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Methodology Statement for Visualisations

1.

The viewpoint assessment is illustrated by a range of visualisations, including photographs and photomontages, which accord with SNH’s Visual Representation of Wind Farms Version 2.2 (SNH, 2017). In the absence of detailed guidance on the production of photomontages for non-wind farm developments, the Landscape Institute (LI) in its Advice Note 01/11 makes the following comment:

 - “Scottish Natural Heritage’s Visual representation of windfarms: good practice guidance states that the guidance may also be applicable to other forms of development or within other locations. The LI endorses this guidance and strongly advises members to follow this where applicable in preference to any other guidance or methodology.”
2.

Although the onshore elements of the project do not constitute a wind farm, the SNH guidance has been applied in the production of the photomontages. In PEIR, 90-degree field of view frames were presented for each viewpoint. However, through PEIR consultation and further site work, it has been agreed that 53.5-degree field of view frames would assist interpretation of the likely effects of the project and are more appropriate for the purposes of the assessment. The 53.5-degree field of view frames show an enlarged image of the development, which is considered more authentic in conveying the likely actual scale that would be experienced on site. A 90-degree baseline photograph frame has also been included to illustrate the wider context of the views experienced from each viewpoint.
3.

Chapter 6 EIA Methodology Section 6.4, ‘The Project Design Envelope’, explains how the project EIA will be based on the ‘Rochdale Envelope’ approach, as supported by The Planning Inspectorate Advice Note Nine (The Planning Inspectorate, 2012). The Rochdale Envelope presents the parameters of the project which represent the worst-case scenario. This ensures the DCO application covers the maximum possible extent of the project. Visualisations in Figures 29.13 to 29.24 therefore present a Rochdale Envelope approach, marked by a blue dashed 3D box around the computer-generated model, indicating the maximum possible extent of the project. This ensures that the LVIA considers the worst case scenario in respect of both the National Grid substation extension and the onshore project substation.
4.

The design of the National Grid substation extension is represented by a computer-generated model indicating the worse case scenario, set within the parameters of the Rochdale Envelope. This ensures that if any modifications to the design are made, these will occur within the worse case scenario assessed.
5.

The design of the onshore project substation will be further developed within the parameters set by the Rochdale Envelope. The computer-generated model included in the visualisations provides an indicative representation of the worst case scenario within the Rochdale Envelope and this has formed the basis of the LVIA. Those aspects of the design that would not change include the footprint of the development (250m x 300m), the maximum height of the buildings (19m), the maximum height of the lightning protection masts (25m) and the general infrastructure of indoor converter halls and outdoor electrical infrastructure. The computer-generated model has been included in the photomontages to give an impression of the general appearance and character of the onshore project substation, set within the parameters of the Rochdale envelope.
6.

Visualisations of energy developments have a number of limitations when using them to form a judgement on the effects of this type of development. These include:

 - A visualisation can never show exactly what the energy development 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 give a reasonable impression of the scale of the energy developments and the distance from the viewpoint and, whilst they have been produced to accord with best practice guidance, can never be 100% accurate;
 - 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 development these images are best viewed in the field at the viewpoint location shown; and
 - The visualisations must be printed at the right size to be viewed properly (A1 width) and viewed at a comfortable viewing distance.
7.

The photographs used to produce the photomontages have been taken using Canon EOS 5D and 6D Digital SLR cameras, with a fixed lens and a full-frame (35mm negative size) CMOS sensor. The photographs are taken on a tripod with a pano-head at a height of approximately 1.5m above ground.
8.

To create the baseline panorama, the frames are individually cylindrically-projected and then digitally joined to create a fully cylindrically-projected panorama using Adobe Photoshop or PTGui software. This process avoids the wide-angle effect that would result should these frames be arranged in a perspective projection, whereby the image is not faceted to allow for the cylindrical nature of the full 360-degree view but appears essentially as a flat plane. These should be viewed flat at a comfortable arm’s length. These images are each printed on paper 841 x 297 mm (half A1), which provides for a relatively large-scale image.
9.

Tonal alterations are made using Adobe Photoshop software to create an even range of tones across the photographs once joined.
10.

3D model views that illustrate the onshore project substation and National Grid substation extension within a computer-generated image of the landform are used in the assessment to present an indicative appearance of the project. These are produced with Visual Nature Studio software and are based on the OS Terrain 5 digital terrain model. There are limitations in the accuracy of DTM data so that finer elements of landform may not be picked up precisely and may result in parts of the onshore project substation or National Grid substation extension, being more or less visible than is shown, however, the use of OS Terrain 5 minimises these limitations. Where descriptions within the assessment identify the extent of onshore infrastructure visible this refers to the illustrations generated and therefore the reality may differ to a degree from these impresions. The modifications to the overhead line, which include an incremental change in the location and height of one tower and the addition of another tower, are included in the ES photomontages.
11.

Photomontages have been produced for all the representative viewpoints, using Adobe Photoshop software, to provide a realistic image of the appearance of the proposal. For most views, these include the introduction of the onshore project substation and National Grid substation extension only, as these are the elements that create the greatest change in views and are likely to be most visible from the surrounding area. The location and scale of the computer-generated model has been verified using markers such as the existing transmission towers, the existing substations, church towers and other fixed built features in the landscape.
12.

Each photomontage is presented on A1 width paper in planar projection with a 53.5 degree horizontal field of view and an image size of 260mm x 820mm. These should be viewed flat at a comfortable arms length.
13.

The photographs and photomontages used in this assessment are for illustrative purposes only and, whilst useful tools in the assessment, are not considered to be completely representative of what will be apparent to the human eye. The assessments are carried out from observations in the field and therefore may include elements that are not visible in the photographs.
14.

GPS readings and accurate aerial photography have been used to verify viewpoint locations and markers within the OS terrain model, which is referenced to the OS British National Grid coordinate system.
15.

In respect of the onshore project substation and National Grid substation extension, there are twelve representative viewpoints shown in Figures 29.13 to 29.24. Viewpoints 1 to 8 were agreed with Statutory Consultees involved in the LVIA (ETG) Meetings, while Viewpoints 9 to 12 were added in response to coments raised at these meetings. The figures for each viewpoint show the following;

(a)

Location map of the viewpoint;

(b)

Baseline photograph and computer-generated model;

(c)

Photomontage of Norfolk Vanguard onshore project substation, National Grid substation extension and overhead line modifications;

(d)

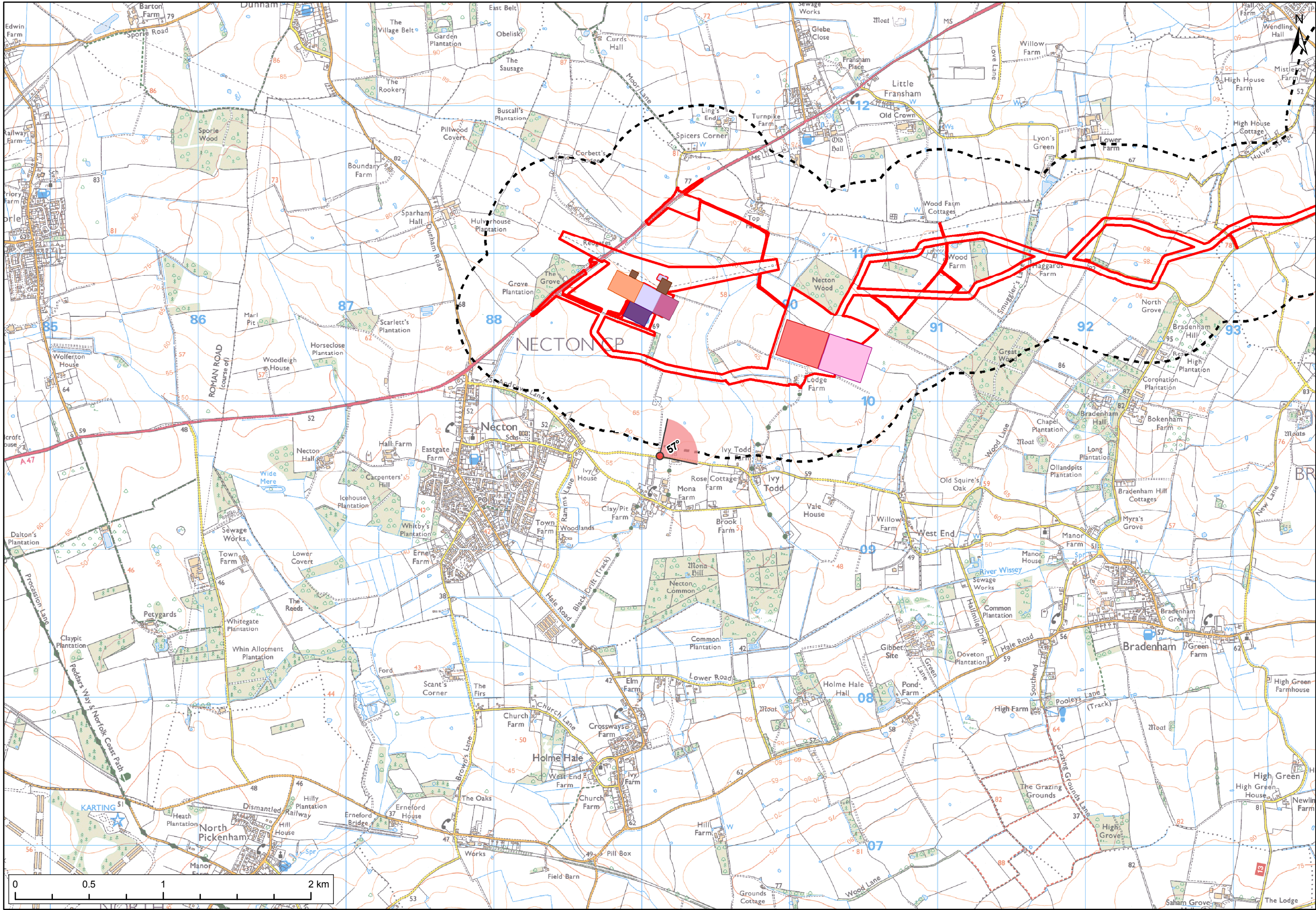
Photomontage of Norfolk Vanguard onshore project substation, National Grid substation extension overhead line modifications and mitigation planting;

(e)

Photomontage of Norfolk Vanguard onshore project substation and National Grid substation extension, Norfolk Boreas onshore project substation and National Grid substation extension, over head line modifications; and

(f)

Photomontage of Norfolk Vanguard onshore project substation and National Grid substation extension, Norfolk Boreas onshore project substation and National Grid substation extension, over head line modifications, with mitigation planting for both projects.

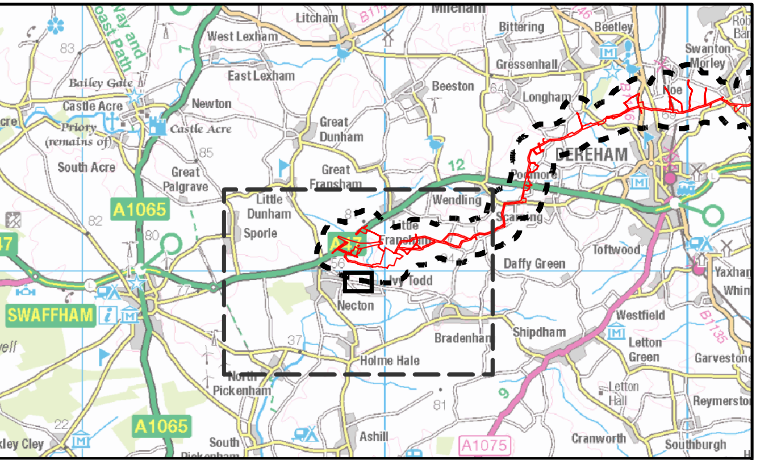


Viewpoint Location Plan Baseline Panorama (90 Degree View)
Scale: 1:25,000



Viewpoint Location Plan: 53.5 Degree View
Scale: 1:2,500

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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend:

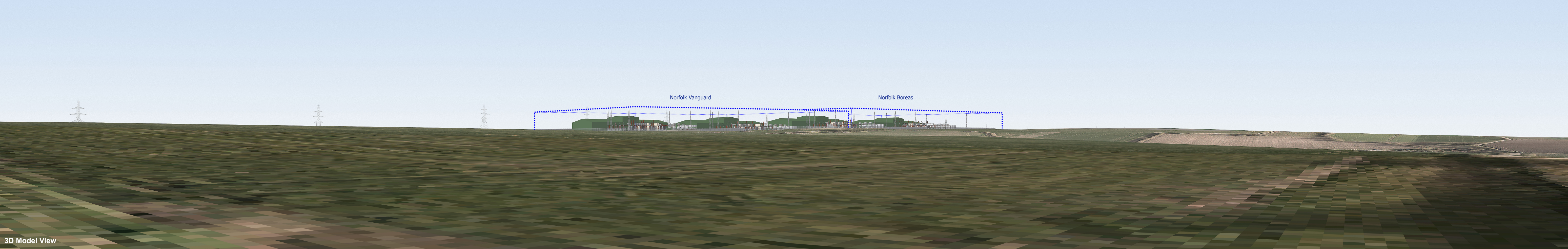
- Norfolk Vanguard onshore red line boundary
- Study area 500m
- Onshore project substation**
- Onshore project substation
- Norfolk Boreas**
- Norfolk Boreas onshore project substation
- Norfolk Boreas National Grid substation extension
- National Grid**
- National Grid substation extension
- National Grid new / replacement overhead line tower
- Existing substation locations**
- Existing Necton substation
- Necton National Grid substation
- Viewpoint**
- 90 degree field of view viewpoint
- 53.5 degree field of view viewpoint

Project:	Report:
Norfolk Vanguard	Environmental Statement

Title:	Viewpoint 1: Ivy Todd Road West
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Figure: 29.13a		Drawing No: PB4476-004-029-013			
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
04	15/05/2018	LA	JP	A3	Multiple
05	04/06/2018	LA	JP	A3	Multiple

Co-ordinate system: British National Grid EPSG: 27700





Photomontage of the proposed Norfolk Vanguard HVDC Substation

View flat at a comfortable arm's length

OS reference:	589120 E 309633 N	Horizontal field of view:	53.5° (planar projection)	Camera:	Canon EOS 5D Mark II
Eye level:	60.5 m AOD	Principal viewing distance:	812.5 mm	Lens:	50mm (Canon EF 50mm f/1.4)
Direction of view:	57°	Paper size:	841 x 297 mm (half A1)	Camera height:	1.5 m AGL
Nearest substation:	1.04 km	Correct printed image size:	820 x 260 mm	Date and time:	25/01/2018, 12:22:35

Figure: 29.13c
Viewpoint 1: Ivy Todd Road West



Photomontage of the proposed Norfolk Vanguard HVDC Substation with mitigation planting

View flat at a comfortable arm's length

OS reference:	589120 E 309633 N	Horizontal field of view:	53.5° (planar projection)	Camera:	Canon EOS 5D Mark II
Eye level:	60.5 m AOD	Principal viewing distance:	812.5 mm	Lens:	50mm (Canon EF 50mm f/1.4)
Direction of view:	57°	Paper size:	841 x 297 mm (half A1)	Camera height:	1.5 m AGL
Nearest substation:	1.04 km	Correct printed image size:	820 x 260 mm	Date and time:	25/01/2018, 12:22:35

Figure: 29.13d
Viewpoint 1: Ivy Todd Road West



Photomontage of the proposed Norfolk Vanguard and Norfolk Boreas HVDC Substations

View flat at a comfortable arm's length

OS reference:	589120 E 309633 N	Horizontal field of view:	53.5° (planar projection)	Camera:	Canon EOS 5D Mark II
Eye level:	60.5 m AOD	Principal viewing distance:	812.5 mm	Lens:	50mm (Canon EF 50mm f/1.4)
Direction of view:	57°	Paper size:	841 x 297 mm (half A1)	Camera height:	1.5 m AGL
Nearest substation:	1.04 km	Correct printed image size:	820 x 260 mm	Date and time:	25/01/2018, 12:22:35

Figure: 29.13e
Viewpoint 1: Ivy Todd Road West



Photomontage of the proposed Norfolk Vanguard and Norfolk Boreas HVDC Substations with mitigation planting

View flat at a comfortable arm's length

OS reference:	589120 E 309633 N	Horizontal field of view:	53.5° (planar projection)	Camera:	Canon EOS 5D Mark II
Eye level:	60.5 m AOD	Principal viewing distance:	812.5 mm	Lens:	50mm (Canon EF 50mm f/1.4)
Direction of view:	57°	Paper size:	841 x 297 mm (half A1)	Camera height:	1.5 m AGL
Nearest substation:	1.04 km	Correct printed image size:	820 x 260 mm	Date and time:	25/01/2018, 12:22:35

Figure: 29.13f
Viewpoint 1: Ivy Todd Road West