

# Morecambe Offshore Windfarm: Generation Assets Environmental Statement

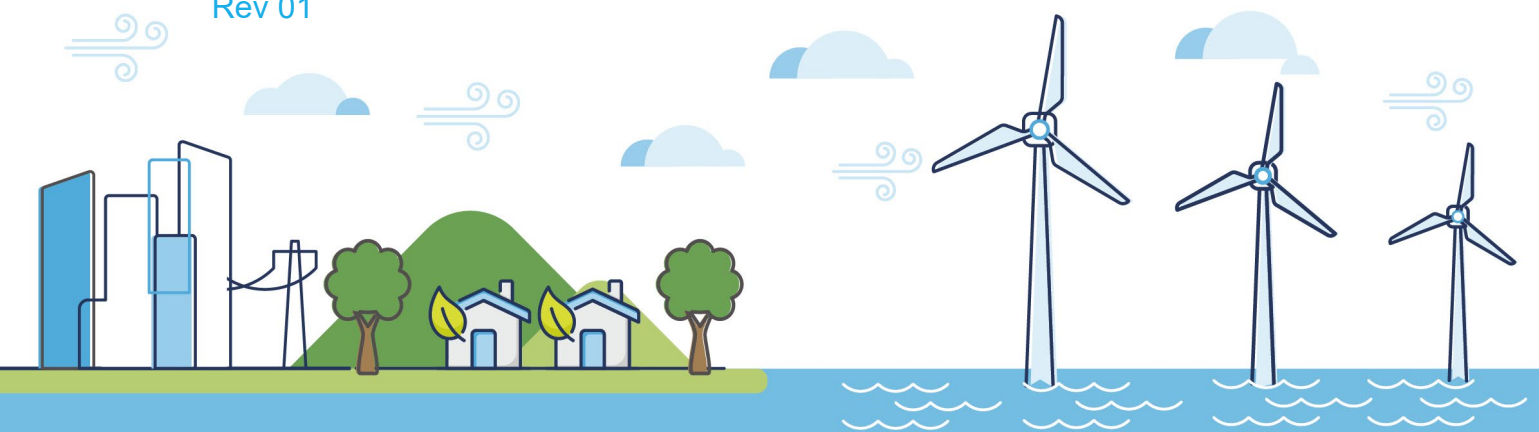
## Volume 5

### Chapter 18 SLVIA Figures (Part 3 of 34)

PINS Document Reference: 5.3.18.3

APFP Regulation: 5(2)(a)

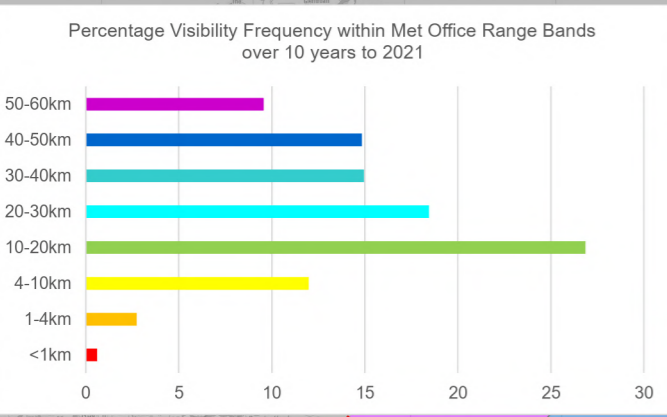
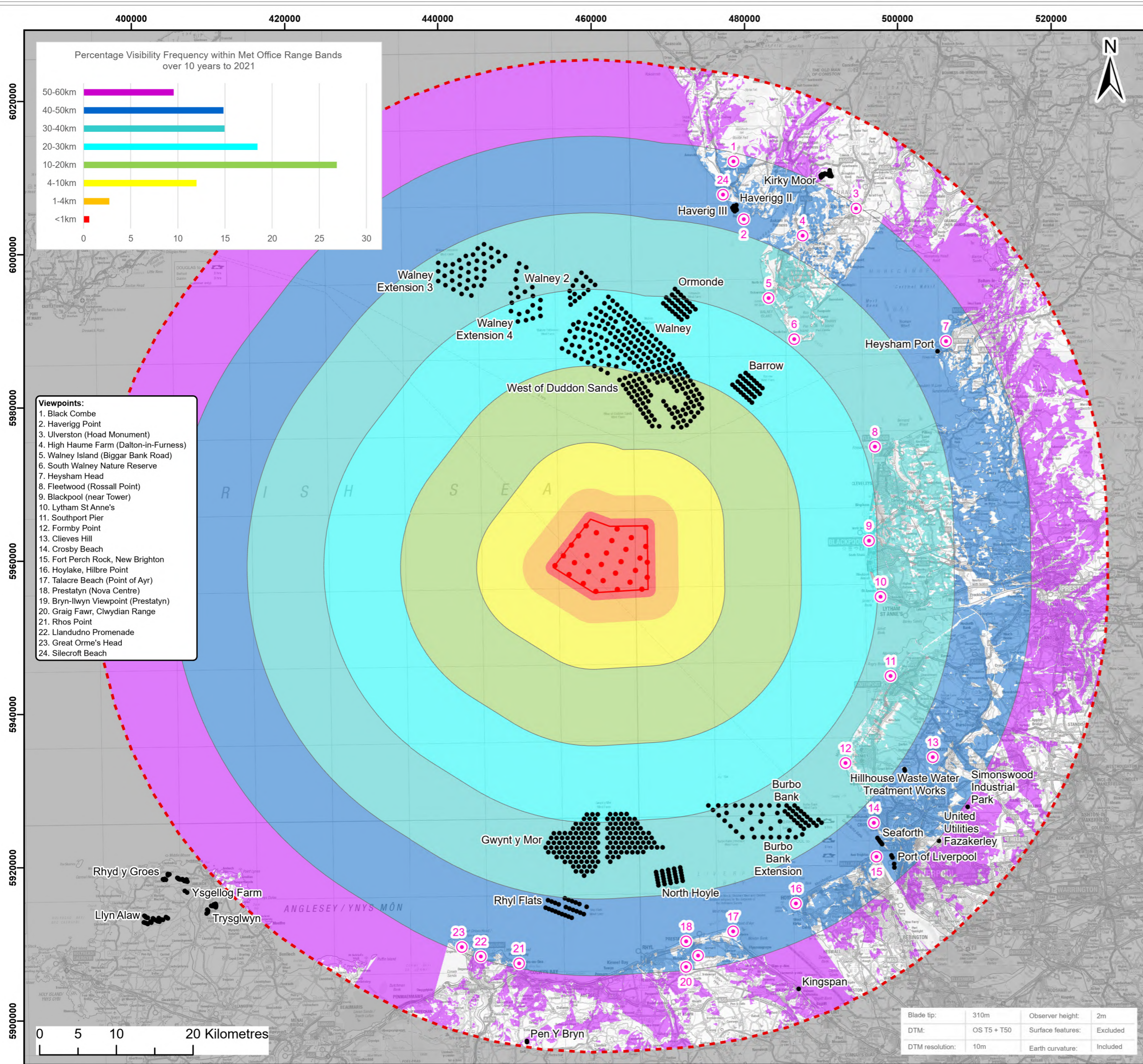
Rev 01



## Document History

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<b>Alt Doc No</b>	PC1165-RHD-ES-XX-DG-Z-0018		
<b>Document Status</b>	Approved for Use	<b>Doc Date</b>	May 2024
<b>PINS Doc Ref</b>	5.3.18.3	<b>APFP Ref</b>	5(2)(a)

Rev	Date	Doc Status	Originator	Reviewer	Approver	Modifications
01	May 2024	Approved for Use	Royal HaskoningDHV	Morecambe Offshore Windfarm Ltd	Morecambe Offshore Windfarm Ltd	n/a



- Viewpoints:**
1. Black Combe
  2. Haverigg Point
  3. Ulverston (Hoad Monument)
  4. High Haume Farm (Dalton-in-Furness)
  5. Walney Island (Biggar Bank Road)
  6. South Walney Nature Reserve
  7. Heysham Head
  8. Fleetwood (Rossall Point)
  9. Blackpool (near Tower)
  10. Lytham St Anne's
  11. Southport Pier
  12. Formby Point
  13. Clieves Hill
  14. Crosby Beach
  15. Fort Perch Rock, New Brighton
  16. Hoylake, Hilbre Point
  17. Talacre Beach (Point of Ayr)
  18. Prestatyn (Nova Centre)
  19. Bryn-Ilwyn Viewpoint (Prestatyn)
  20. Graig Fawr, Clwydian Range
  21. Rhos Point
  22. Llandudno Promenade
  23. Great Orme's Head
  24. Silecroft Beach



**Legend:**

- Morecambe Offshore Wind Farm - Assumed WTG locations (30 x BT 310m(HAT))
- Viewpoints
- Operational WTG
- Morecambe Offshore Windfarm Site
- 10km Radii
- 60km Study Area

**Met Office Visibility Range**

- <1km Very Poor Visibility
- 1-4km Poor Visibility
- 4-10km Moderate Visibility
- 10-20km Good Visibility
- 20-30km Very Good Visibility
- 30-40km Very Good Visibility
- 40-50km Excellent Visibility
- 50-60km Excellent Visibility
- >60km No Visibility

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**Report:**  
Morecambe Offshore Windfarm: Generation Assets Environmental Statement

**Title:**  
Blade Tip Zone of Theoretical Visibility with Visibility Range

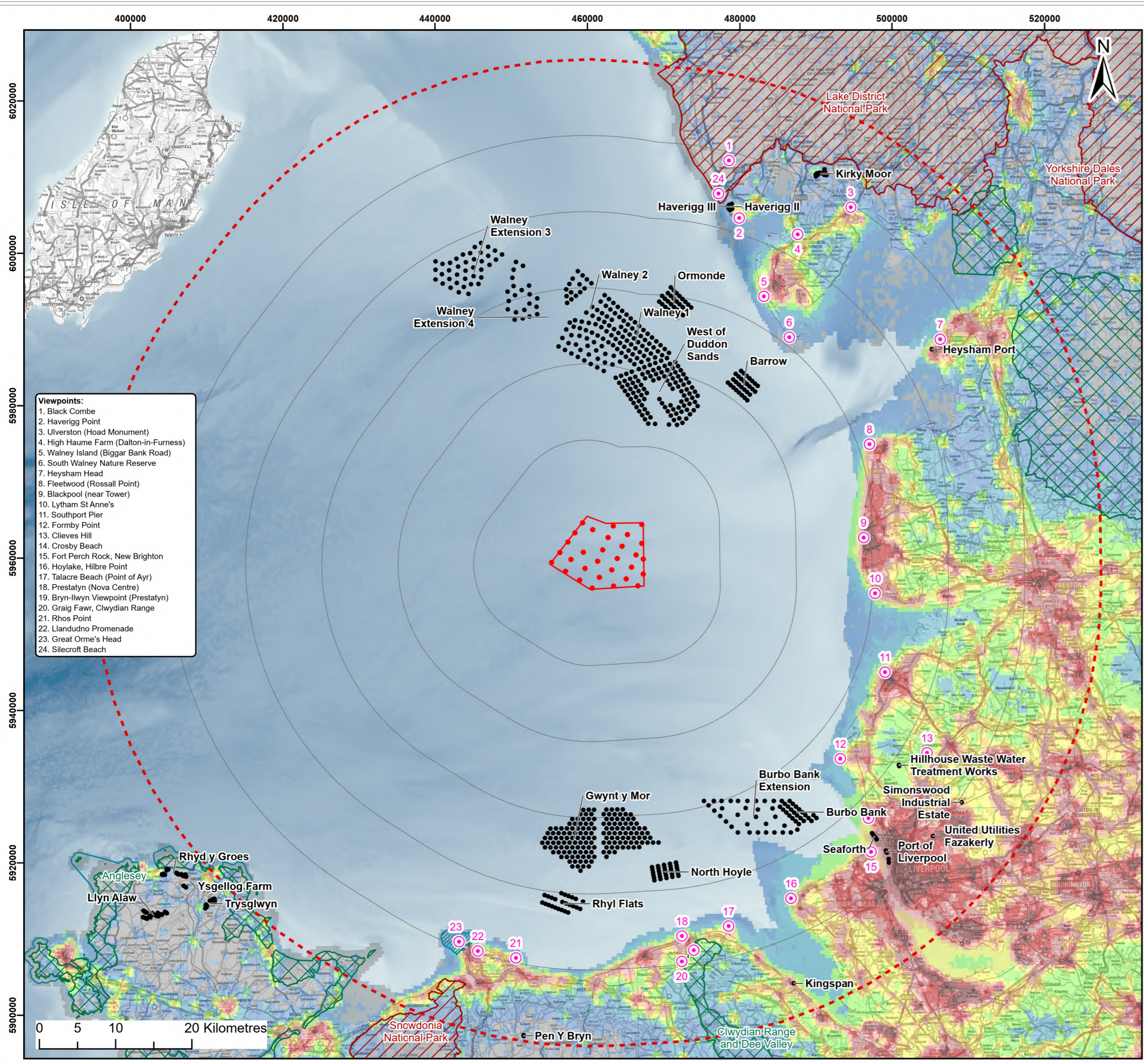
Figure: 18.15 Drawing No: 211609

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	19/09/2023	RA	SM	A3	1:500,000

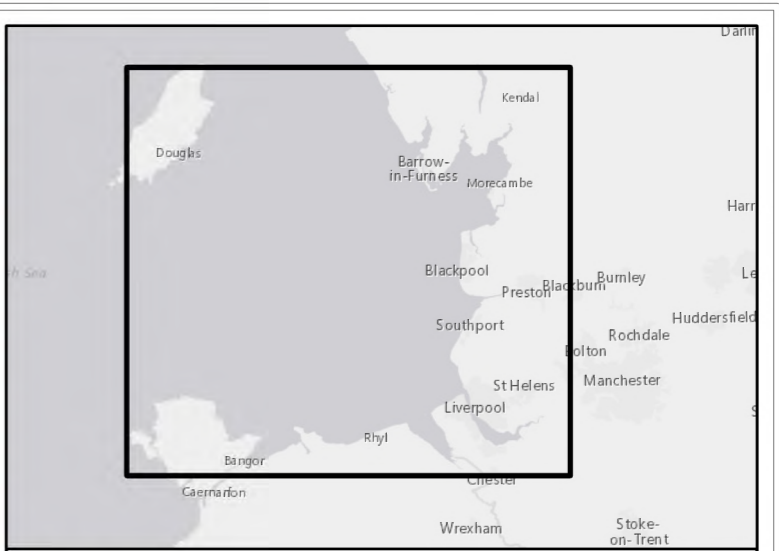
Co-ordinate system: WGS 1984 UTM Zone 30N

Blade tip:	310m	Observer height:	2m
DTM:	OS T5 + T50	Surface features:	Excluded
DTM resolution:	10m	Earth curvature:	Included





- Viewpoints:**
1. Black Combe
  2. Haverigg Point
  3. Ulverston (Hoad Monument)
  4. High Haume Farm (Dalton-in-Furness)
  5. Walney Island (Biggar Bank Road)
  6. South Walney Nature Reserve
  7. Heysham Head
  8. Fleetwood (Rossall Point)
  9. Blackpool (near Tower)
  10. Lytham St Anne's
  11. Southport Pier
  12. Formby Point
  13. Clieves Hill
  14. Crosby Beach
  15. Fort Perch Rock, New Brighton
  16. Hoylake, Hlibre Point
  17. Talacre Beach (Point of Ayr)
  18. Prestatyn (Nova Centre)
  19. Bryn-Ilwyn Viewpoint (Prestatyn)
  20. Graig Fawr, Clwydian Range
  21. Rhos Point
  22. Llandudno Promenade
  23. Great Orme's Head
  24. Silecroft Beach



**Legend:**

- Morecambe Offshore Wind Farm - Assumed WTG locations (30 x BT 310m(HAT))
- Viewpoints
- Operational WTG
- Morecambe Offshore Windfarm Site
- 10km Radii
- 60km Study Area
- Area of Outstanding Natural Beauty
- Heritage Coast
- National Park

**Night Light Pollution (NanoWatts/ cm2 / sr)**

- < 0.25 (low)
- 0.25 - 0.5
- 0.5 - 1
- 1 - 2
- 2 - 4
- 4 - 8
- 8 - 16
- 16 - 32
- > 32 (high)

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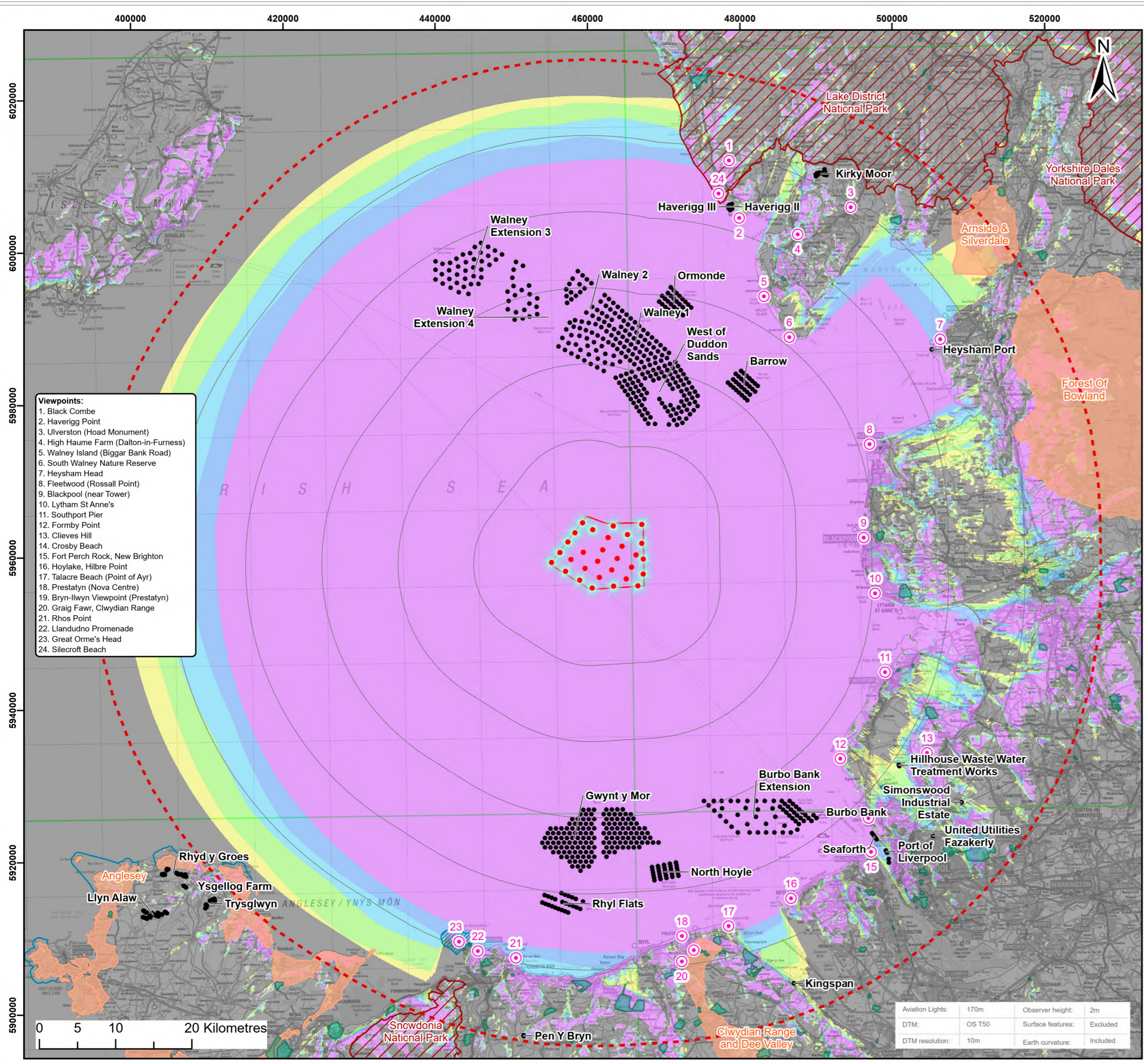
**Report:**  
 Morecambe Offshore Windfarm: Generation Assets  
 Environmental Statement

**Title:**  
 Baseline Lighting

Figure: 18.16	Drawing No:	211609			
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	18/09/2023	RA	SM	A3	1:500,000

Co-ordinate system: WGS 1984 UTM Zone 30N

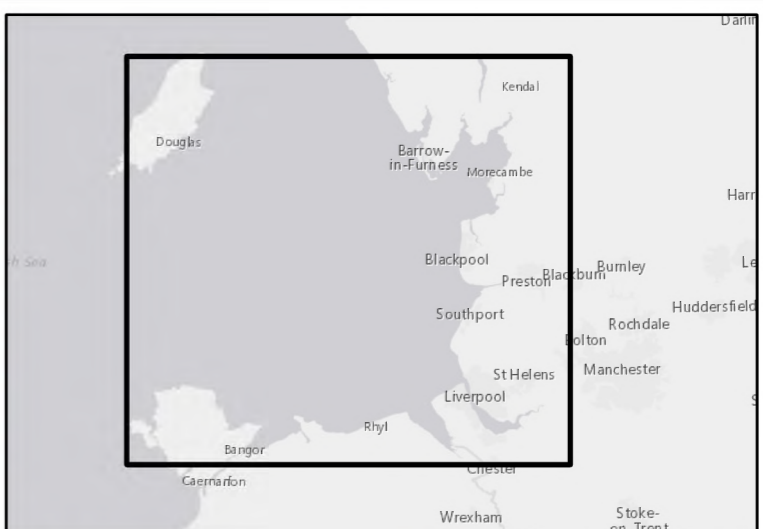




- Viewpoints:**
1. Black Combe
  2. Haverigg Point
  3. Ulverston (Hoad Monument)
  4. High Haume Farm (Dalton-in-Furness)
  5. Walney Island (Biggar Bank Road)
  6. South Walney Nature Reserve
  7. Heysham Head
  8. Fleetwood (Rossall Point)
  9. Blackpool (near Tower)
  10. Lytham St Anne's
  11. Southport Pier
  12. Formby Point
  13. Clieves Hill
  14. Crosby Beach
  15. Fort Perch Rock, New Brighton
  16. Hoylake, Hilbre Point
  17. Talacre Beach (Point of Ayr)
  18. Prestatyn (Nova Centre)
  19. Bryn-Ilwyn Viewpoint (Prestatyn)
  20. Graig Fawr, Clwydian Range
  21. Rhos Point
  22. Llandudno Promenade
  23. Great Orme's Head
  24. Silecroft Beach

**Legend:**

- Morecambe Offshore Wind Farm - Assumed WTG locations (30 x BT 310m(HAT))
- Civil Aviation Perimeter Lighting (steady red, 2000 candela)
- Operational WTG
- Viewpoints
- Morecambe Offshore Windfarm Site
- 10km Radii
- 60km Study Area
- Parks and Gardens
- Area of Outstanding Natural Beauty
- Heritage Coast
- National Park
- No. Lights Theoretically Visible
  - 2 - 3
  - 4 - 7
  - 8 - 10
  - 11 - 14
  - 15 - 17



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**Report:**  
 Morecambe Offshore Windfarm: Generation Assets Environmental Statement

**Title:**  
 Nacelle Aviation Lighting Zone of Theoretical Visibility

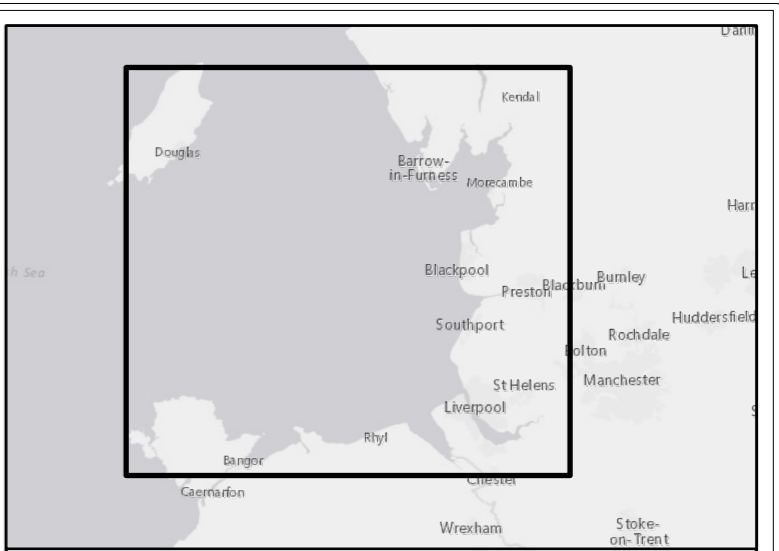
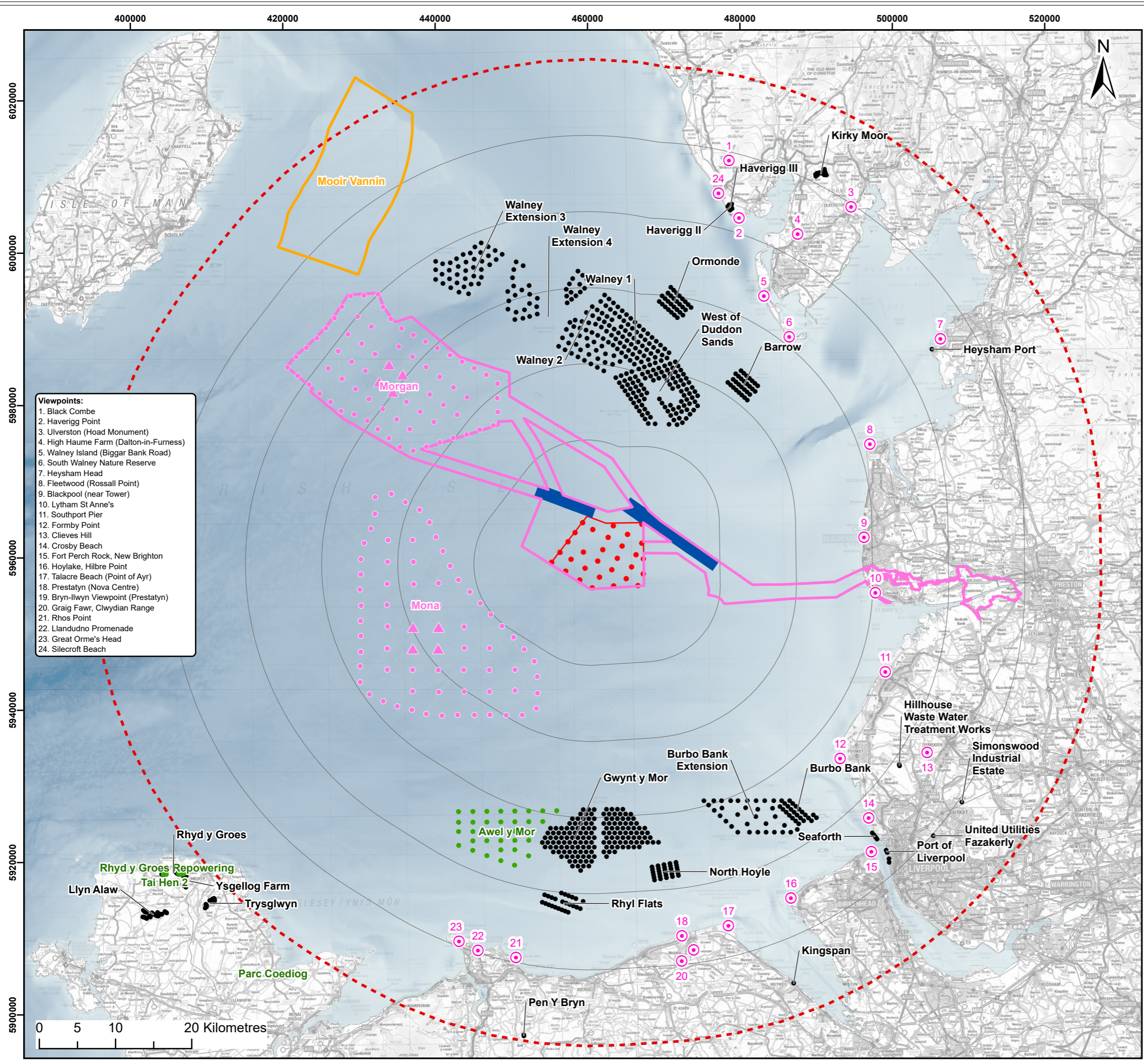
Figure: 18.17 Drawing No: 211609

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	18/09/2023	RA	SM	A3	1:500,000

Co-ordinate system: WGS 1984 UTM Zone 30N

Aviation Lights:	170m	Observer height:	2m
DTM:	OS T50	Surface features:	Excluded
DTM resolution:	10m	Earth curvature:	Included





**Legend:**

- Morecambe Offshore Wind Farm - Assumed WTG locations (30 x BT 310m(HAT))
- ⊙ Viewpoints
- ▭ Morecambe Offshore Windfarm Site
- 10km Radii
- ⊞ 60km Study Area

**Cumulative Wind Farms Status**

- Operational
- Under Construction
- Consented
- Appeal; Application
- Scoping
- Pre-Application (PEIR)
- ▲ Assumed Offshore Substation Location

**Other Symbols:**

- ▭ Scoping
- ▭ Morgan Transmission Assets Boundary (PEIR)
- ▭ Morgan Offshore Booster Station Search Areas

EMODnet Bathymetry Consortium (2020): EMODnet Digital Bathymetry (DTM).  
<https://doi.org/10.12770/bb6a87dd-e579-4036-abe1-e649cea9881a>  
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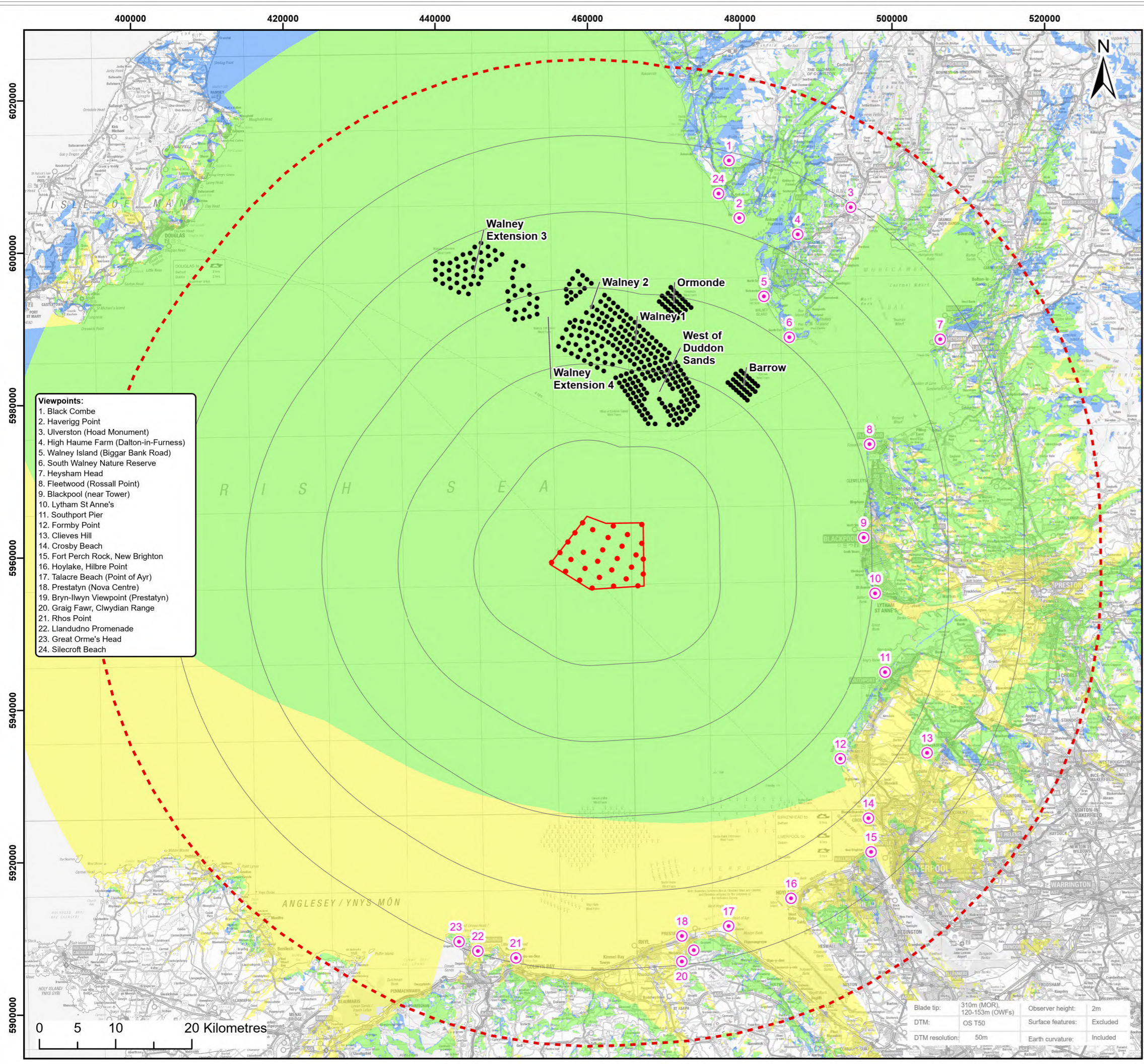
**Report:**  
 Morecambe Offshore Windfarm: Generation Assets Environmental Statement

**Title:**  
 Cumulative Projects

Figure: 18.18	Drawing No:	211609			
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	08/03/2023	RA	SM	A3	1:500,000

Co-ordinate system: WGS 1984 UTM Zone 30N





- Viewpoints:**
1. Black Combe
  2. Haverigg Point
  3. Ulverston (Hoad Monument)
  4. High Haume Farm (Dalton-in-Furness)
  5. Walney Island (Biggar Bank Road)
  6. South Walney Nature Reserve
  7. Heysham Head
  8. Fleetwood (Rossall Point)
  9. Blackpool (near Tower)
  10. Lytham St Anne's
  11. Southport Pier
  12. Formby Point
  13. Clieves Hill
  14. Crosby Beach
  15. Fort Perch Rock, New Brighton
  16. Hoylake, Hilbre Point
  17. Talacre Beach (Point of Ayr)
  18. Prestatyn (Nova Centre)
  19. Bryn-Ilwyn Viewpoint (Prestatyn)
  20. Graig Fawr, Clwydian Range
  21. Rhos Point
  22. Llandudno Promenade
  23. Great Orme's Head
  24. Silecroft Beach



- Legend:**
- Turbine (30 x BT 310m(HAT))
  - ⊙ Viewpoints
  - Operational WTG
  - ▭ Morecambe Offshore Windfarm Site
  - 10km Radii
  - ⋯ 60km Study Area
- Cumulative Zone of Theoretical Visibility**
- Morecambe Theoretical Visibility
  - North West OWFs Theoretical Visibility
  - Combined Theoretical Visibility

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**Report:**  
Morecambe Offshore Windfarm: Generation Assets  
Environmental Statement

**Title:**  
Cumulative ZTV: North West Offshore Wind Farms  
(Walney 1-4, West of Duddon Sands, Ormonde and Barrow)

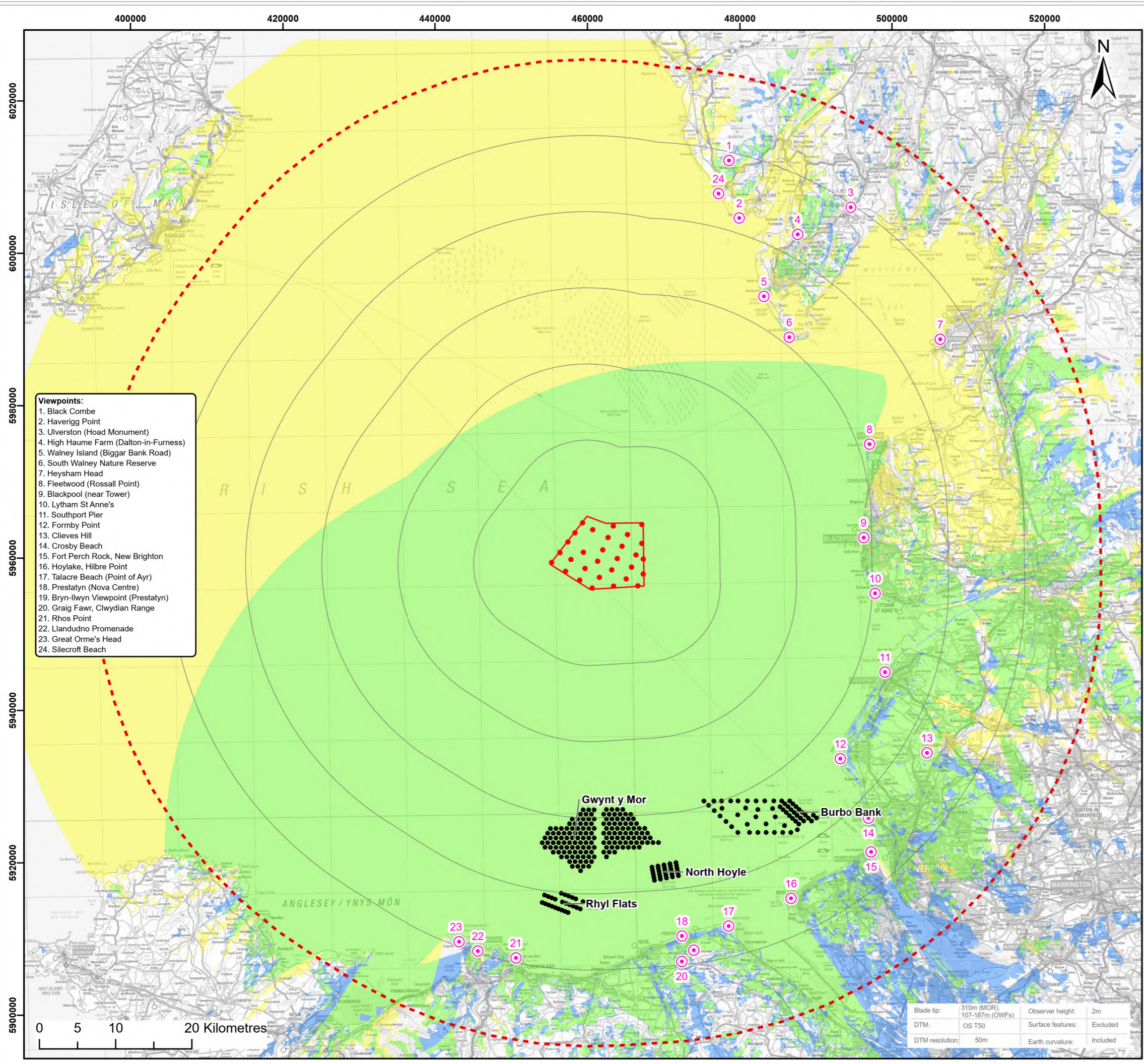
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Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	17/08/2023	RA	SM	A3	1:500,000

Co-ordinate system: WGS 1984 UTM Zone 30N

Blade tip:	310m (MOR)	Observer height:	2m
DTM:	OS T50	Surface features:	Excluded
DTM resolution:	50m	Earth curvature:	Included





- Viewpoints:**
1. Black Combe
  2. Haverigg Point
  3. Ulverston (Hoad Monument)
  4. High Haume Farm (Dalton-in-Furness)
  5. Walney Island (Biggar Bank Road)
  6. South Walney Nature Reserve
  7. Heysham Head
  8. Fleetwood (Rossall Point)
  9. Blackpool (near Tower)
  10. Lytham St Anne's
  11. Southport Pier
  12. Formby Point
  13. Clieves Hill
  14. Crosby Beach
  15. Fort Perch Rock, New Brighton
  16. Hoylake, Hilbre Point
  17. Talacre Beach (Point of Ayr)
  18. Prestatyn (Nova Centre)
  19. Bryn-Ilwyn Viewpoint (Prestatyn)
  20. Graig Fawr, Clwydian Range
  21. Rhos Point
  22. Llandudno Promenade
  23. Great Orme's Head
  24. Silecroft Beach



- Legend:**
- Farm - Assumed WTG locations (30 x BT 310m(HAT))
  - ⊙ Viewpoints
  - Operational WTG
  - ▭ Morecambe Offshore Windfarm Site
  - 10km Radii
  - ⋯ 60km Study Area
- Cumulative Zone of Theoretical Visibility**
- Morecambe Theoretical Visibility
  - North Wales OWFs Theoretical Visibility
  - Combined Theoretical Visibility

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**Report:**  
Morecambe Offshore Windfarm: Generation Assets Environmental Statement

**Title:**  
Cumulative ZTV: North Wales Offshore Wind Farms (North Hoyle, Rhyl Flats, Gwynt y Mor, Burbo Bank & Ext.)

Figure: 18.20      Drawing No: 211609

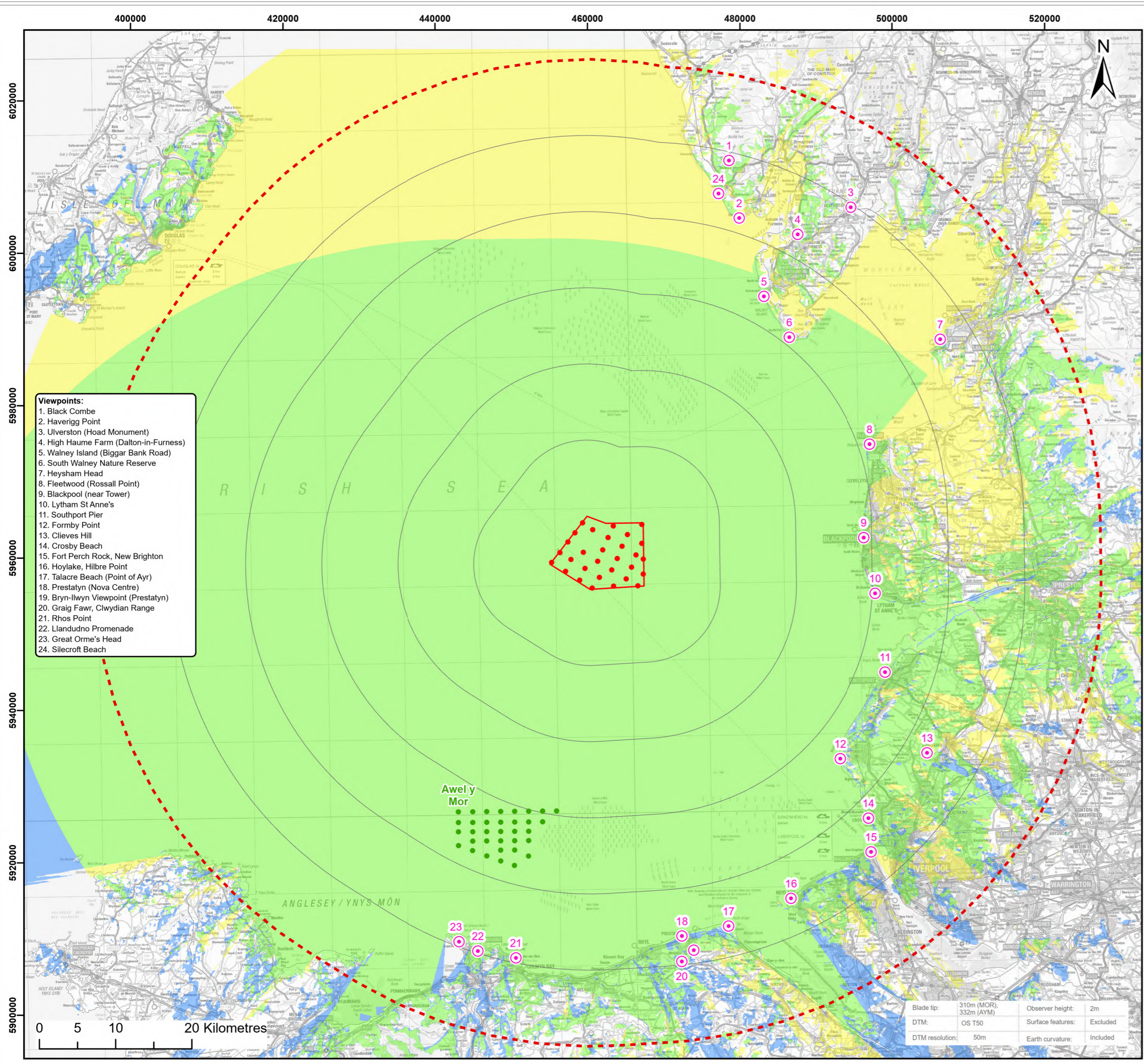
Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	17/08/2023	RA	SM	A3	1:500,000

Co-ordinate system: WGS 1984 UTM Zone 30N

Blade tip:	310m (MOR), 107-187m (OWFs)	Observer height:	2m
DTM:	OS T50	Surface features:	Excluded
DTM resolution:	50m	Earth curvature:	Included







- Viewpoints:**
1. Black Combe
  2. Haverigg Point
  3. Ulverston (Hoad Monument)
  4. High Haume Farm (Dalton-in-Furness)
  5. Walney Island (Biggar Bank Road)
  6. South Walney Nature Reserve
  7. Heysham Head
  8. Fleetwood (Rossall Point)
  9. Blackpool (near Tower)
  10. Lytham St Anne's
  11. Southport Pier
  12. Formby Point
  13. Clieves Hill
  14. Crosby Beach
  15. Fort Perch Rock, New Brighton
  16. Hoylake, Hilbre Point
  17. Talacre Beach (Point of Ayr)
  18. Prestatyn (Nova Centre)
  19. Bryn-Ilwyn Viewpoint (Prestatyn)
  20. Graig Fawr, Clwydian Range
  21. Rhos Point
  22. Llandudno Promenade
  23. Great Orme's Head
  24. Silecroft Beach

**Legend:**

- Farm - Assumed WTG locations (30 x BT 310m(HAT))
- ⊙ Viewpoints
- Consented WTG
- ▭ Morecambe Offshore Windfarm Site
- 10km Radii
- ⋯ 60km Study Area

**Cumulative Zone of Theoretical Visibility**

- Morecambe Theoretical Visibility
- Awel y Mor OWFs Theoretical Visibility
- Combined Theoretical Visibility

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**Report:**  
Morecambe Offshore Windfarm: Generation Assets  
Environmental Statement

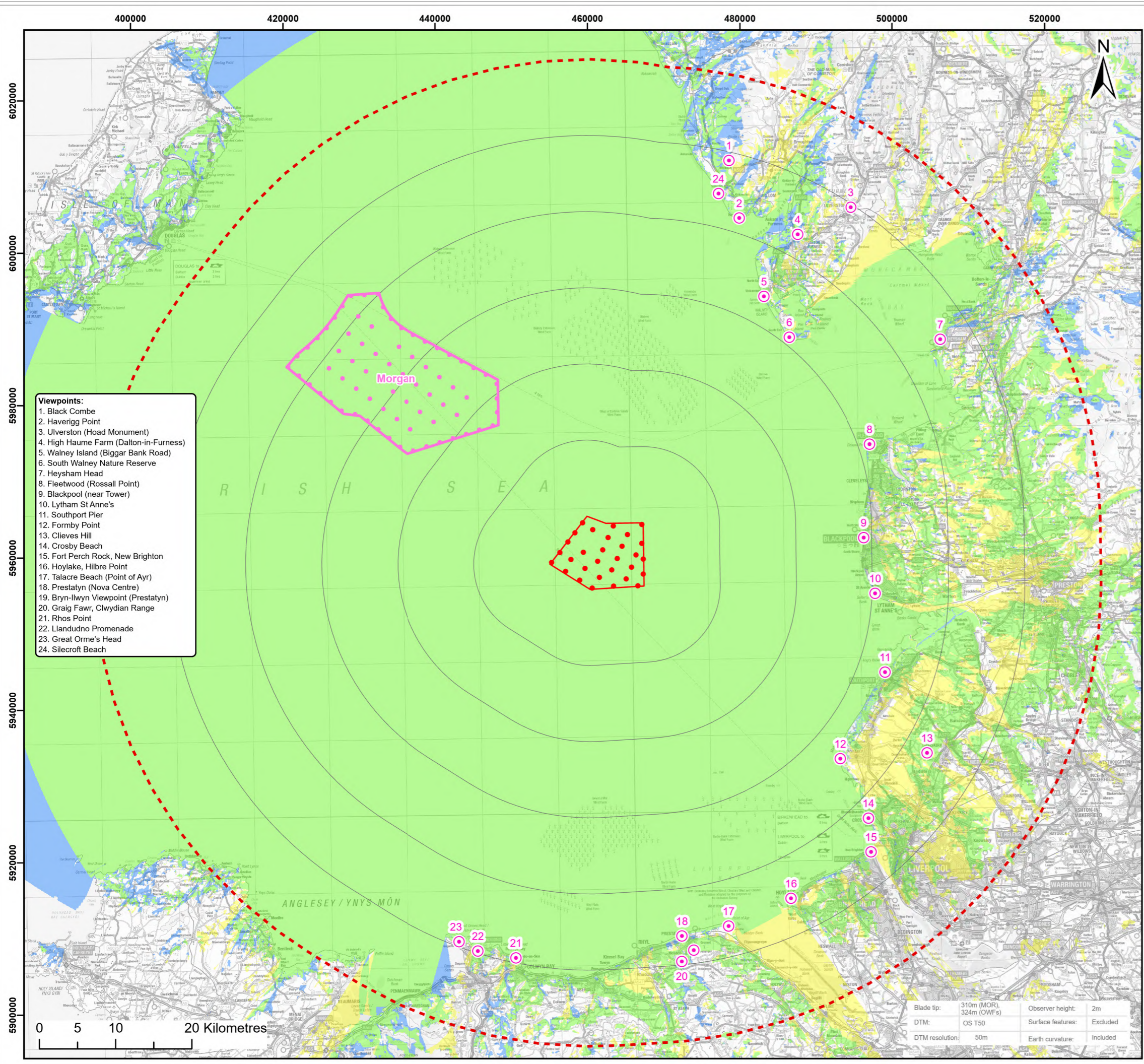
**Title:**  
Cumulative ZTV: Awel y Mor

**Figure:** 18.21      **Drawing No.:** 211609

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	17/08/2023	RA	SM	A3	1:500,000

**Co-ordinate system:** WGS 1984 UTM Zone 30N





- Viewpoints:**
1. Black Combe
  2. Haverigg Point
  3. Ulverston (Hoad Monument)
  4. High Haume Farm (Dalton-in-Furness)
  5. Walney Island (Biggar Bank Road)
  6. South Walney Nature Reserve
  7. Heysham Head
  8. Fleetwood (Rossall Point)
  9. Blackpool (near Tower)
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  11. Southport Pier
  12. Formby Point
  13. Clieves Hill
  14. Crosby Beach
  15. Fort Perch Rock, New Brighton
  16. Hoylake, Hilbre Point
  17. Talacre Beach (Point of Ayr)
  18. Prestatyn (Nova Centre)
  19. Bryn-Ilwyn Viewpoint (Prestatyn)
  20. Graig Fawr, Clwydian Range
  21. Rhos Point
  22. Llandudno Promenade
  23. Great Orme's Head
  24. Silecroft Beach

**Legend:**

- Farm - Assumed WTG locations (30 x BT 310m(HAT))
  - ⊙ Viewpoints
  - Pre-Application (PEIR) - Layout of 72 locations of which 4 are Offshore Substations
  - ▭ Morecambe Offshore Windfarm Site
  - 10km Radii
  - ⋯ 60km Study Area
- Cumulative Zone of Theoretical Visibility**
- Morecambe Theoretical Visibility
  - Morgan OWF Theoretical Visibility
  - Combined Theoretical Visibility

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**Report:**  
Morecambe Offshore Windfarm: Generation Assets Environmental Statement

**Title:**  
Cumulative ZTV: Morgan Offshore Wind Farm (PEIR)

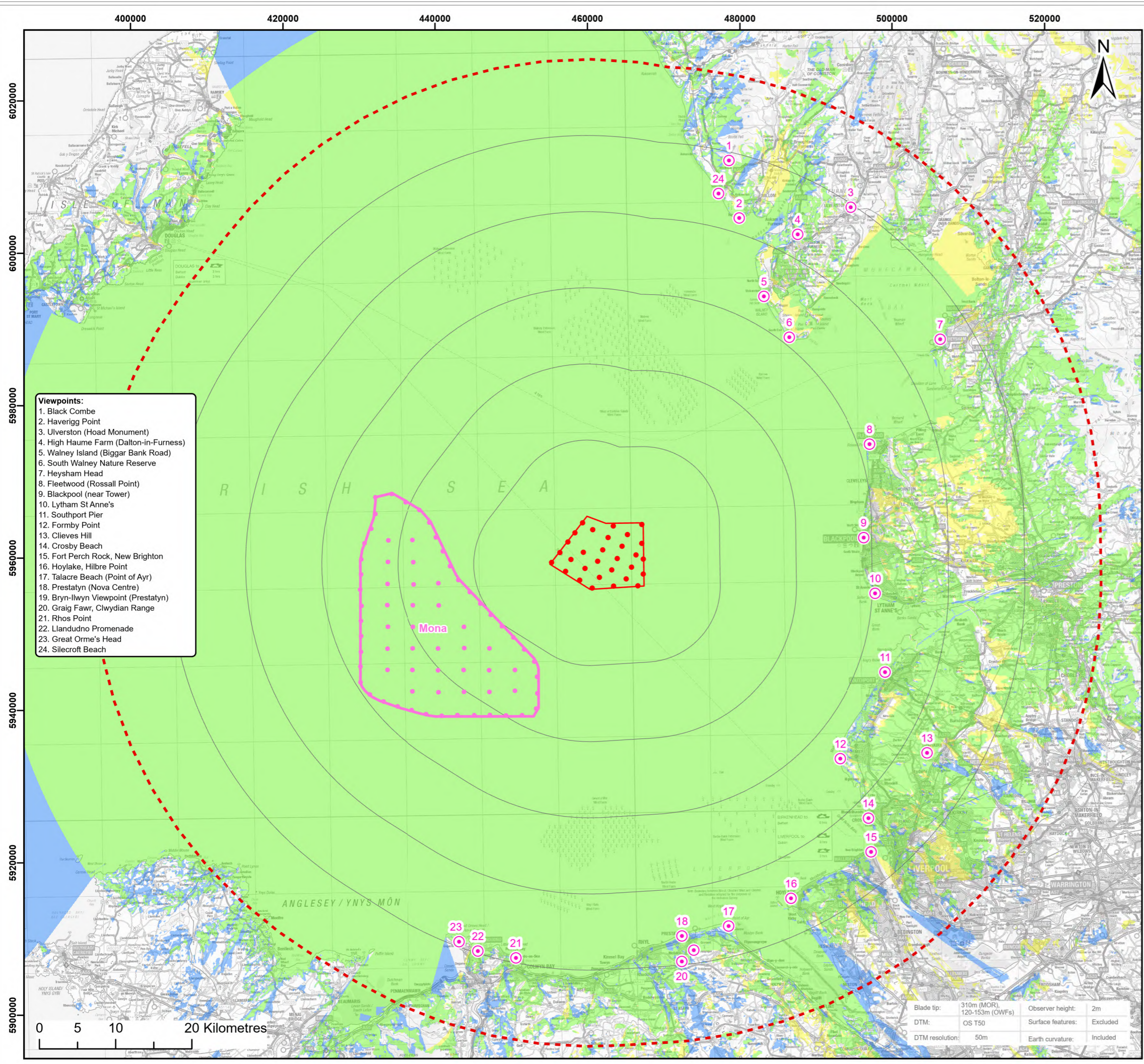
**Figure:** 18.22      **Drawing No.:** 211609

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	25/09/2023	RA	SM	A3	1:500,000

Co-ordinate system: WGS 1984 UTM Zone 30N

Blade tip:	310m (MOR), 324m (OWFs)	Observer height:	2m
DTM:	OS T50	Surface features:	Excluded
DTM resolution:	50m	Earth curvature:	Included





- Viewpoints:**
1. Black Combe
  2. Haverigg Point
  3. Ulverston (Hoad Monument)
  4. High Haume Farm (Dalton-in-Furness)
  5. Walney Island (Biggar Bank Road)
  6. South Walney Nature Reserve
  7. Heysham Head
  8. Fleetwood (Rossall Point)
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  12. Formby Point
  13. Clieves Hill
  14. Crosby Beach
  15. Fort Perch Rock, New Brighton
  16. Hoylake, Hilbre Point
  17. Talacre Beach (Point of Ayr)
  18. Prestatyn (Nova Centre)
  19. Bryn-Ilwyn Viewpoint (Prestatyn)
  20. Graig Fawr, Clwydian Range
  21. Rhos Point
  22. Llandudno Promenade
  23. Great Orme's Head
  24. Silecroft Beach



- Legend:**
- Farm - Assumed WTG locations (30 x BT 310m(HAT))
  - Viewpoints
  - Pre-Application (PEIR) - Layout of 72 locations of which 4 are Offshore Substations
  - ▭ Morecambe Offshore Windfarm Site
  - 10km Radii
  - ▭ 60km Study Area
- Cumulative Zone of Theoretical Visibility**
- Morecambe Theoretical Visibility
  - Mona OWF Theoretical Visibility
  - Combined Theoretical Visibility

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**Report:**  
Morecambe Offshore Windfarm: Generation Assets Environmental Statement

**Title:**  
Cumulative ZTV: Mona Offshore Wind Farm (PEIR)

**Figure:** 18.23      **Drawing No.:** 211609

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P02	25/09/2023	RA	SM	A3	1:500,000

Co-ordinate system: WGS 1984 UTM Zone 30N

Blade tip:	310m (MOR)	Observer height:	2m
DTM:	OS T50	Surface features:	Excluded
DTM resolution:	50m	Earth curvature:	Included

