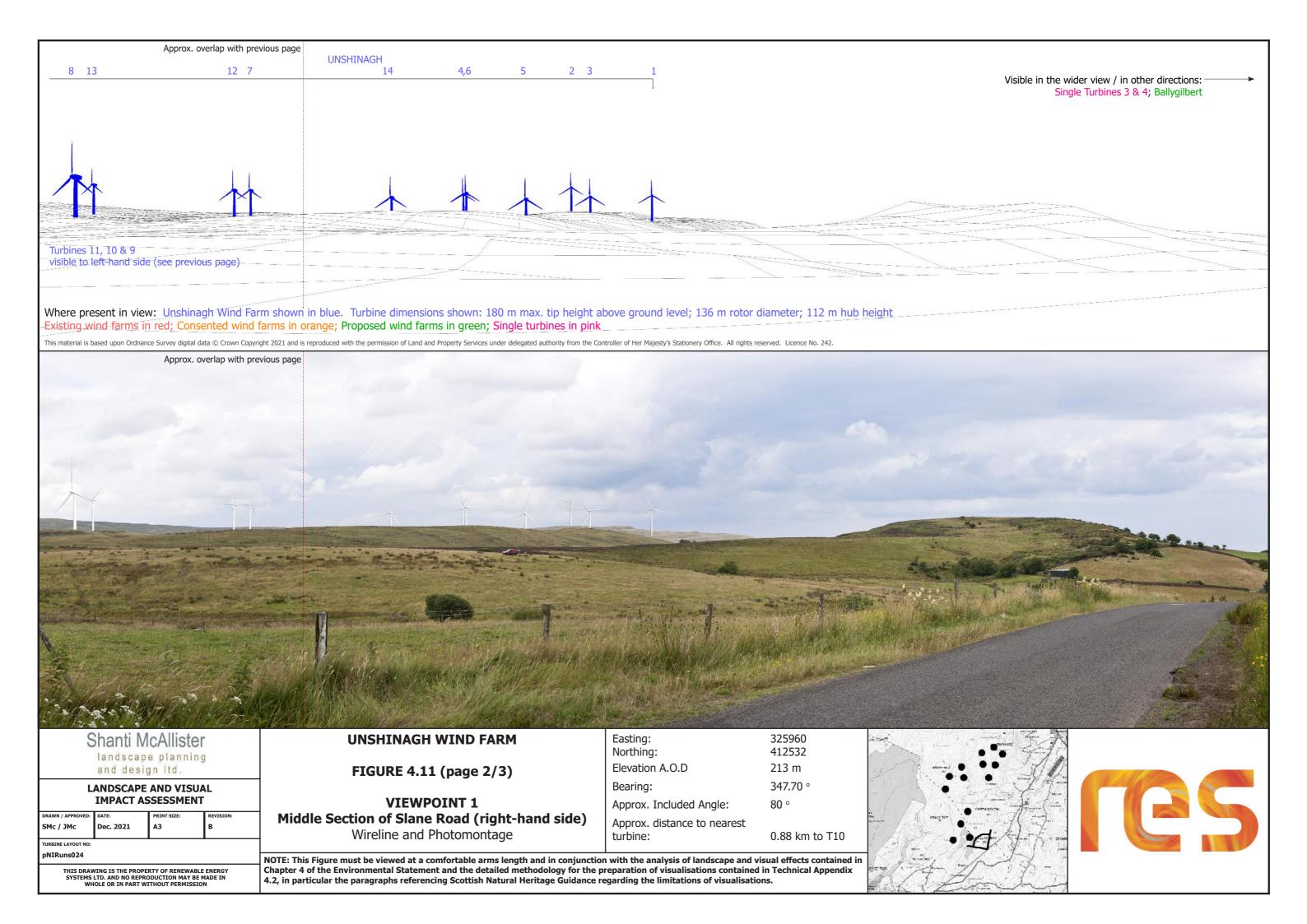
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Location of forestry to be removed around T10

Location of forestry to be removed around T10



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UNSHINAGH WIND FARM

FIGURE 4.11 (page 3/3)

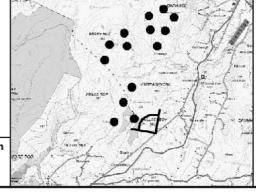
VIEWPOINT 1 Middle Section of Slane Road

Baseline Photograph

Easting: 325960
Northing: 412532
Elevation A.O.D 213 m
Bearing: 347.70 °
Approx. Included Angle: 80 °

Approx. distance to nearest

turbine: 0.88 km to T10





Visible in the wider view / in other directions: Carnalbanagh; Ballygilbert; Single Turbines 2, 3 & 4



Blade tips of T11 & 10 visible to left-hand side of view;
 Turbines T9, 8, 13 & 12 concealed by hill in foreground.

Where present in view: Unshinagh Wind Farm shown in blue. Turbine dimensions shown: 180 m max. tip height above ground level; 136 m rotor diameter; 112 m hub height Existing wind farms in red; Consented wind farms in orange; Proposed wind farms in green; Single turbines in pink

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UNSHINAGH WIND FARM

FIGURE 4.12

VIEWPOINT 2 North Eastern section of Slane Road

Wireline and Photomontage

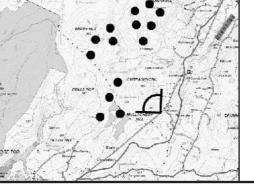
Easting: 326476
Northing: 412961
Elevation A.O.D 208 m
Bearing: 330.78 °
Approx. Included Angle: 80 °

Approx. distance to nearest

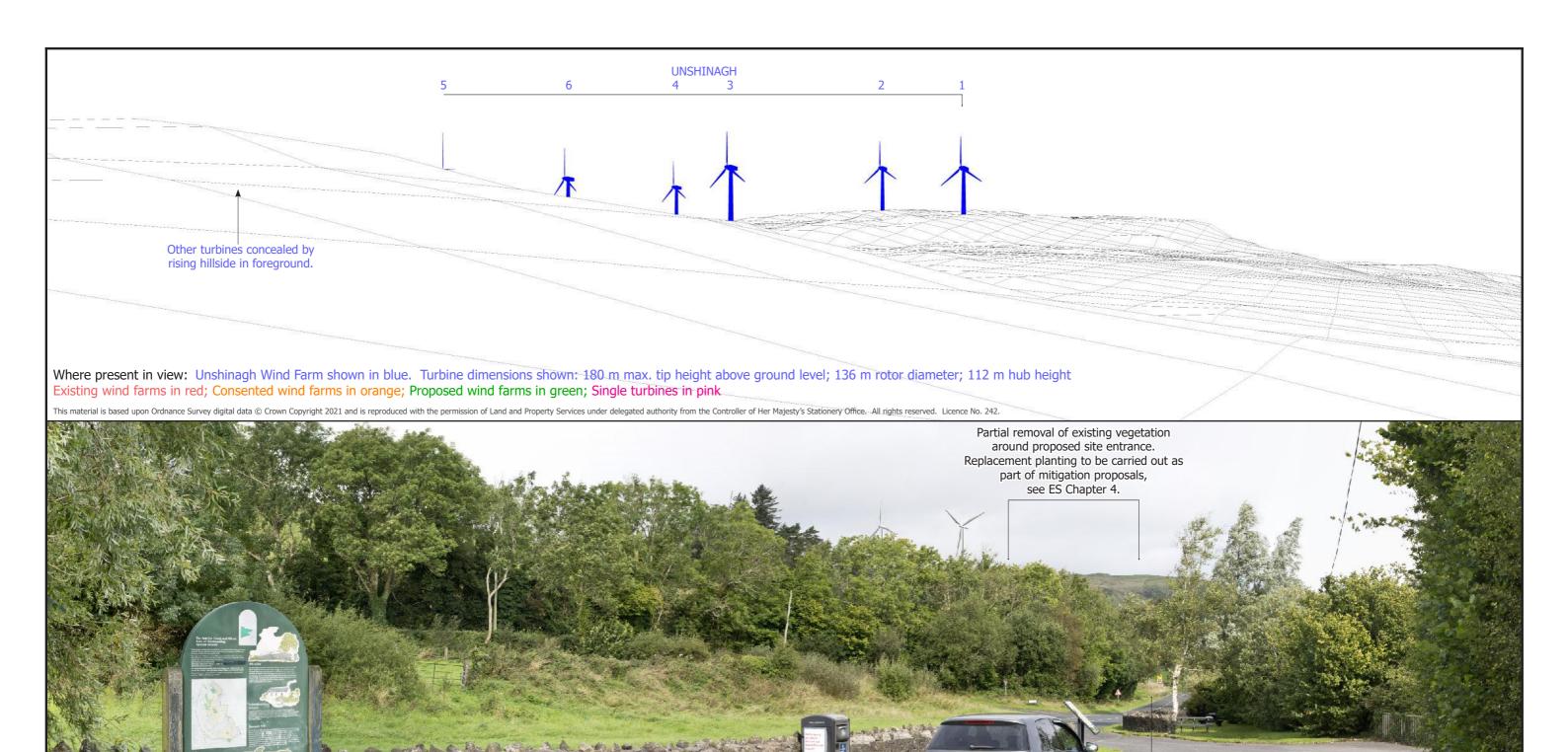
NOTE: This Figure must be viewed at a comfortable arms length and in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the preparation of visualisations contained in Technical Appendix

4.2, in particular the paragraphs referencing Scottish Natural Heritage Guidance regarding the limitations of visualisations.

turbine: 1.28 km to T10







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UNSHINAGH WIND FARM

FIGURE 4.13

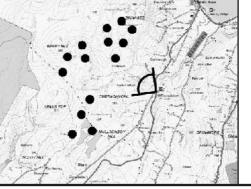
VIEWPOINT 3 Doonan Leap Carpark, A42, Glencloy

Wireline and Photomontage

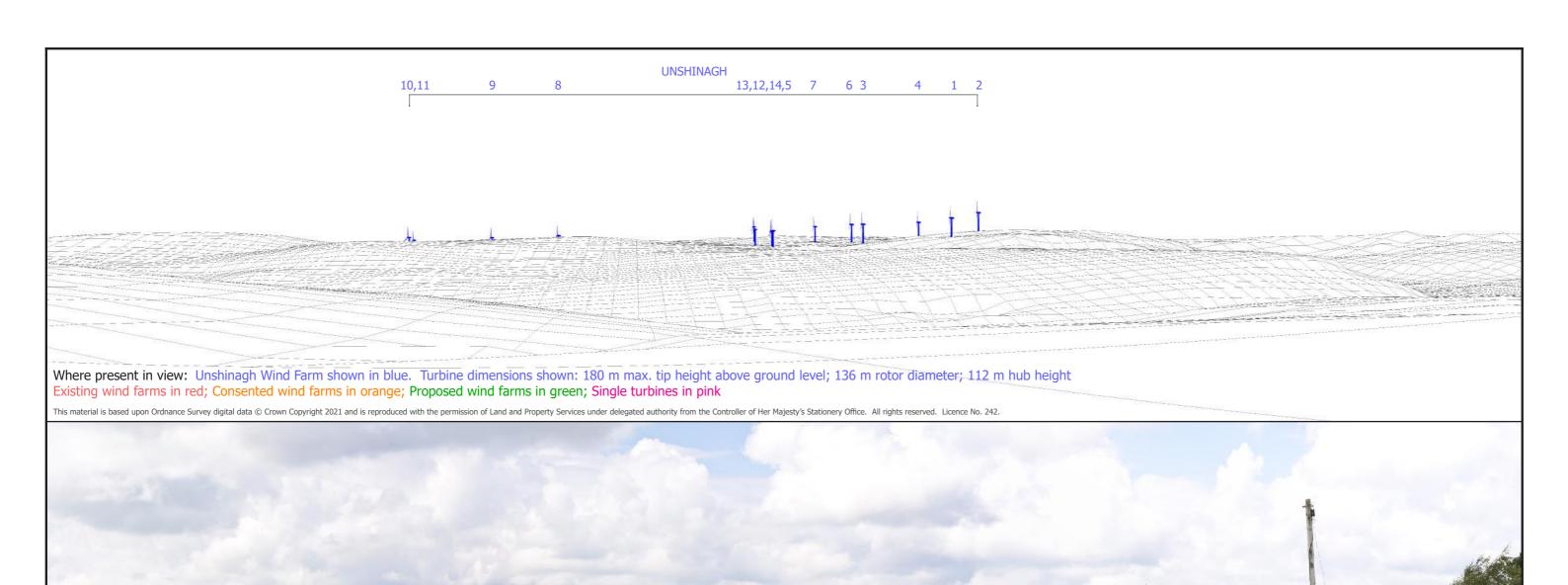
Easting: 327309
Northing: 414256
Elevation A.O.D 134 m
Bearing: 291.76 °
Approx. Included Angle: 80 °

Approx. distance to nearest

turbine: 1.72 km to T5







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UNSHINAGH WIND FARM

FIGURE 4.14

VIEWPOINT 4 Dickeystown Road, Glenarm

Wireline and Photomontage

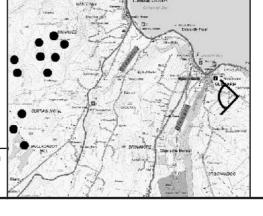
Easting: 332246
Northing: 414491
Elevation A.O.D 148 m
Bearing: 274.78 °
Approx. Included Angle: 80 °

Approx. distance to nearest

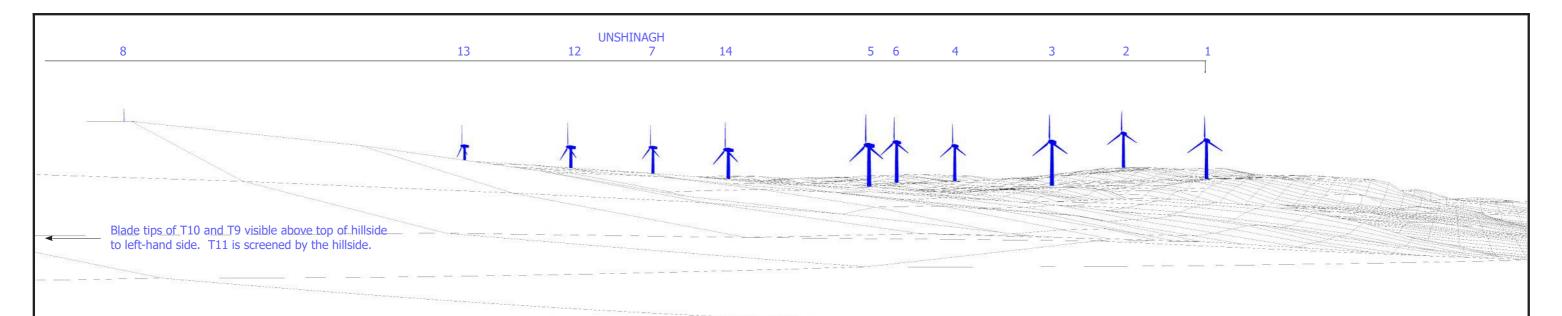
NOTE: This Figure must be viewed at a comfortable arms length and in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the preparation of visualisations contained in Technical Appendix

4.2, in particular the paragraphs referencing Scottish Natural Heritage Guidance regarding the limitations of visualisations.

turbine: 6.02 km to T1







Where present in view: Unshinagh Wind Farm shown in blue. Turbine dimensions shown: 180 m max. tip height above ground level; 136 m rotor diameter; 112 m hub height Existing wind farms in red; Consented wind farms in orange; Proposed wind farms in green; Single turbines in pink

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UNSHINAGH WIND FARM

FIGURE 4.15

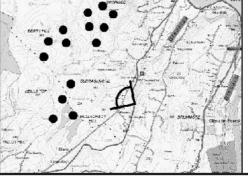
VIEWPOINT 5 Approach into Carnlough on A42

Wireline and Photomontage

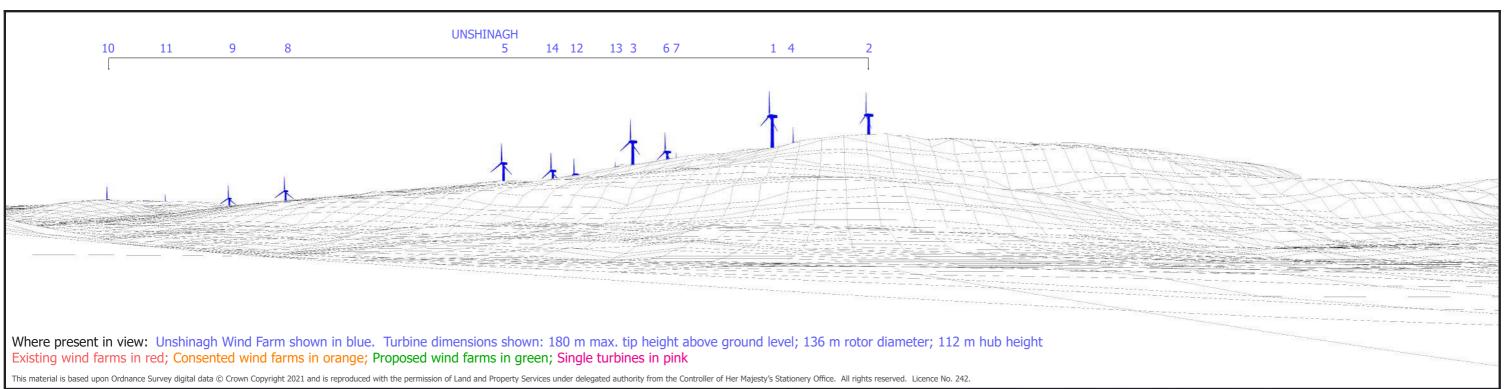
Easting: 327190
Northing: 413285
Elevation A.O.D 173 m
Bearing: 315.255 °
Approx. Included Angle: 80 °

Approx. Included Angle:
Approx. distance to nearest

turbine: 2.01 km to T10









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UNSHINAGH WIND FARM

FIGURE 4.16

VIEWPOINT 6 Straidkilly Road, Carnlough

Wireline and Photomontage

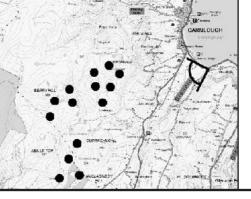
Easting: 329355
Northing: 416434
Elevation A.O.D 6 m
Bearing: 251.19 °
Approx. Included Angle: 80 °

Approx. distance to nearest

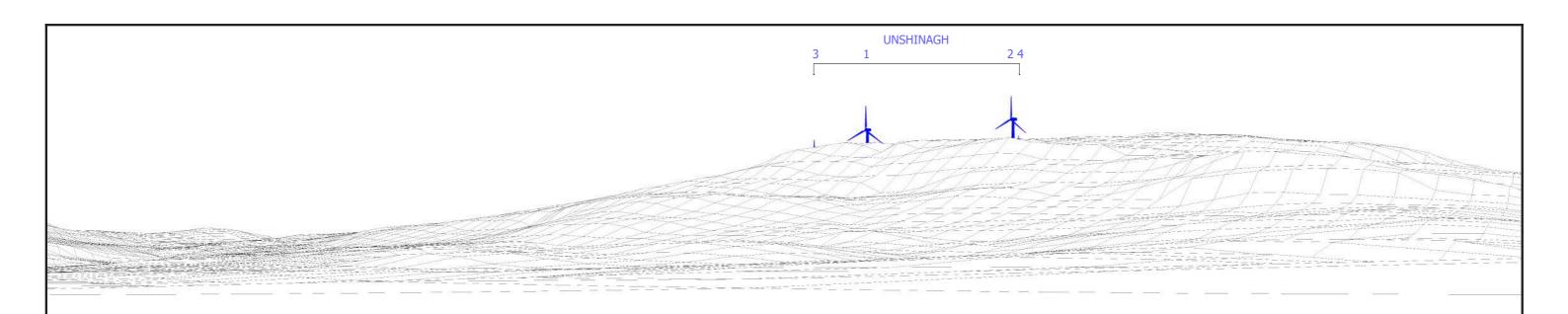
NOTE: This Figure must be viewed at a comfortable arms length and in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the preparation of visualisations contained in Technical Appendix

4.2, in particular the paragraphs referencing Scottish Natural Heritage Guidance regarding the limitations of visualisations.

turbine: 2.87 km to T1







Where present in view: Unshinagh Wind Farm shown in blue. Turbine dimensions shown: 180 m max. tip height above ground level; 136 m rotor diameter; 112 m hub height Existing wind farms in red; Consented wind farms in orange; Proposed wind farms in green; Single turbines in pink

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UNSHINAGH WIND FARM

FIGURE 4.17

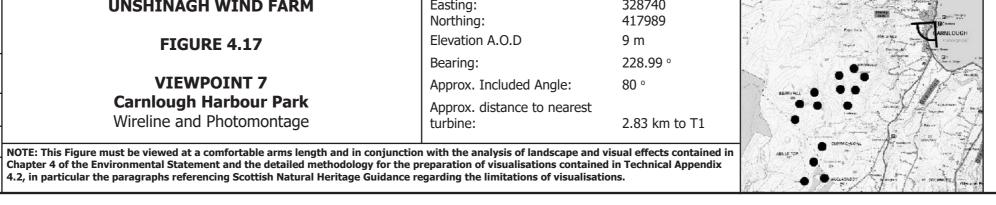
VIEWPOINT 7 Carnlough Harbour Park

Wireline and Photomontage

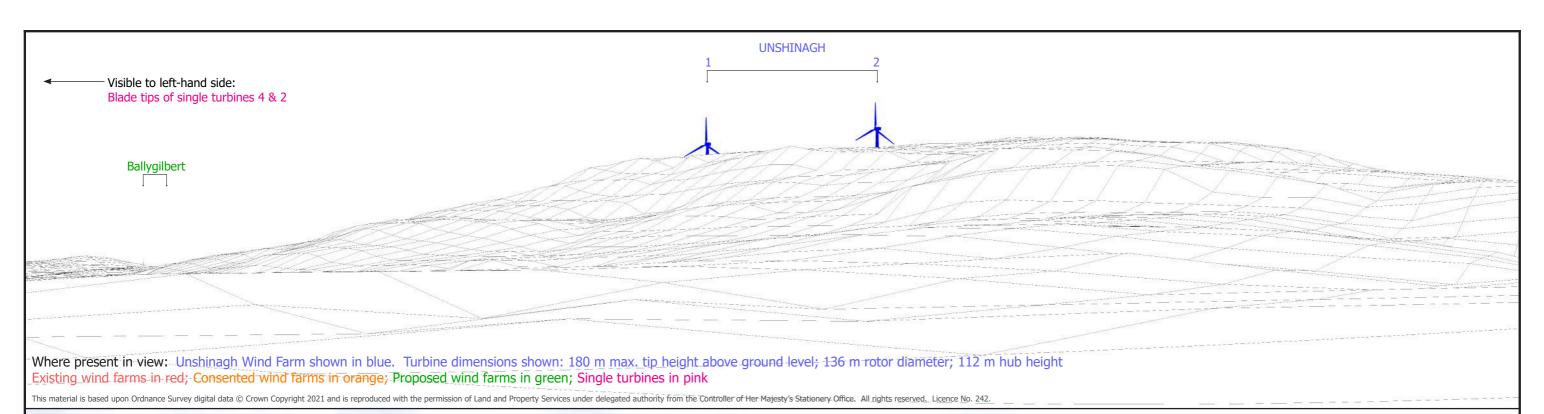
328740 Easting: 417989 Northing: Elevation A.O.D 9 m Bearing: 228.99 ° Approx. Included Angle: 80 °

Approx. distance to nearest

turbine: 2.83 km to T1









LANDSCAPE AND VISUAL IMPACT ASSESSMENT

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UNSHINAGH WIND FARM

FIGURE 4.18

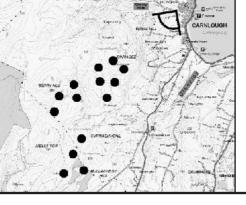
VIEWPOINT 8 Lane to Cranny Falls, Carnlough

Wireline and Photomontage

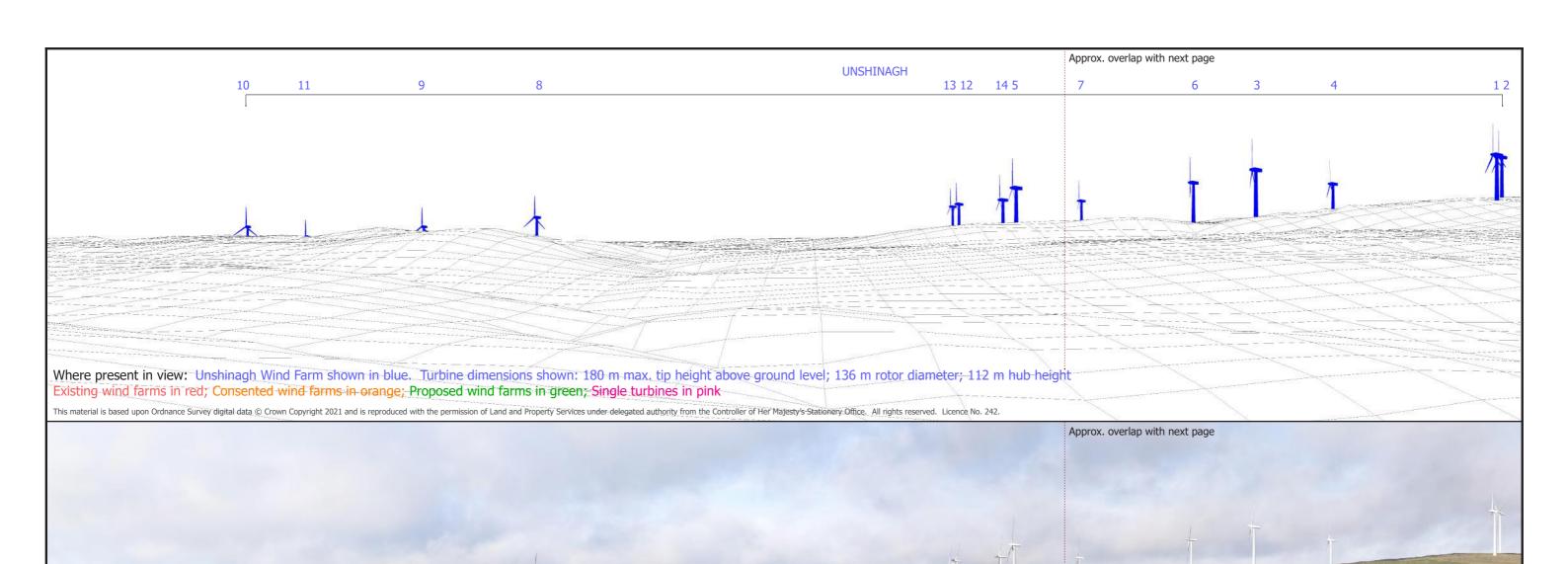
Easting: 328316
Northing: 418191
Elevation A.O.D 21 m
Bearing: 223.19 °
Approx. Included Angle: 80 °

Approx. distance to nearest

turbine: 2.65 km to T1







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UNSHINAGH WIND FARM

FIGURE 4.19 (page 1/2)

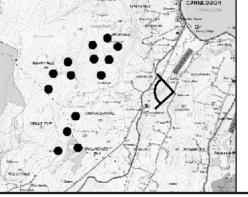
VIEWPOINT 9
Ballyvaddy Road (left-hand side)

Wireline and Photomontage

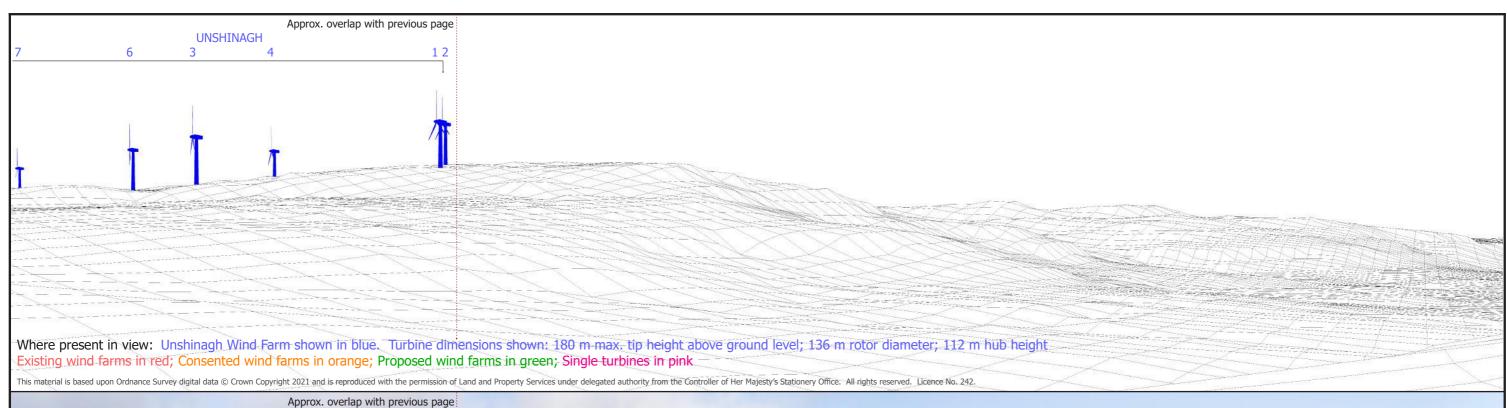
Easting: 328347
Northing: 414844
Elevation A.O.D 108 m
Bearing: 274.73 °
Approx. Included Angle: 80 °

Approx. distance to nearest

turbine: 2.33 km to T1









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UNSHINAGH WIND FARM

FIGURE 4.19 (page 2/2)

VIEWPOINT 9 Ballyvaddy Road (right-hand side)

Wireline and Photomontage

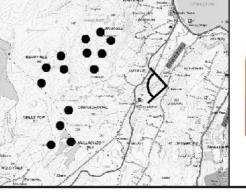
Easting: 328347
Northing: 414844
Elevation A.O.D 108 m
Bearing: 274.73 °
Approx. Included Angle: 80 °

Approx. distance to nearest

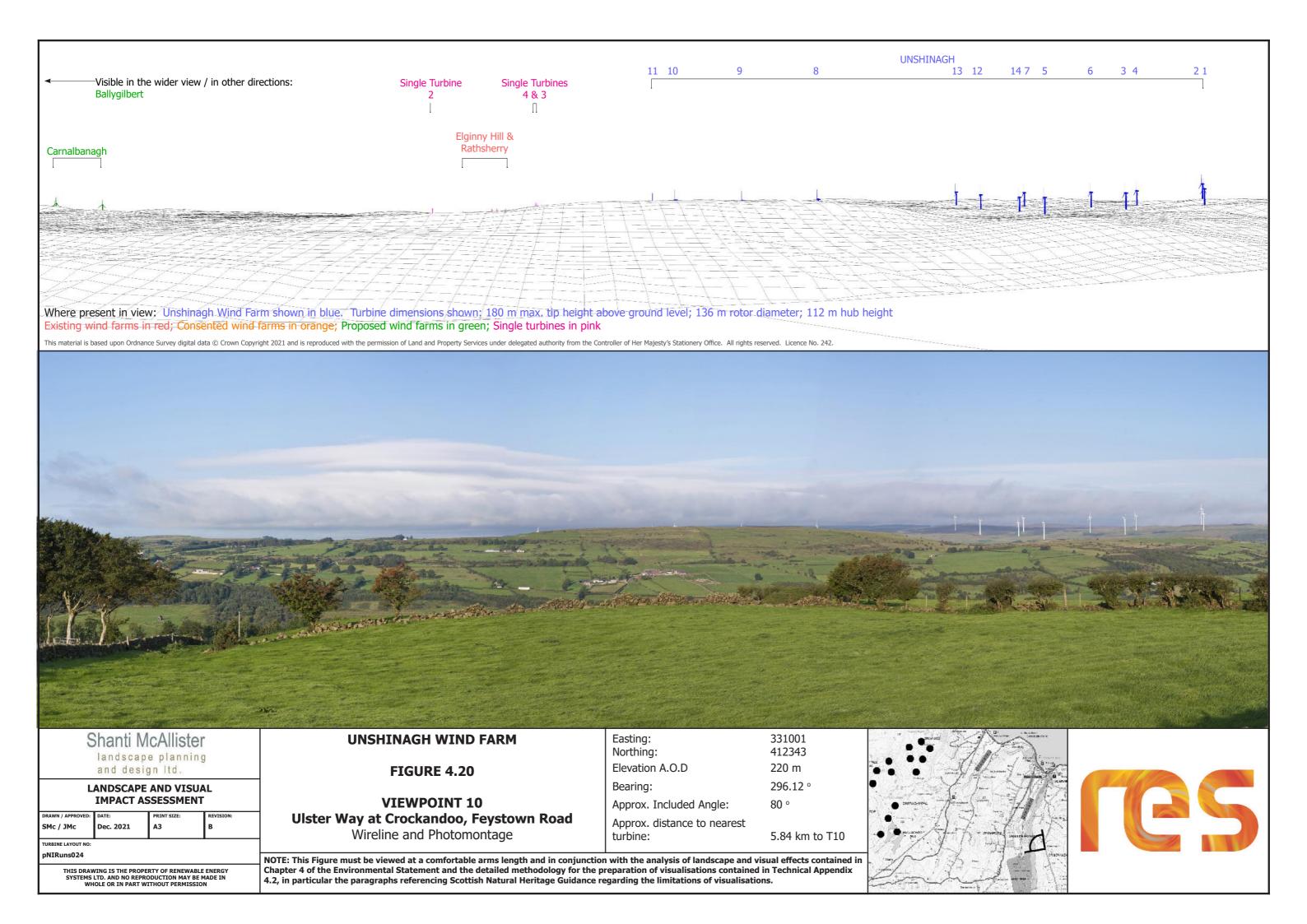
NOTE: This Figure must be viewed at a comfortable arms length and in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the preparation of visualisations contained in Technical Appendix

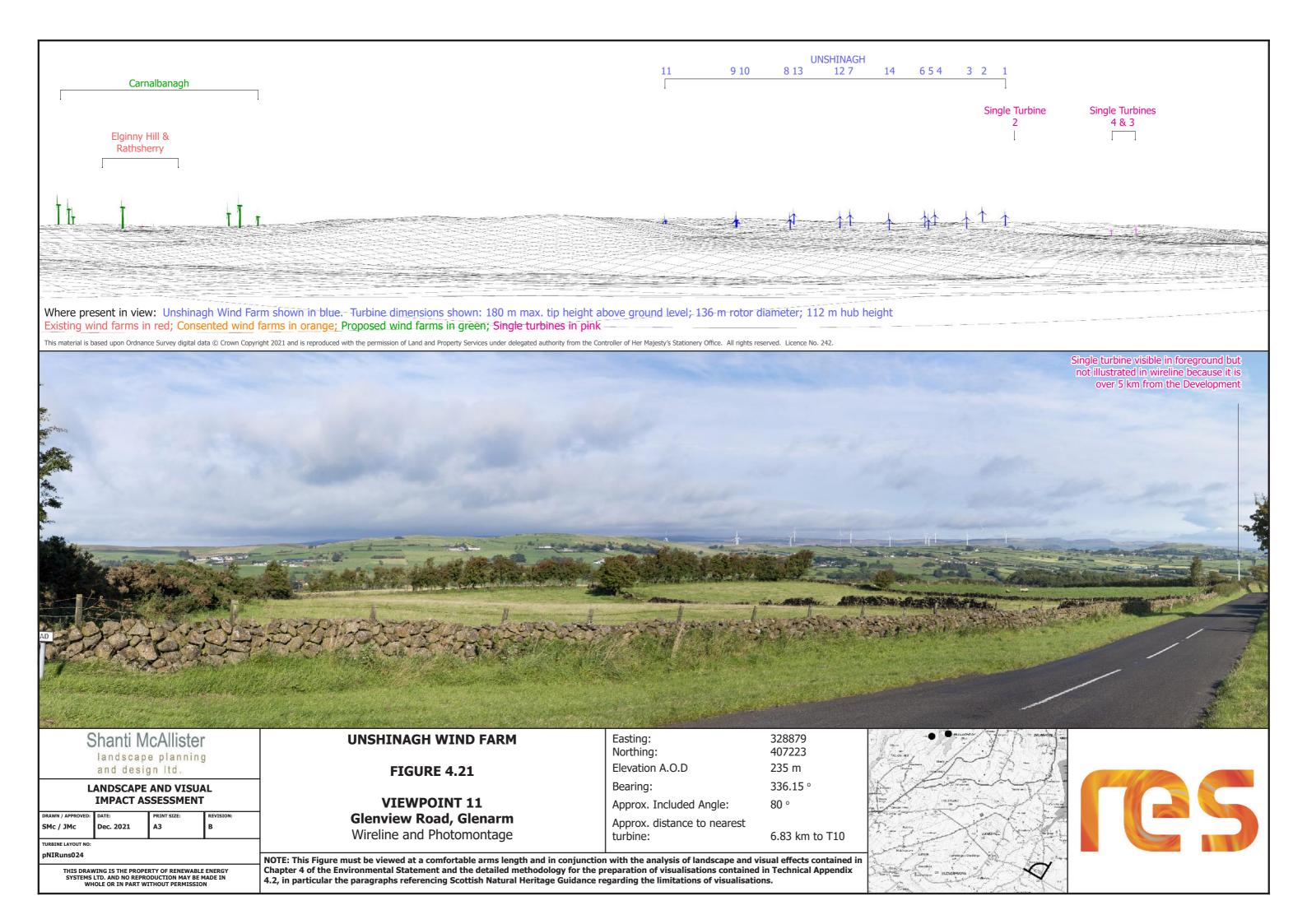
4.2, in particular the paragraphs referencing Scottish Natural Heritage Guidance regarding the limitations of visualisations.

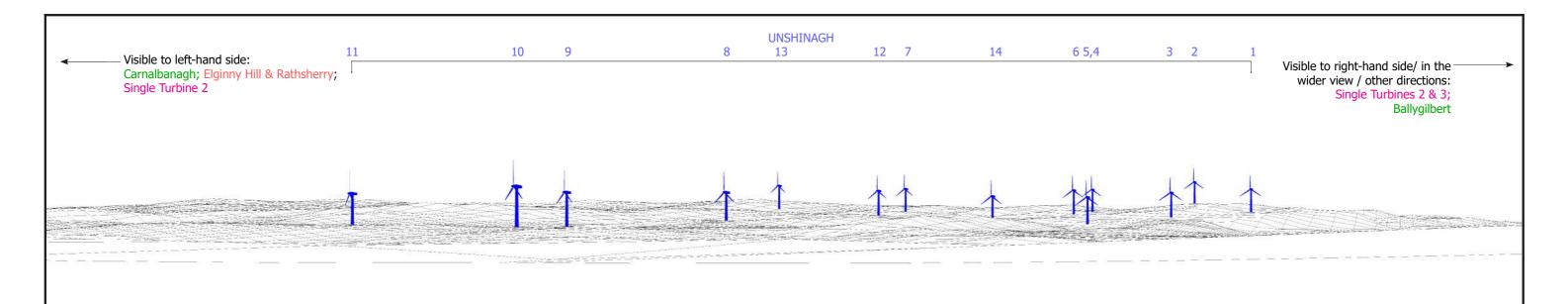
turbine: 2.33 km to T1











Where present in view: Unshinagh Wind Farm shown in blue. Turbine dimensions shown: 180 m max. tip height above ground level; 136 m rotor diameter; 112 m hub height Existing wind farms in red; Consented wind farms in orange; Proposed wind farms in green; Single turbines in pink

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UNSHINAGH WIND FARM

FIGURE 4.22 (page 1/2)

VIEWPOINT 12 Munie Road

Wireline and Photomontage

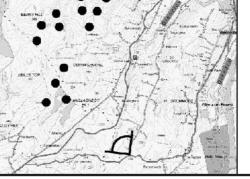
Easting: 327241
Northing: 411163
Elevation A.O.D 211 m
Bearing: 334.90 °
Approx. Included Angle: 80 °

Approx. distance to nearest

NOTE: This Figure must be viewed at a comfortable arms length and in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the preparation of visualisations contained in Technical Appendix

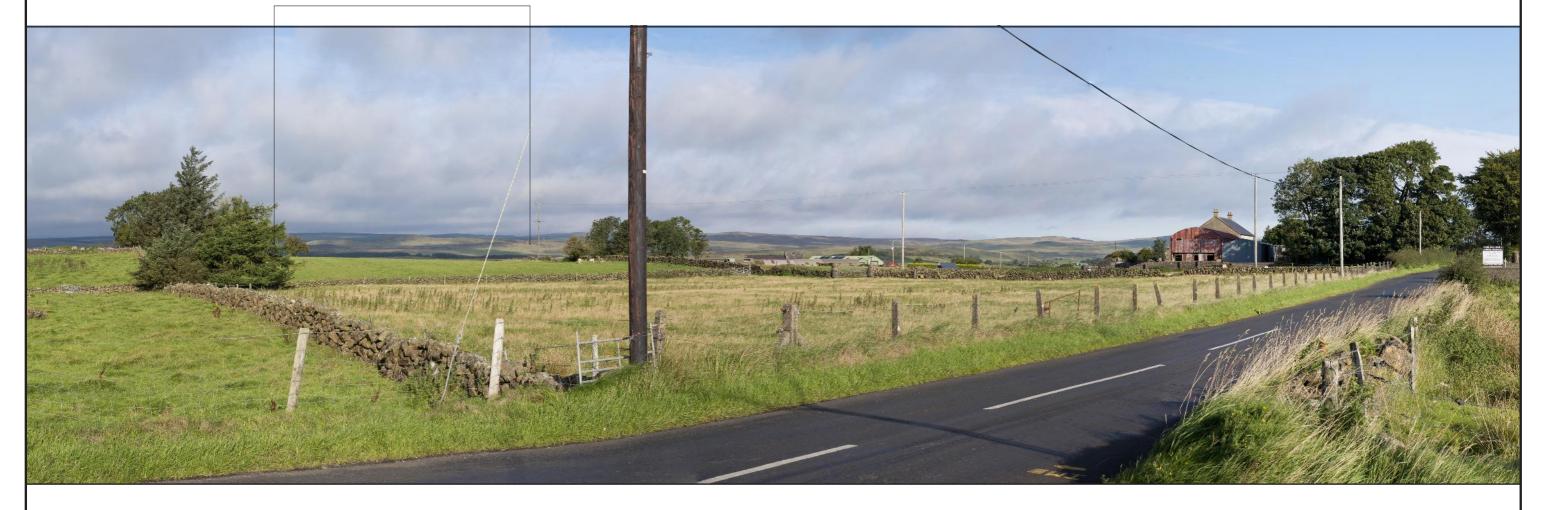
4.2, in particular the paragraphs referencing Scottish Natural Heritage Guidance regarding the limitations of visualisations.

turbine: 2.73 km to T10





Location of forestry to be removed around T10



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UNSHINAGH WIND FARM

FIGURE 4.22 (page 2/2)

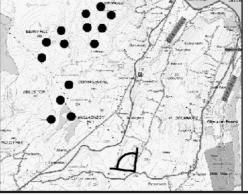
VIEWPOINT 12 Munie Road

Baseline Photograph

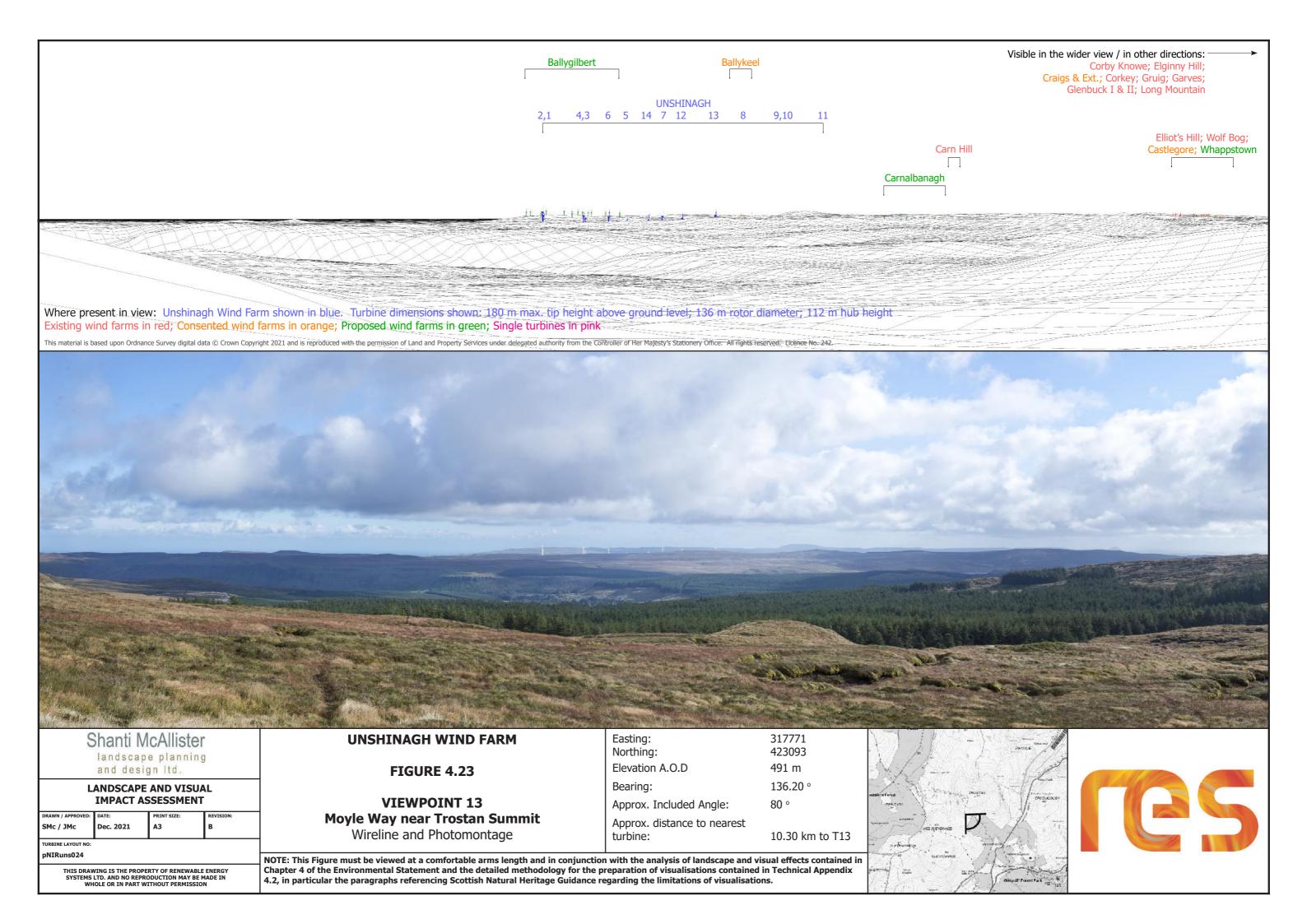
Easting: 327241
Northing: 411163
Elevation A.O.D 211 m
Bearing: 334.90 °
Approx. Included Angle: 80 °

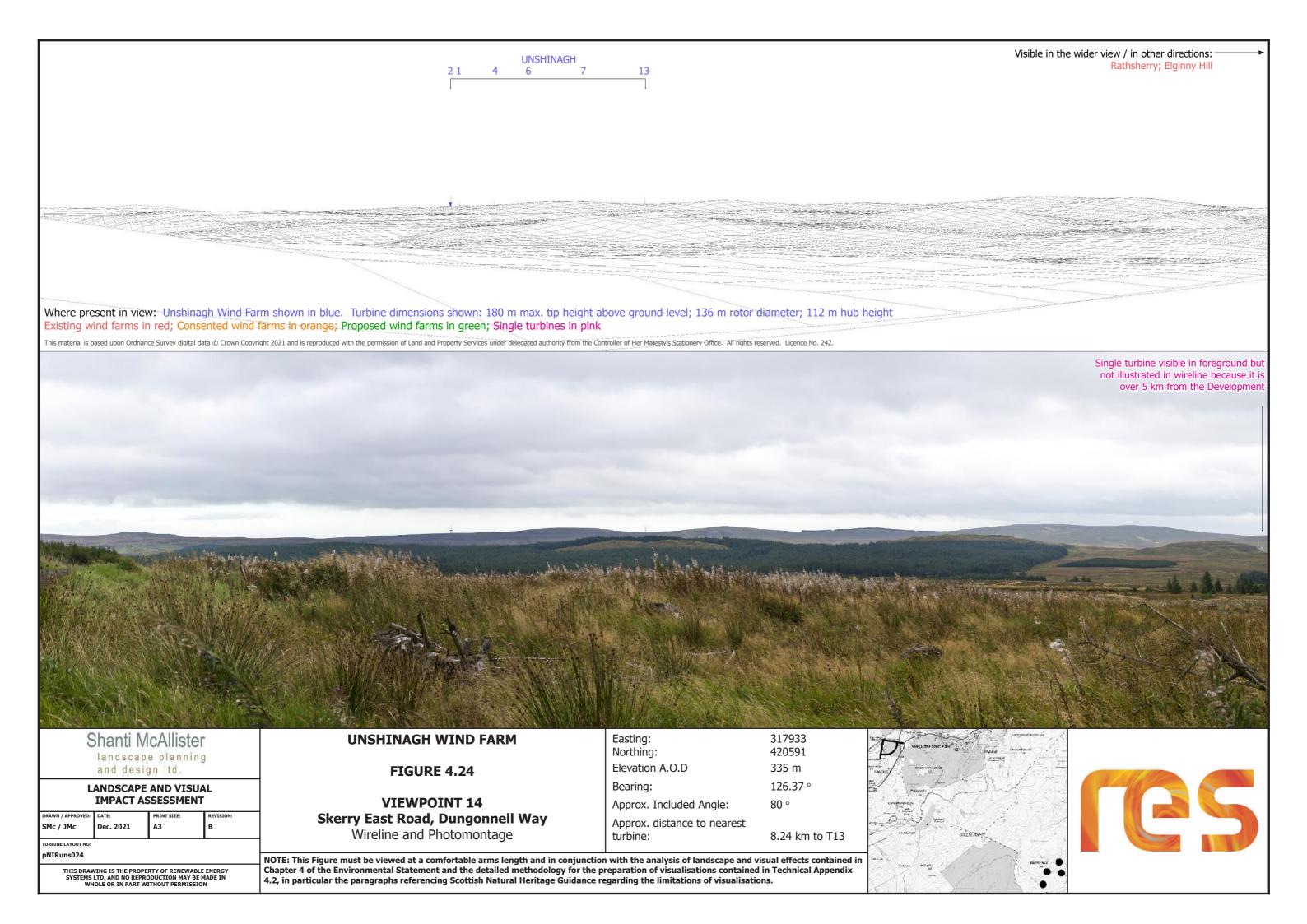
Approx. distance to nearest

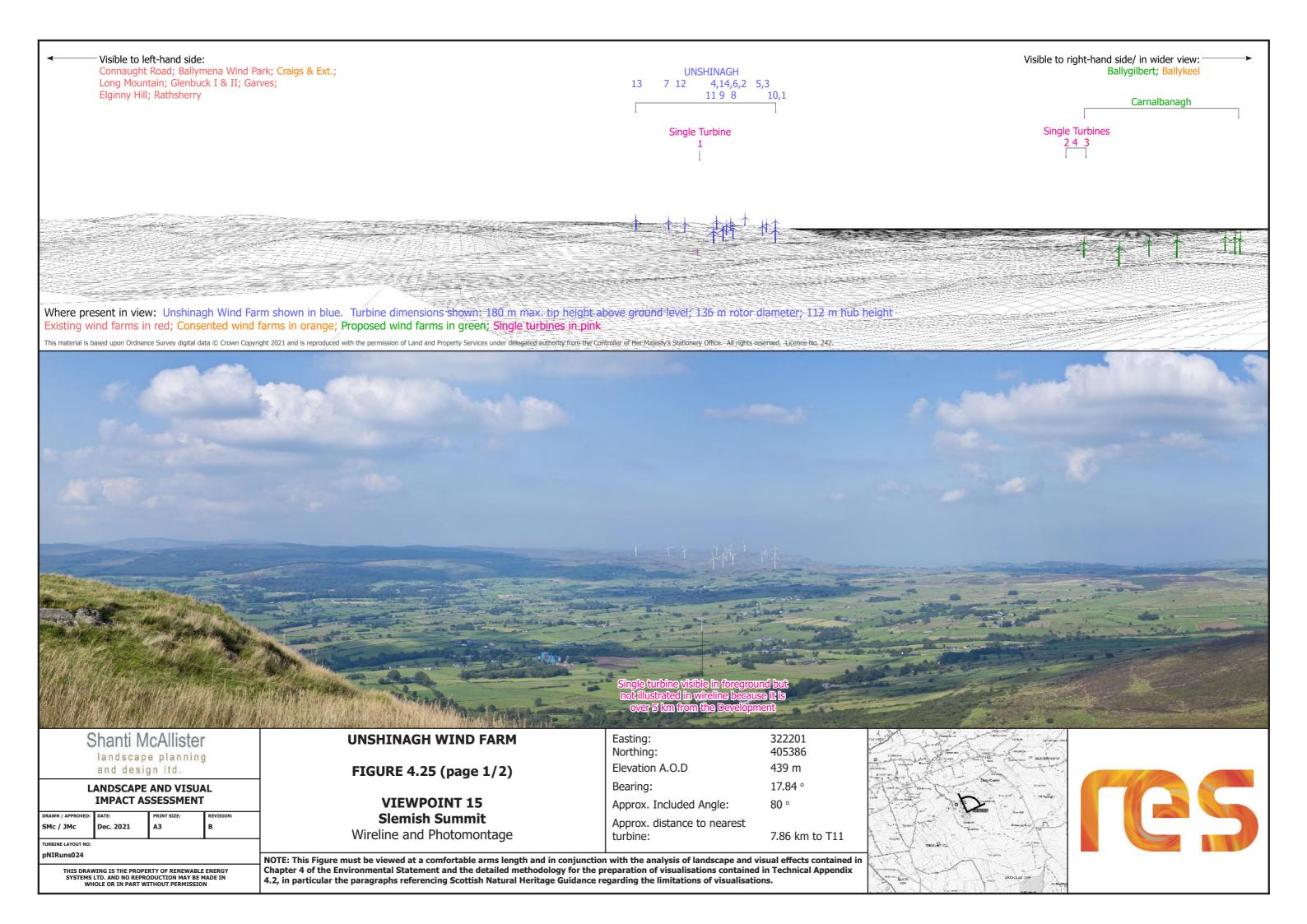
turbine: 2.73 km to T10











forestry to be removed near T8

Location of Location of forestry to be removed around T10



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LANDSCAPE AND VISUAL IMPACT ASSESSMENT

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TURBINE LAYOUT NO pNIRuns024

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UNSHINAGH WIND FARM

FIGURE 4.25 (page 2/2)

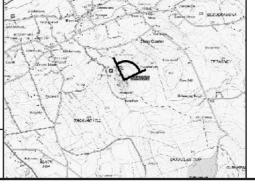
VIEWPOINT 15 Slemish Summit

Baseline Photograph

322201 Easting: 405386 Northing: Elevation A.O.D 439 m Bearing: 17.84 ° Approx. Included Angle: 80 °

Approx. distance to nearest

turbine: 7.86 km to T11





UNSHINAGH 14 4,6 5 23 1 9,13 10 8 7,12 Visible in the wider view / in other directions: Visible to right-hand side: Carnalbanagh; Ballymena Wind Park; Single turbines 2 & 4 Craigs & Ext; Elginny Hill; Rathsherry; Glenbuck; Long Mountain Single Turbine Where present in view: Unshinagh Wind Farm shown in blue. Turbine dimensions shown: 180 m max. tip height above ground level; 136 m rotor diameter; 112 m hub height Existing wind farms in red; Consented wind farms in orange; Proposed wind farms in green; Single turbines in pink This material is based upon Ordnance Survey digital data © Crown Copyright 2021 and is reproduced with the permission of Land and Property Services under delegated authority from the Controller of Her Majesty's Stationery Office. All rights reserved. Licence No. 242. Shanti McAllister **UNSHINAGH WIND FARM** 325950 Easting: Northing: 409158 landscape planning Elevation A.O.D 245 m and design Itd. FIGURE 4.26 (page 1/2) Bearing: 354.73 ° LANDSCAPE AND VISUAL **IMPACT ASSESSMENT VIEWPOINT 16** Approx. Included Angle: 80 ° Carnalbanagh Approx. distance to nearest SMc / JMc Dec. 2021 Wireline and Photomontage turbine: 3.89 km to T10 TURBINE LAYOUT NO nNTRuns024 NOTE: This Figure must be viewed at a comfortable arms length and in conjunction with the analysis of landscape and visual effects contained in Chapter 4 of the Environmental Statement and the detailed methodology for the preparation of visualisations contained in Technical Appendix THIS DRAWING IS THE PROPERTY OF RENEWABLE ENERGY SYSTEMS LTD. AND NO REPRODUCTION MAY BE MADE IN WHOLE OR IN PART WITHOUT PERMISSION 4.2, in particular the paragraphs referencing Scottish Natural Heritage Guidance regarding the limitations of visualisations.

Locations of forestry to be removed around T10 and T8



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UNSHINAGH WIND FARM

FIGURE 4.26 (page 2/2)

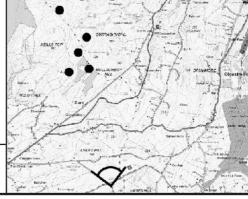
VIEWPOINT 16 Carnalbanagh

Baseline Photograph

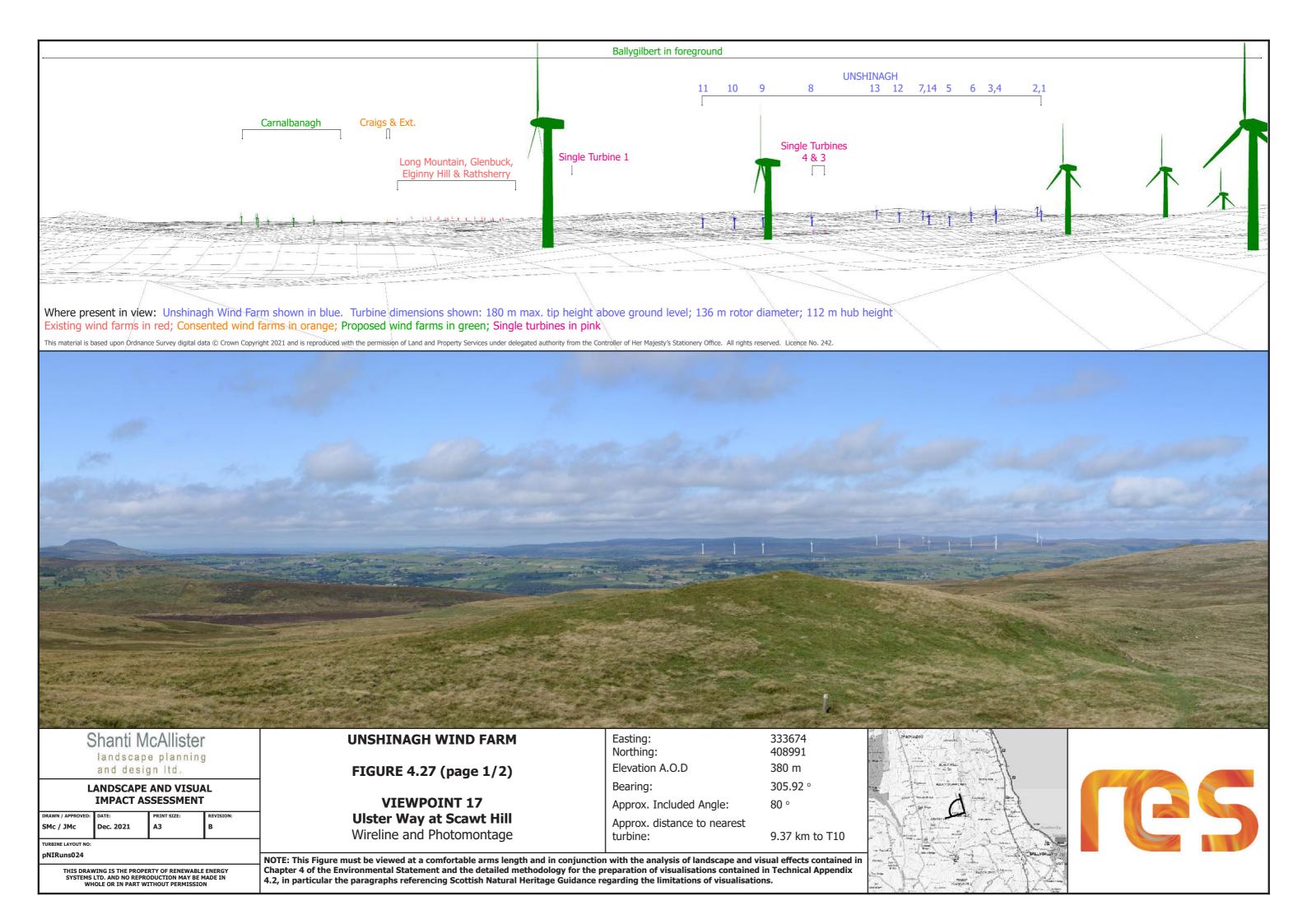
Easting: 325950
Northing: 409158
Elevation A.O.D 245 m
Bearing: 354.73 °
Approx. Included Angle: 80 °

Approx. Included Angle:
Approx. distance to nearest

turbine: 3.89 km to T10







Location of forestry to be removed around T10 Location of forestry to be removed near T8



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UNSHINAGH WIND FARM

FIGURE 4.27 (page 2/2)

VIEWPOINT 17 Ulster Way at Scawt Hill

Baseline Photograph

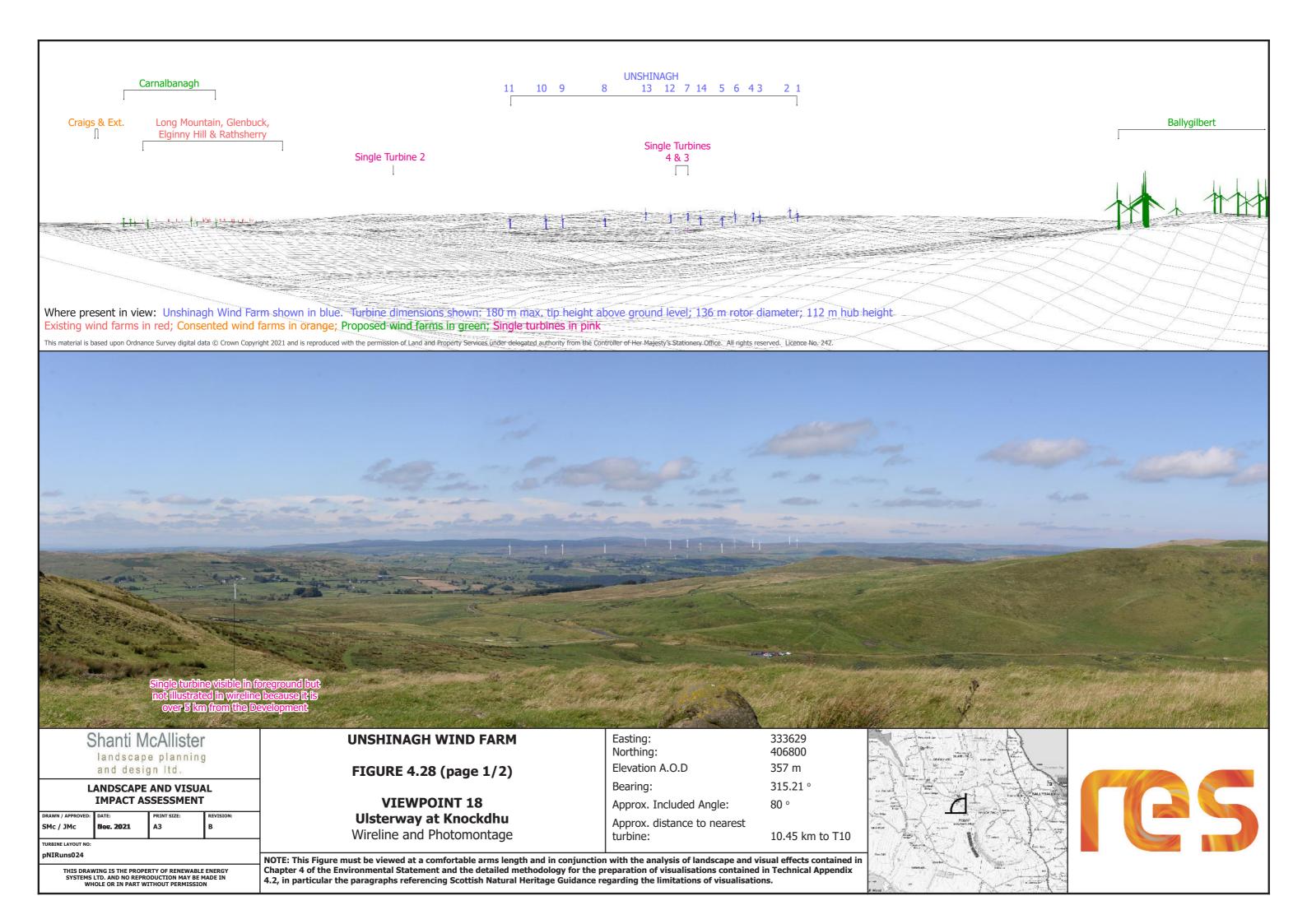
Easting: 333674
Northing: 408991
Elevation A.O.D 380 m
Bearing: 305.92 °
Approx. Included Angle: 80 °

Approx. Included Angle:
Approx. distance to nearest

turbine: 9.37 km to T10







Location of forestry to be removed around T10 Location of forestry to be removed near T8



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UNSHINAGH WIND FARM

FIGURE 4.28 (page 2/2)

VIEWPOINT 18 Ulsterway at Knockdhu

Baseline Photograph

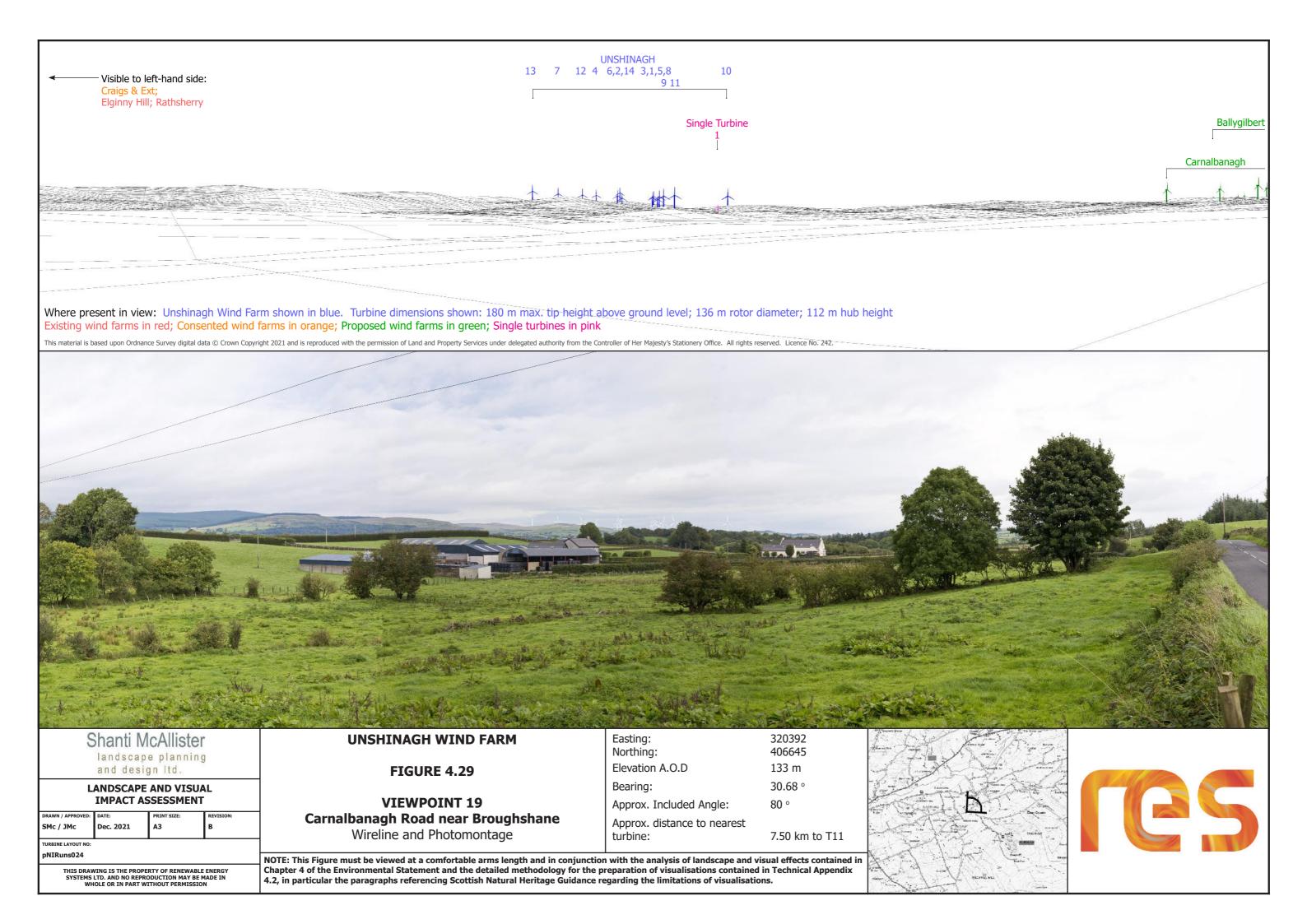
Easting: 333629
Northing: 406800
Elevation A.O.D 357 m
Bearing: 315.21 °
Approx. Included Angle: 80 °

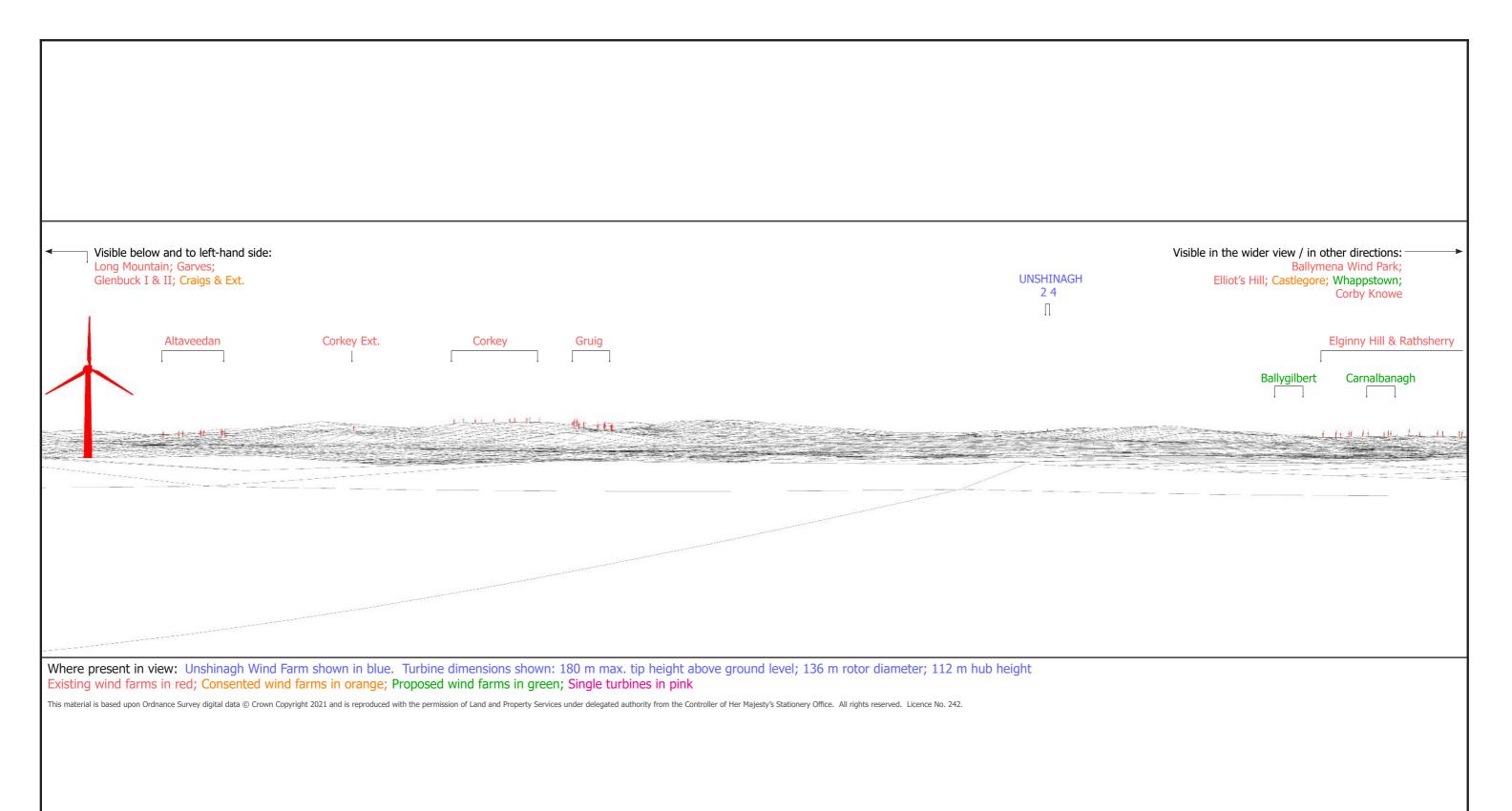
Approx. distance to nearest

turbine: 10.45 km to T10









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UNSHINAGH WIND FARM

FIGURE 4.30

VIEWPOINT 20 Glenbuck Road, Long Mountain Ridge

Wireline

Easting: 301252
Northing: 415544
Elevation A.O.D 180 m
Bearing: 90.08 °
Approx. Included Angle: 80 °

Approx. distance to nearest

turbine: 23.13 km to T13

