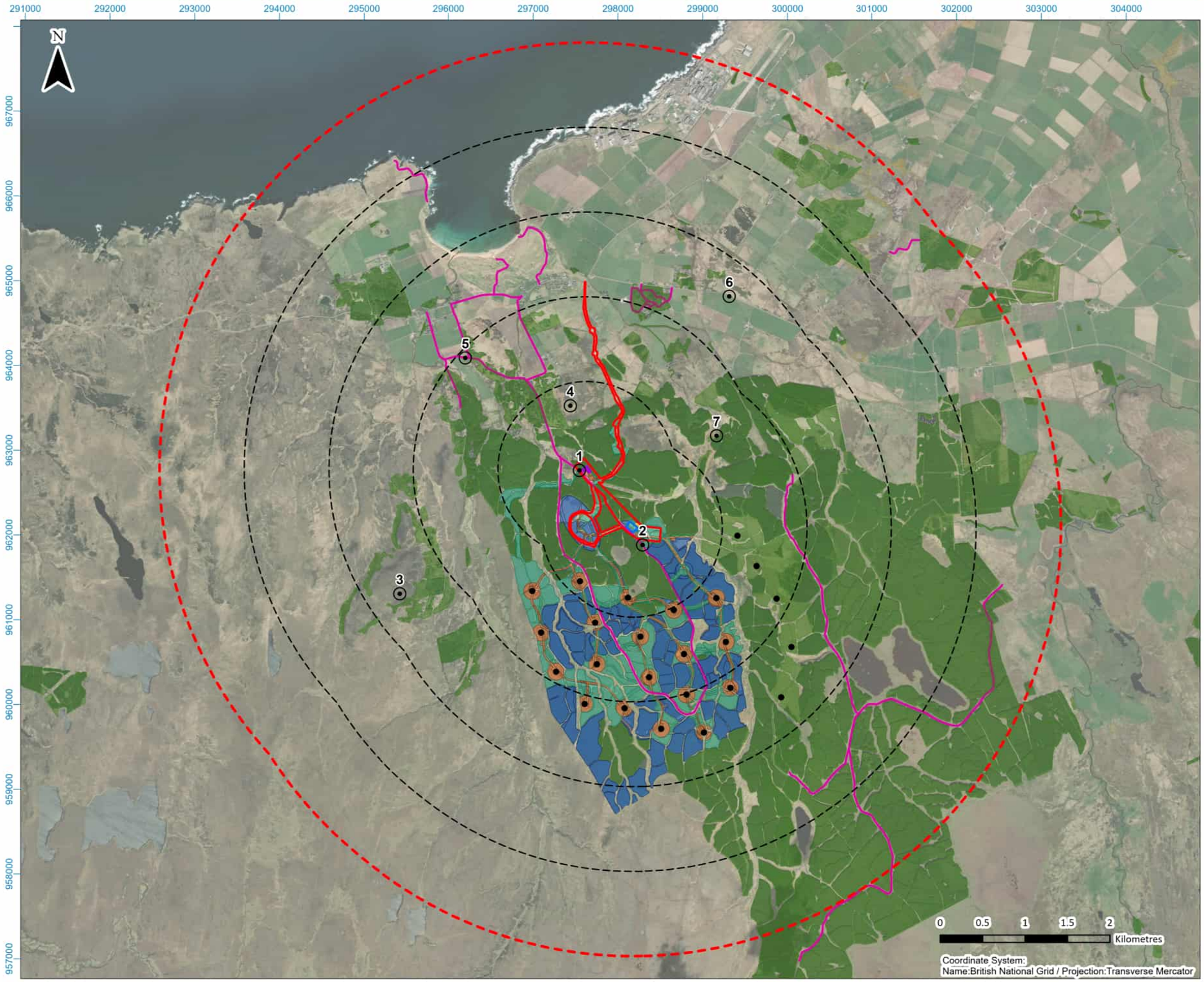
Figure 5.1: Site Location and Context



Legend:

- Proposed Site Boundary
- Substation Extension Footprint
- Proposed Battery Energy Storage System (BESS) Footprint
- 1 km Radii
- 5 km Study Area
- Viewpoint
  - 1 - CA11.03 Limekiln Forest Core Path (Substation)
  - 2 - CA11.03 Limekiln Forest Core Path (BESS compound)
  - 3 - Beinn Ratha
  - 4 - Borlum Hill
  - 5 - Reay FootPath
  - 6 - Shebster
  - 7 - Clach Clais an Tuirc (Cultural Heritage)
- Woodland
- Sustainable Drainage System (SuDS)

Forestry Removal

- Phase 1
- Phase 2
- Turbine/Windfarm Infrastructure
- Limekiln As Built Turbine Locations
- Core Path

Title

Site Location and Context

Project:

Limekiln BESS and Substation Extension LVA

Source:

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Client:

Boralex

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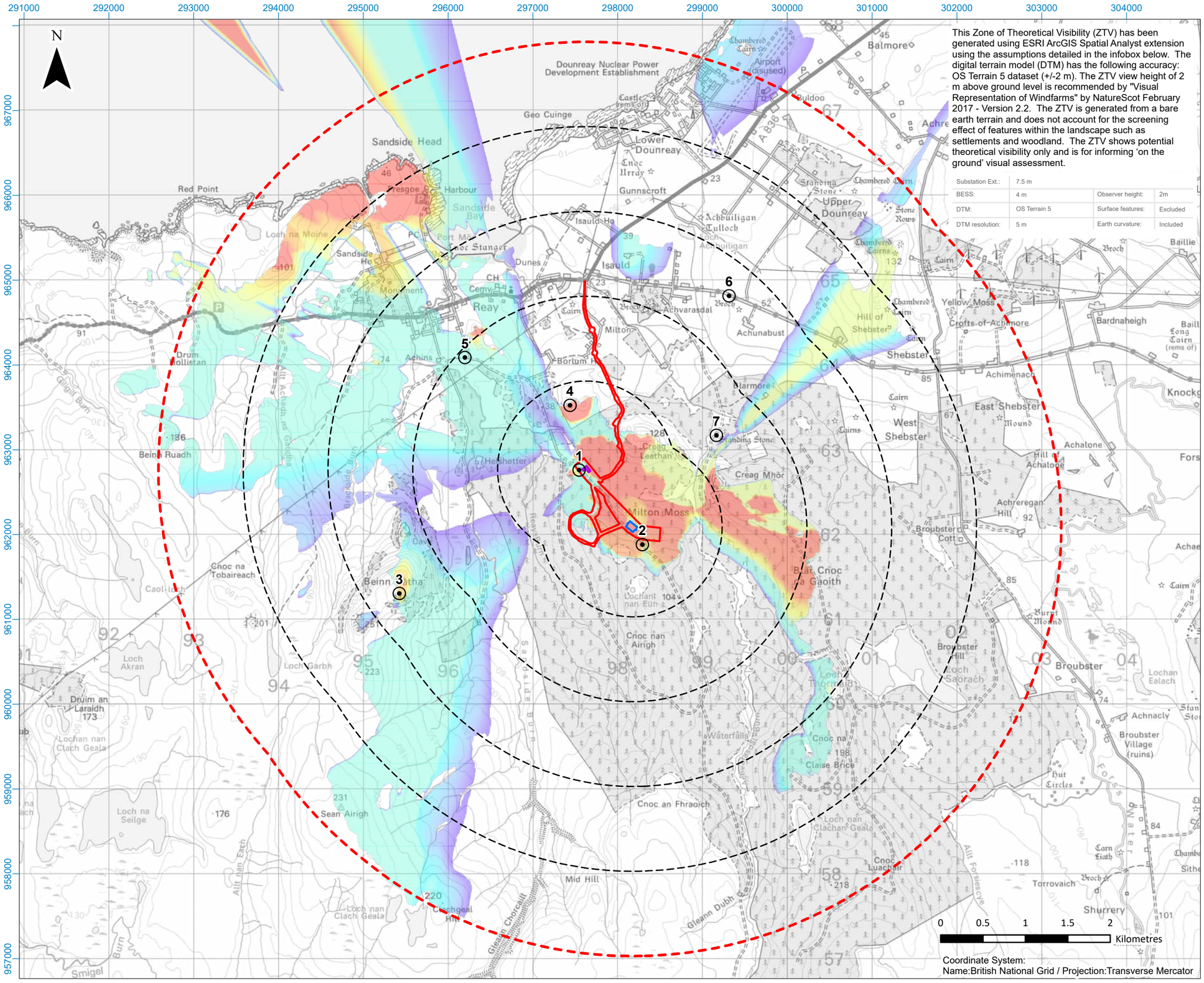
Date:	**Figure:**
14/07/2025	428.013385.00001.0009.1
Scale:	**Revision No.**
1:45,000	01

Figure 5.2: Bare Earth Zone of Theoretical Visibility



This Zone of Theoretical Visibility (ZTV) has been generated using ESRI ArcGIS Spatial Analyst extension using the assumptions detailed in the infobox below. The digital terrain model (DTM) has the following accuracy: OS Terrain 5 dataset (+/-2 m). The ZTV view height of 2 m above ground level is recommended by "Visual Representation of Windfarms" by NatureScot February 2017 - Version 2.2. The ZTV is generated from a bare earth terrain and does not account for the screening effect of features within the landscape such as settlements and woodland. The ZTV shows potential theoretical visibility only and is for informing 'on the ground' visual assessment.

Substation Ext.:	7.5 m		
BESS:	4 m	Observer height:	2m
DTM:	OS Terrain 5	Surface features:	Excluded
DTM resolution:	5 m	Earth curvature:	Included

Legend:

- Proposed Site Boundary
- Substation Extension Footprint
- Proposed Battery Energy Storage System (BESS) Footprint
- 1 km Radii
- 5 km Study Area
- Viewpoint
  - 1 - CA11.03 Limekiln Forest Core Path (Substation)
  - 2 - CA11.03 Limekiln Forest Core Path (BESS compound)
  - 3 - Beinn Ratha
  - 4 - Borlum Hill
  - 5 - Reay FootPath
  - 6 - Shebster
  - 7 - Clach Clais an Tuirc (Cultural Heritage)

BESS and Substation Extension Zone of Theoretical Visibility (ZTV) Bare Earth*

- High Visibility
- Low Visibility

ZTV has been generated based on the dimensions of the substation extension and BESS footprints combined with the maximum height to ensure theoretical visibility represents the maximum dimensions.

*This ZTV shows higher to lower visibility based on the amount of substation extension and BESS visible as represented by a perimeter of points with a 5m spacing arranged around the upper perimeter of the maximum substation 3D envelope. The ZTV does not indicate the decrease in scale that occurs with increased distance from the proposed developments.

Title

Bare Earth Zone of Theoretical Visibility (ZTV) plan

Project:

Limekiln BESS and Substation Extension LVA

Source:

Credits: © Crown copyright and database rights (2025) Ordnance Survey AC0000808122.

Client:

Boralex

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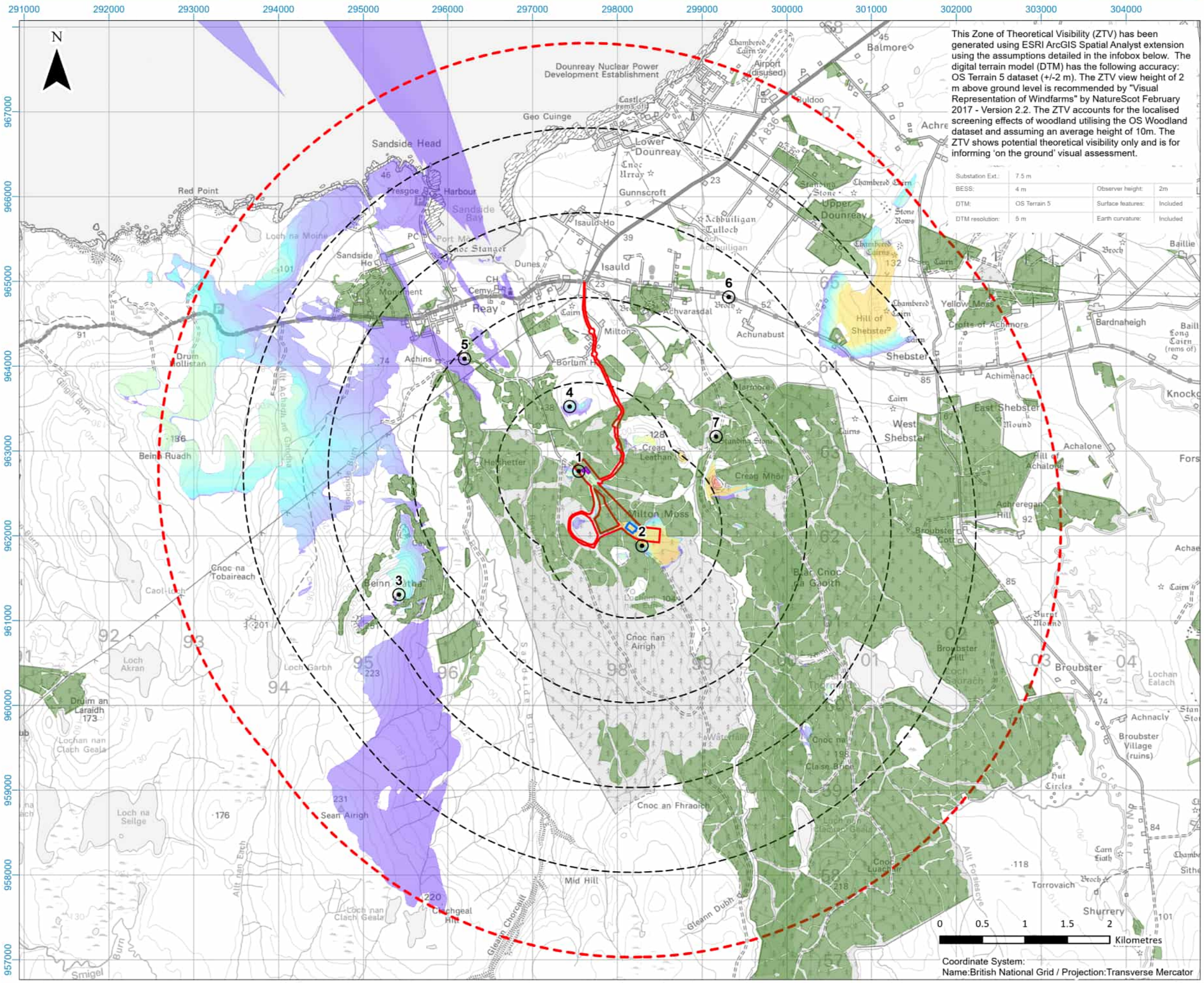
15/07/2025	428.013385.00001.00011.0
Scale:	**Revision No.**
1:45,000	01

Figure 5.3: Screened Zone of Theoretical Visibility

BORALEX



This Zone of Theoretical Visibility (ZTV) has been generated using ESRI ArcGIS Spatial Analyst extension using the assumptions detailed in the infobox below. The digital terrain model (DTM) has the following accuracy: OS Terrain 5 dataset (+/-2 m). The ZTV view height of 2 m above ground level is recommended by "Visual Representation of Windfarms" by NatureScot February 2017 - Version 2.2. The ZTV accounts for the localised screening effects of woodland utilising the OS Woodland dataset and assuming an average height of 10m. The ZTV shows potential theoretical visibility only and is for informing 'on the ground' visual assessment.

Substation Ext.:	7.5 m		
BESS:	4 m	Observer height:	2m
DTM:	OS Terrain 5	Surface features:	Included
DTM resolution:	5 m	Earth curvature:	Included

Legend:

- Proposed Site Boundary
- Substation Extension Footprint
- Proposed Battery Energy Storage System (BESS) Footprint
- 1 km Radii
- 5 km Study Area
- Woodland
- Viewpoint
  - 1 - CA11.03 Limekiln Forest Core Path (Substation)
  - 2 - CA11.03 Limekiln Forest Core Path (BESS compound)
  - 3 - Beinn Ratha
  - 4 - Borlum Hill
  - 5 - Reay FootPath
  - 6 - Shebster
  - 7 - Clach Clais an Tuirc (Cultural Heritage)

BESS and Substation Extension Zone of Theoretical Visibility (ZTV) Screened*

- High Visibility
- Low Visibility

ZTV has been generated based on the dimensions of the substation extension and BESS footprints combined with the maximum height to ensure theoretical visibility represents the maximum dimensions.

*This ZTV shows higher to lower visibility based on the amount of substation extension and BESS visible as represented by a perimeter of points with a 5m spacing arranged around the upper perimeter of the maximum substation 3D envelope. The ZTV does not indicate the decrease in scale that occurs with increased distance from the proposed developments.

Title

Screened Zone of Theoretical Visibility (ZTV) plan

Project:

Limekiln BESS and Substation Extension LVA

Source:

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Client:

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Date:	**Figure:**
14/07/2025	428.013385.00001.00012.0
Scale:	**Revision No.**
1:45,000	01

BORALEX

SLR

Figure 5.4: Landscape Character with Screened Zone of Theoretical Visibility

BORALEX

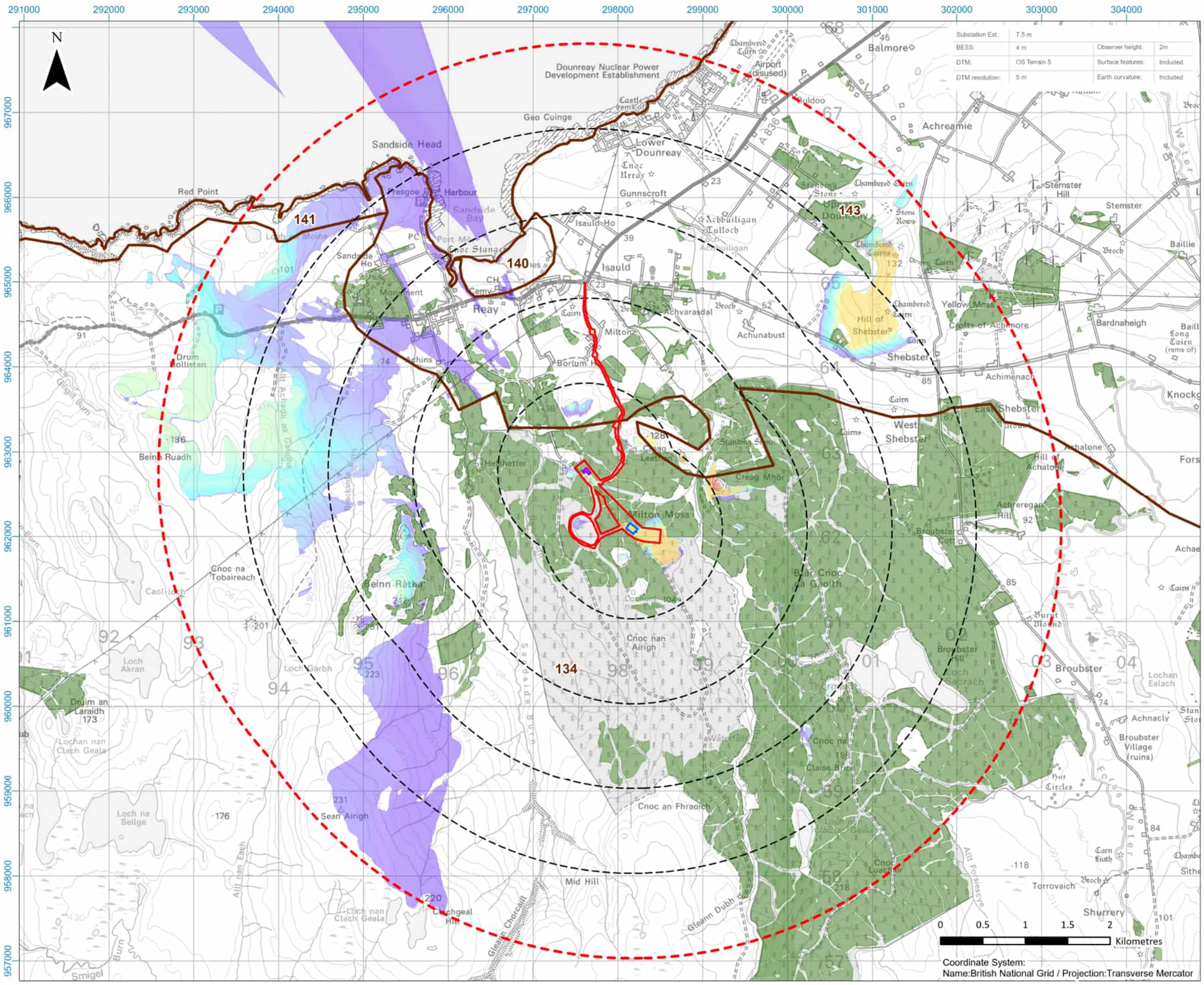
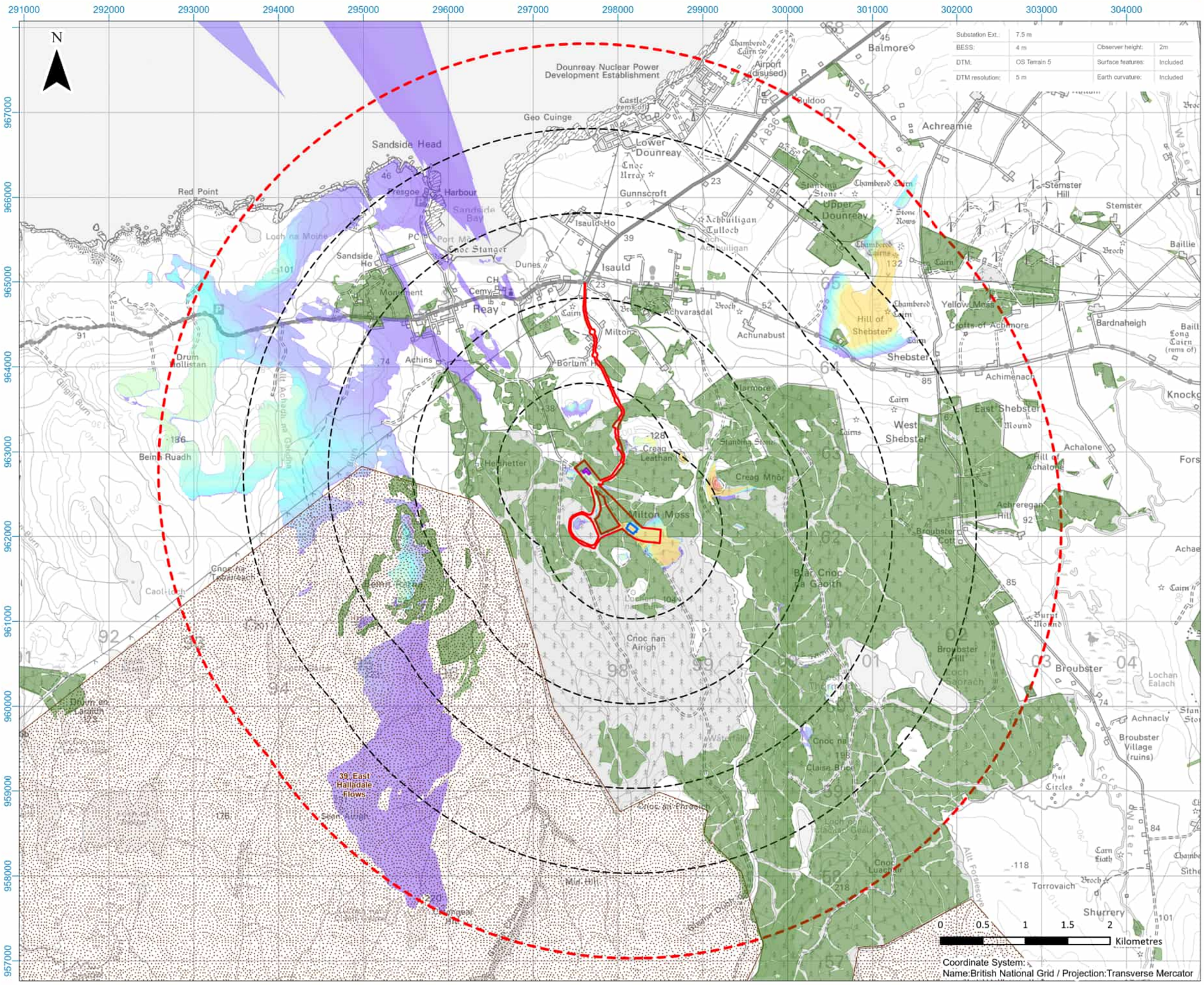

N
291000
292000
293000
294000
295000
296000
297000
298000
299000
300000
301000
302000
303000
304000
967000
966000
965000
964000
963000
962000
961000
960000
959000
958000
957000
Substation Ext.: 7.5 m
BESS: 4 m
Observer height: 2m
DTM: OS Terrain 5
Surface features: Included
DTM resolution: 5 m
Earth curvature: Included
Dounreay Nuclear Power Development Establishment
Airport (disused)
Balmore
Achreamie
Lower Dounreay
Upper Dounreay
Sandside Head
Red Point
Harbour
Gunnscroft
Isauld
Reay
Achvarasdal
Achunabust
Milton
Hill of Shebster
Shebster
West Shebster
East Shebster
Crofts of Achimore
Yellow Mess
Bardnaheigh
Stemster
Stemster Hill
Baillie
Achimenach
Achalone
Broubster
Achnacly
Broubster Village (ruins)
Torrovaich
Shurrery
Milton Moss
Creag Mhor
Creag Leathan
Cnoc na Tobaireach
Geinn Ratha
Cnoc nan Airigh
Cnoc an Fhraoich
Mid Hill
Beinn Ruadh
Drum an Laraidh
Loch Akran
Loch Garbh
Loch nan Clach Geala
Loch na Seilge
Sean Airigh
Cnoc nan Clach Geala
Smigel
Gleann Chorcaill
Gleann Dubh
Allt Achagan a Ghlinne
Allt nan Eireh
Allt Forsiescya
Forss Water
Burn of Isauld
Burn of Sandside
Gilligill Burn
Burn of Achins
Burn of Bortum
Burn of Achvarasdal
Burn of Achunabust
Burn of Milton
Burn of Achimenach
Burn of Achreregan
Burn of Broubster
Burn of Achnacly
Burn of Achalone
Burn of Shurrery
Burn of Torrovaich
Burn of Forss
Burn of Forsiescya
Burn of Gleann Dubh
Burn of Gleann Chorcaill
Burn of Smigel
Burn of Sandside Bay
Burn of Sandside Ho
Burn of Isauld Ho
Burn of Milton
Burn of Bortum Ho
Burn of Achvarasdal
Burn of Achunabust

Figure 5.5: Landscape Designations with Screened Zone of Theoretical Visibility

BORALEX



Legend:

- Proposed Site Boundary
- Substation Extension Footprint
- Proposed Battery Energy Storage System (BESS) Footprint
- 1 km Radii
- 5 km Study Area
- Woodland
- Wild Land

BESS and Substation Extension Zone of Theoretical Visibility (ZTV) Screened*

- High Visibility
- Low Visibility

ZTV has been generated based on the dimensions of the substation extension and BESS footprints combined with the maximum height to ensure theoretical visibility represents the maximum dimensions.

*This ZTV shows higher to lower visibility based on the amount of substation extension and BESS visible as represented by a perimeter of points with a 5m spacing arranged around the upper perimeter of the maximum substation 3D envelope. The ZTV does not indicate the decrease in scale that occurs with increased distance from the proposed developments.

Title

Landscape Designations with Screened Zone of Theoretical Visibility (ZTV) overlaid

Project:

Limekiln BESS and Substation Extension LVA

Source:

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Client:

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Scale:	**Revision No.**
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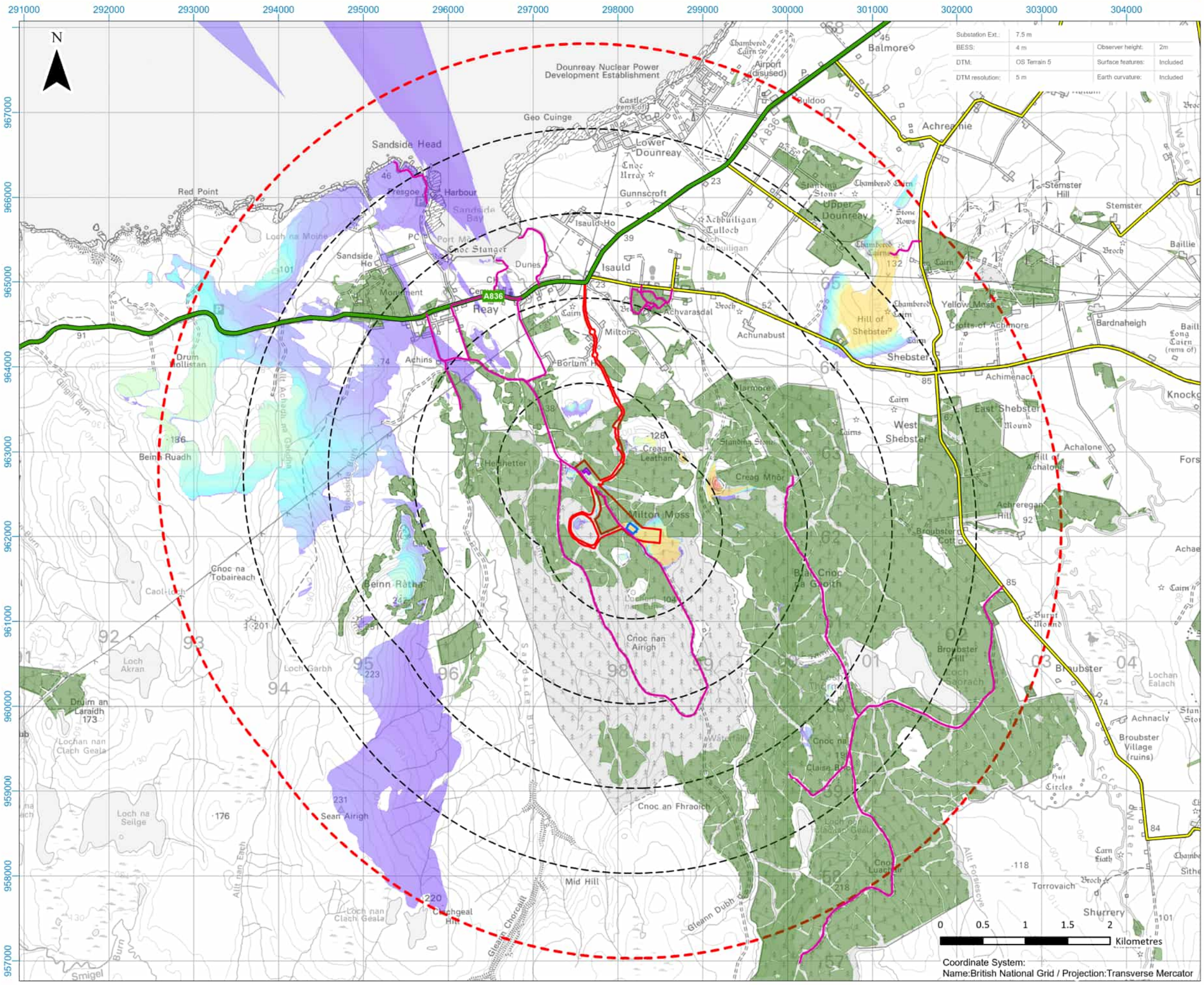
BORALEX

SLR

Figure 5.6: Visual Receptors with Screened Zone of Theoretical Visibility

BORALEX



Legend:

- Proposed Site Boundary
- Substation Extension Footprint
- Proposed Battery Energy Storage System (BESS) Footprint
- 1 km Radii
- 5 km Study Area
- Woodland
- Core Path
- A Road
- Minor Road

BESS and Substation Extension Zone of Theoretical Visibility (ZTV) Screened*

- High Visibility
- Low Visibility

ZTV has been generated based on the dimensions of the substation extension and BESS footprints combined with the maximum height to ensure theoretical visibility represents the maximum dimensions.

*This ZTV shows higher to lower visibility based on the amount of substation extension and BESS visible as represented by a perimeter of points with a 5m spacing arranged around the upper perimeter of the maximum substation 3D envelope. The ZTV does not indicate the decrease in scale that occurs with increased distance from the proposed developments.

Title

Visual Receptors with Screened Zone of Theoretical Visibility (ZTV) overlaid

Project:

Limekiln BESS and Substation Extension LVA

Source:

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Client:

Boralex

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Date:	**Figure:**
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Scale:	**Revision No.**
1:45,000	01

BORALEX

SLR





OS reference: 297545E 962761N
Eye level: 73.85 m AOD
Direction of view: 105°
Distance to site: 0.04 km

Horizontal field of view: 90° (cylindrical projection)
Principal distance: 522 mm
Paper size: 841 x 297 mm (half A1)
Correct printed image size: 820 x 130 mm

Camera: Canon EOS 6D
Lens: Canon EF 50mm f/1.4
Camera height: 1.5 m
Date and time: 14/05/2025, 12:08

Enlargement Factor: 150% @A1

Figure 5.7.a - Existing
Viewpoint 1: CA11.03 Limekilns Forest Core Path (Substation)
Limekiln Substation Extension and BESS



OS reference: 297545E 962761N
Eye level: 73.85 m AOD
Direction of view: 105°
Distance to site: 0.04 km

Horizontal field of view: 53.5° (planar projection)
Principal distance: 812.5 mm
Paper size: 841 x 297 mm (half A1)
Correct printed image size: 820 x 260 mm

Camera: Canon EOS 6D
Lens: Canon EF 50mm f/1.4
Camera height: 1.5 m
Date and time: 14/05/2025, 12:08

Enlargement Factor: 150% @A1

Figure 5.7.b - Existing
Viewpoint 1: CA11.03 Limekilns Forest Core Path (Substation)
Limekiln Substation Extension and BESS



OS reference: 297545E 962761N
Eye level: 73.85 m AOD
Direction of view: 105°
Distance to site: 0.04 km

Horizontal field of view: 53.5° (planar projection)
Principal distance: 812.5 mm
Paper size: 841 x 297 mm (half A1)
Correct printed image size: 820 x 260 mm

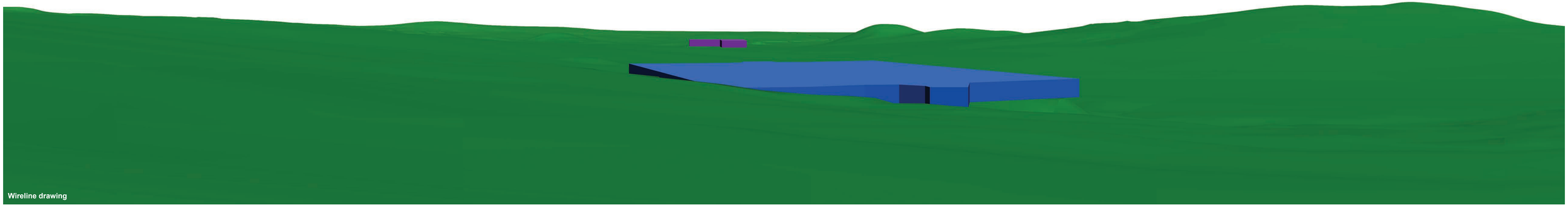
Camera: Canon EOS 6D
Lens: Canon EF 50mm f/1.4
Camera height: 1.5 m
Date and time: 14/05/2025, 12:08

Enlargement Factor: 150% @A1

Note: This photomontage shows an indicative 3D model representation of the OnSS and EBI within the context of a Maximum Parameter Envelope representing their maximum height and footprint. The EIA assesses the Maximum Parameter Envelope with the 3D model provided for illustration only. The layout and form of the OnSS and EBI 3D model shown is an example; it does not include details such as building colour or materiality and could differ from the eventual design of the OnSS and EBI.

Figure 5.7.c - Proposed
Viewpoint 1: CA11.03 Limekilns Forest Core Path (Substation)
Limekiln Substation Extension and BESS





OS reference: 298291E 961882 N
Eye level: 102.59 m AOD
Direction of view: 327°
Distance to site: 0.25 km

Horizontal field of view: 90° (cylindrical projection)
Principal distance: 522 mm
Paper size: 841 x 297 mm (half A1)
Correct printed image size: 820 x 130 mm

Camera: Canon EOS 6D
Lens: Canon EF 50mm f/1.4
Camera height: 1.5 m
Date and time: 11/07/2025, 09:52

Enlargement Factor: 150% @A1

Figure 5.8.a - Existing
Viewpoint 2: CA11.03 Limekilns Forest Core Path (BESS compound)
Limekiln Substation Extension and BESS



OS reference: 298291E 961882 N
Eye level: 102.59 m AOD
Direction of view: 327°
Distance to site: 0.25 km

Horizontal field of view: 53.5° (planar projection)
Principal distance: 812.5 mm
Paper size: 841 x 297 mm (half A1)
Correct printed image size: 820 x 260 mm

Camera: Canon EOS 6D
Lens: Canon EF 50mm f/1.4
Camera height: 1.5 m
Date and time: 11/07/2025, 09:52

Enlargement Factor: 150% @A1

Figure 5.8.b - Existing
Viewpoint 2: CA11.03 Limekilns Forest Core Path (BESS compound)
Limekiln Substation Extension and BESS



OS reference: 298291E 961882 N
Eye level: 102.59 m AOD
Direction of view: 327°
Distance to site: 0.25 km

Horizontal field of view: 53.5° (planar projection)
Principal distance: 812.5 mm
Paper size: 841 x 297 mm (half A1)
Correct printed image size: 820 x 260 mm

Camera: Canon EOS 6D
Lens: Canon EF 50mm f/1.4
Camera height: 1.5 m
Date and time: 11/07/2025, 09:52

Enlargement Factor: 150% @A1

Note: This photomontage shows an indicative 3D model representation of the OnSS and EBI within the context of a Maximum Parameter Envelope representing their maximum height and footprint. The EIA assesses the Maximum Parameter Envelope with the 3D model provided for illustration only. The layout and form of the OnSS and EBI 3D model shown is an example; it does not include details such as building colour or materiality and could differ from the eventual design of the OnSS and EBI.

Figure 5.8.c - Proposed
Viewpoint 2: CA11.03 Limekilns Forest Core Path (BESS compound)
Limekiln Substation Extension and BESS