Partners in UK offshore wind

MONA OFFSHORE WIND PROJECT

Cumulative Zone of Theoretical Visibility at 1:50,000 Scales

Deadline: 6

Application Reference: EN010137

Document Reference: S_D6_50

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20 December 2024

F01

Image of an offshore wind farm

www.morganandmona.com/en

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
F01	Submission at D6	RPS	Mona Offshore Wind Ltd	Mona Offshore Wind Ltd	20 Dec 2024

Prepared by:

RPS

Prepared for:

Mona Offshore Wind Ltd.

Contents

Glossary

Term	Meaning
Applicant	Mona Offshore Wind Limited.
Appropriate Assessment	A step-wise procedure undertaken in accordance with Article 6(3) of the Habitats Directive, to determine the implications of a plan or project on a European site in view of the site's conservation objectives, where the plan or project is not directly connected with or necessary to the management of a European site but likely to have a significant effect thereon, either individually or in-combination with other plans or projects.
Bodelwyddan National Grid Substation	This is the Point of Interconnection (POI) selected by the National Grid for the Mona Offshore Wind Project.
Competent Authority	Regulation 6(1) defines competent authorities as "any Minister, government department, public or statutory undertaker, public body of any description or person holding a public office".
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Project (NSIP).
Environmental Statement	The document presenting the results of the Environmental Impact Assessment (EIA) process for the Mona Offshore Wind Project.
Evidence Plan Process	The Evidence Plan process is a mechanism to agree upfront what information the Applicant needs to supply to the Planning Inspectorate as part of the Development Consent Order (DCO) applications for the Mona Offshore Wind Project.
Expert Working Group (EWG)	Expert working groups set up with relevant stakeholders as part of the Evidence Plan process.
Inter-array cables	Cables which connect the wind turbines to each other and to the offshore substation platforms. Inter-array cables will carry the electrical current produced by the wind turbines to the offshore substation platforms.
Interconnector cables	Cables that may be required to interconnect the Offshore Substation Platforms in order to provide redundancy in the case of cable failure elsewhere.
Intertidal access areas	The area from Mean High Water Springs (MHWS) to Mean Low Water Springs (MLWS) which will be used for access to the beach and construction related activities.
Intertidal area	The area between MHWS and MLWS.
Landfall	The area in which the offshore export cables make contact with land and the transitional area where the offshore cabling connects to the onshore cabling.
Local Authority	A body empowered by law to exercise various statutory functions for a particular area of the United Kingdom. This includes County Councils, District Councils and County Borough Councils.
Local Highway Authority	A body responsible for the public highways in a particular area of England and Wales, as defined in the Highways Act 1980.
Marine licence	The Marine and Coastal Access Act 2009 requires a marine licence to be obtained for licensable marine activities. Section 149A of the Planning Act 2008 allows an applicant for a DCO to apply for a 'deemed' marine licence as part of the DCO process. In addition,

Term	Meaning
	licensable activities within 12nm of the Welsh coast require a separate marine licence from Natural Resource Wales (NRW).
Maximum Design Scenario (MDS)	The scenario within the design envelope with the potential to result in the greatest impact on a particular topic receptor, and therefore the one that should be assessed for that topic receptor.
Mona 400kV Grid Connection Cable Corridor	The corridor from the Mona onshore substation to the National Grid substation at Bodelwyddan.
Mona Array Area	The area within which the wind turbines, foundations, inter-array cables, interconnector cables, offshore export cables and offshore substation platforms (OSPs) forming part of the Mona Offshore Wind Project will be located.
Mona Array Scoping Boundary	The Preferred Bidding Area that the Applicant was awarded by The Crown Estate as part of Offshore Wind Leasing Round 4.
Mona Offshore Cable Corridor	The corridor located between the Mona Array Area and the landfall up to MHWS, in which the offshore export cables will be located.
Mona Offshore Cable Corridor and Access Areas	The corridor located between the Mona Array Area and the landfall up to MHWS, in which the offshore export cables will be located and in which the intertidal access areas are located.
Mona Offshore Transmission Infrastructure Scoping Search Area	The area that was presented in the Mona Scoping Report as the area encompassing and located between the Mona Potential Array Area and the landfall up to MHWS, in which the offshore export cables will be located.
Mona Offshore Wind Project	The Mona Offshore Wind Project is comprised of both the generation assets, offshore and onshore transmission assets, and associated activities.
Mona Offshore Wind Project Boundary	The area containing all aspects of the Mona Offshore Wind Project, both offshore and onshore.
Mona Offshore Wind Project PEIR	The Mona Offshore Wind Project Preliminary Environmental Information Report (PEIR) that was submitted to The Planning Inspectorate (on behalf of the Secretary of State) and NRW for the Mona Offshore Wind Project.
Mona Offshore Wind Project Scoping Report	The Mona Scoping Report that was submitted to The Planning Inspectorate (on behalf of the Secretary of State) and NRW for the Mona Offshore Wind Project.
Mona Onshore Cable Corridor	The corridor between MHWS at the landfall and the Mona onshore substation, in which the onshore export cables will be located.
Mona Onshore Development Area	The area in which the landfall, onshore cable corridor, onshore substation, mitigation areas, temporary construction facilities (such as access roads and construction compounds), and the connection to National Grid substation will be located
Mona Onshore Transmission Infrastructure Scoping Search Area	The area that was presented in the Mona Scoping Report as the area located between MHWS at the landfall and the onshore National Grid substation, in which the onshore export cables, onshore substation and other associated onshore transmission infrastructure will be located.
Mona PEIR Offshore Cable Corridor	The corridor presented at PEIR that was consulted on during statutory consultation and has subsequently been refined for the application for Development Consent. It is located between the Mona Array Area and the landfall up to MHWS, in which the offshore export cables and the offshore booster substation will be located.

Term	Meaning
Mona PEIR Offshore Wind Project Boundary	The area presented at PEIR containing all aspects of the Mona Offshore Wind Project, both offshore and onshore. This area was the boundary consulted on during statutory consultation and subsequently refined for the application for Development Consent.
Mona Potential Array Area	The area that was presented in the Mona Scoping Report and in the PEIR as the area within which the wind turbines, foundations, meteorological mast, inter-array cables, interconnector cables, offshore export cables and OSPs forming part of the Mona Offshore Wind Project were likely to be located. This area was the boundary consulted on during statutory consultation and subsequently refined for the application for Development Consent.
Mona Proposed Onshore Development Area	The area presented at PEIR in which the landfall, onshore cable corridor, onshore substation, mitigation areas, temporary construction facilities (such as access roads and construction compounds), and the connection to National Grid infrastructure will be located. This area was the boundary consulted on during statutory consultation and subsequently refined for the application for Development Consent.
Mona Scoping Report	The Mona Scoping Report that was submitted to The Planning Inspectorate (on behalf of the Secretary of State) and NRW for the Mona Offshore Wind Project.
National Policy Statement (NPS)	The current national policy statements published by the Department for Energy Security & Net Zero in 2024.
Non-statutory consultee	Organisations that an applicant may choose to consult in relation to a project who are not designated in law but are likely to have an interest in the project.
Offshore Substation Platform (OSP)	The offshore substation platforms located within the Mona Array Area will transform the electricity generated by the wind turbines to a higher voltage allowing the power to be efficiently transmitted to shore.
Offshore Wind Leasing Round 4	The Crown Estate auction process which allocated developers preferred bidder status on areas of the seabed within Welsh and English waters and ends when the Agreements for Lease (AfLs) are signed.
Pre-construction site investigation surveys	Pre-construction geophysical and/or geotechnical surveys undertaken offshore and, or onshore to inform, amongst other things, the final design of the Mona Offshore Wind Project.
Point of Interconnection	The point of connection at which a project is connected to the grid. For the Mona Offshore Wind Project, this is the Bodelwyddan National Grid Substation.
Relevant Local Planning Authority	The Relevant Local Planning Authority is the Local Authority in respect of an area within which a project is situated, as set out in Section 173 of the Planning Act 2008. Relevant Local Planning Authorities may have responsibility for discharging requirements and some functions pursuant to the DCO, once made.
the Secretary of State for Business, Energy and Industrial Strategy	The decision maker with regards to the application for development consent for the Mona Offshore Wind Project.
Statutory consultee	Organisations that are required to be consulted by an applicant pursuant to the Planning Act 2008 in relation to an application for development consent. Not all consultees will be statutory consultees (see non-statutory consultee definition).

Term	Meaning
Wind turbines	The wind turbine generators, including the tower, nacelle and rotor.
The Planning Inspectorate	The agency responsible for operating the planning process for NSIPs.

Acronyms

Acronym	Description
AfL	Agreement for Lease
BEIS	Department for Business, Energy and Industrial Strategy
BNG	Biodiversity net gain
DCO	Development Consent Order
EIA	Environmental Impact Assessment
EnBW	Energie Baden-Württemberg AG
EWG	Expert Working Group
HVAC	High Voltage Alternating Current
IEF	Important Ecological Feature
IEMA	Institute for Environmental Management and Assessment
ISAA	Information to support the Appropriate Assessment
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
NBB	Net Benefits for Biodiversity
NRW	Natural Resources Wales
NSIP	Nationally Significant Infrastructure Project
NTS	Non-Technical Summary
OSP	Offshore Substation Platform
PDE	Project Design Envelope
PEI	Preliminary Environmental Information
PEIR	Preliminary Environmental Information Report
POI	Point of Interconnection
SAC	Special Area of Conservation
SoCG	Statement of Common Ground
SPA	Special Protection Area
TCE	The Crown Estate
WTW	Wildlife Trust Wales
TWT	The Wildlife Trusts

Acronym	Description
ZTV	Zone of Theoretical Visibility

Units

Unit	Description
GW	Gigawatt
km	Kilometres
km^2	Kilometres squared
kV	Kilovolt
MW	Megawatt
nm	Nautical miles

1 CUMULATUVE ZONE OF THEORETICAL VISIBILITY

1.1 Introduction

1.1.1.1 This document has been prepared in response to Natural Resource Wales Advisory (NRW(A)'s) comments in the Statement of Common Ground (SoCG), which requested:

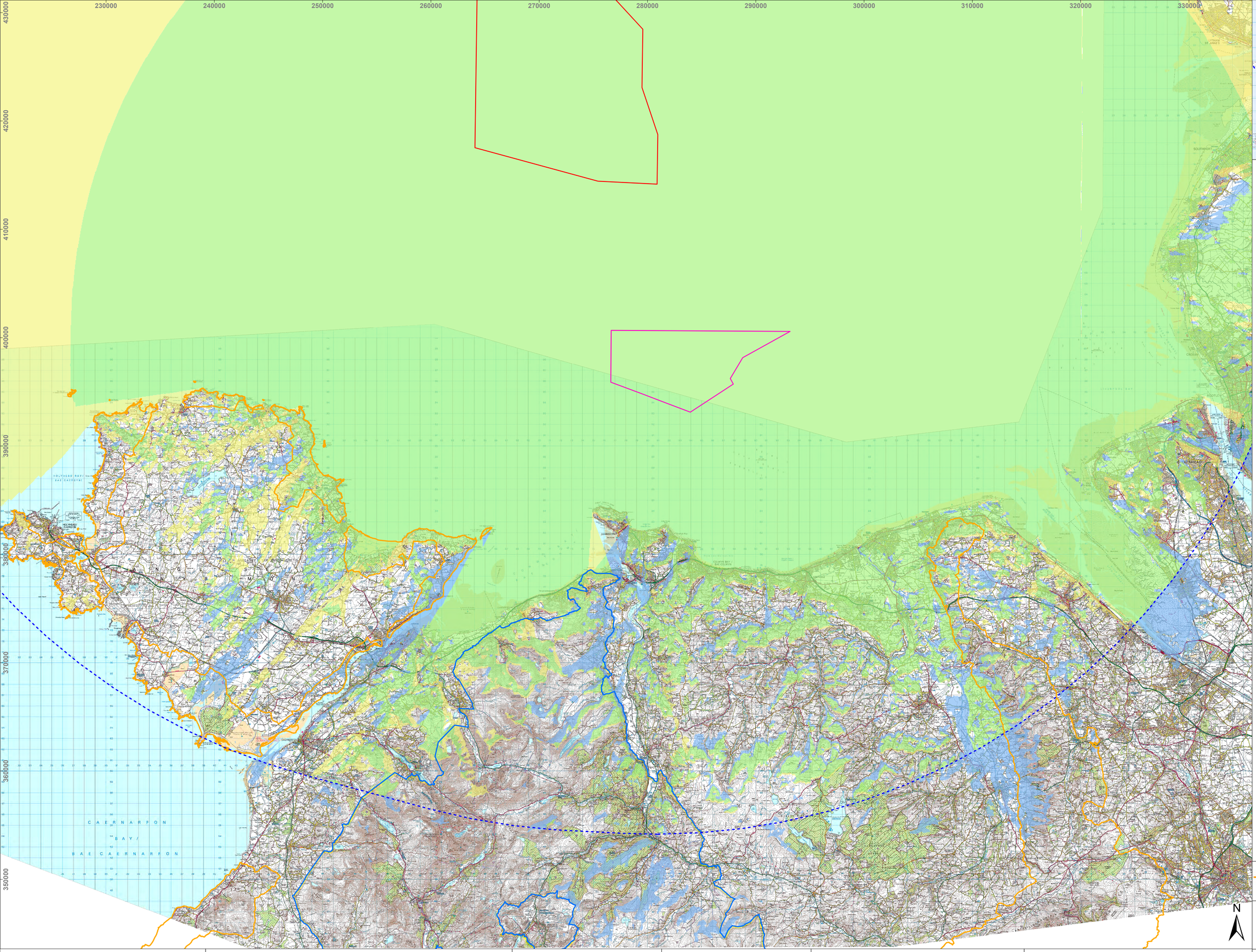
NRW (A) welcomes the provision of the ZTV mapping on a 1:50:000 OS base which replaces the previous mapping presented at 1:10,000. NRW (A) recommends the cumulative ZTVs are also re-presented at a larger scale.

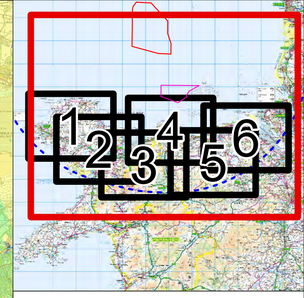
1.1.1.2 The Applicant has agreed to submit the Cumulative Zone of Theoretical Visibility (ZTV) of the Mona Array Area and the Awel y Môr Array Area on a 1:50,000 Ordnance Survey base. Although a small part of the cumulative ZTV covers areas of England, NRW are concerned with nationally designated landscape in Wales and therefore it is this part of the cumulative ZTV that has been provided within this document.

1.1.1.3 This cumulative ZTV is in addition to the ZTV requested by NRW previously and submitted at Deadline 4 (Zone of Theoretical Visibility and representative viewpoint locations at 1:50,000 scale (REP4-046)).

1.1.1.4 As explained in the Applicant's response REP5-061 to NRW's written submission REP4-105.80, the Applicant notes the following with regards to the interpretation of the cumulative ZTV:

- the ZTV does not factor in areas of vegetation or buildings, the ZTV is 'bare ground'/based on topography only (in this case 50m DTM data has been used, which has accuracy of +/- 4 m)
- the generation of a ZTV does not factor in the effect of distance
- ZTVs do not identify how many turbines or to what extent the turbines would be theoretically visible. This could be a fraction of a blade tip or a whole development
- the viewer's height in a ZTV map is set at 2 m above ground level, which is higher than the average eye level height of a viewer
- a ZTV is a baseline tool in the process of considering viewpoints and visibility and not an end point/definitive answer to the actual availability of views.





Legend

- Mona Array Area (BPGBP-MONA-DAT0114)
- Awel y Môr Offshore Wind Farm Array
- 60km Study Area
- National Park
- National Landscape
- Only Mona Array Visable
- Only Awel y Môr Visable
- Both Schemes Visable

Data source	OS Terrain 50
Coverage	Within 60km of the site
Date sourced	2023
Original cell size	50m
Resampling	None
ZTV does not consider the effects of ground cover	ZTV is calculated using a blade tip height of 364m
Viewer height is 2m	ZTV calculation does not use mathematically approximate methods

EnBW bp rps
Partners in UK offshore wind

Drawing Number:
12079-0828-01

Project Name:
MONA OFFSHORE WIND PROJECT

Drawing Title:
MONA AND AWEL Y MÔR ZTV

0 1 2 4 6 Miles
0 1 2 4 6 8 Kilometers

Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid
Scale@ A1: 1:155,000

Data Sources: Client, Natural Resources Wales, NatureScot. MMO

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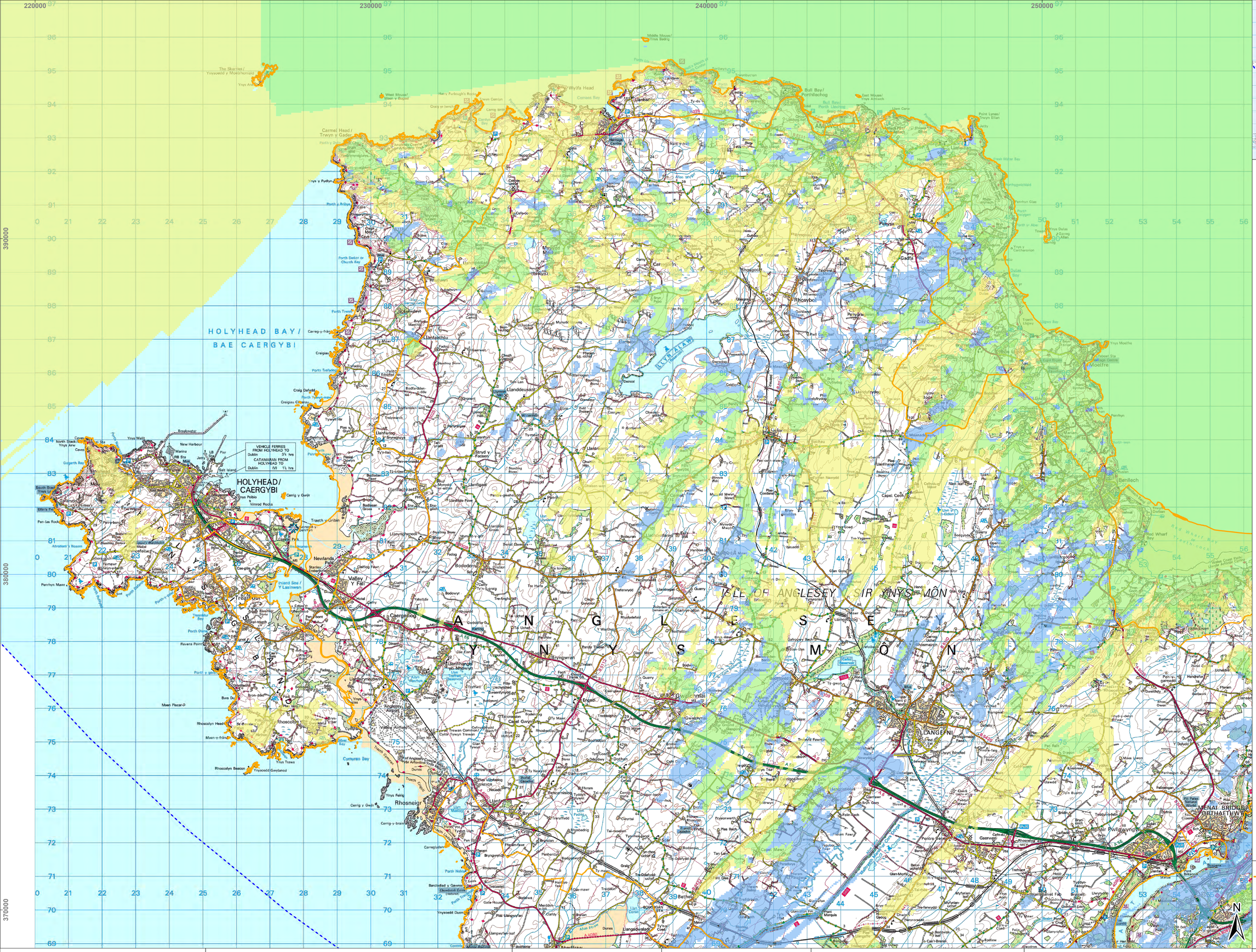
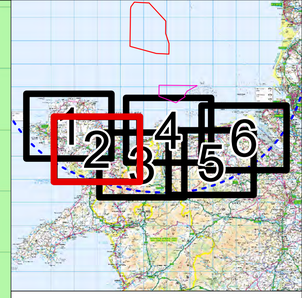

HOLYHEAD BAY/
BAE CAERGYBI
HOLYHEAD/
CAERGYBI
ISLE OF ANGLESEY
SIR YNYS MÔN
ANGLESEY
SIR YNYS MÔN
VEHICLE FERRIES
FROM HOLYHEAD TO
Dublin 3¾ hrs
CATAMARAN FROM
HOLYHEAD TO
Dublin 1¾ hrs
Llanfaethlu
Llanddeusant
Llanfachraeth
Llanfwrog
Llanfigael
Llanfaelog
Caergeiliog
Valley / Y Fali
Rhosneigr
Aberffraw
Bodorgan
Llangwyllog
Llangwyllog
Llangadwaladr
Llanfair Pwllgwyngyll
MENAI BRIDGE/
PORTHAETHWY
LLANGEFNI
Rhosybol
Rhosgoch
Penysarn
Gadfa
Moelfre
Benllech
Amlwch
Bull Bay/
Porthllechog
Wylfa Head
Carmel Head /
Trwyn y Gader
The Skerries /
Ynysoedd y Moelrhoniaid
West Mouse /
Mean y Buoel
Middle Mouse /
Ynys Badrig
East Mouse /
Ynys Amlwch
Inland Sea /
Y Lasinwen
Cymyran Bay
Rhoscolyn Beacon
Rhoscolyn Head
Ravens Point
Penrhyn Mawr
Porth Trwyno
Porth Swtan or
Church Bay
Porth y Post
Porth Dafarch
Porth Diana
Porth Wen
Porth Eilian
Porth Llanlleiana
Porth Namarch
Porth Penrhyn-mawr
Porth Trecastell
Porth Tywyn-mawr
Porth Trefadog
Porth Cwnsela
Porth Nobla
Porth Saint
Porth Cwyfan
Porth Penrhos Lligwy
Porth Dinllaen
Porth Lleiniog
Porth Aethwy
Porth Penmon
Porth Helaeth
Porth Wylfa
Porth Llanlleiana
Porth Namarch
Porth Penrhyn-mawr
Porth Trecastell
Porth Tywyn-mawr
Porth Trefadog
Porth Cwnsela
Porth Nobla
Porth Saint
Porth Cwyfan
Porth Penrhos Lligwy
Porth Dinllaen
Porth Lleiniog
Porth Aethwy
Porth Penmon
Porth Helaeth
Porth Wylfa
Breakwater
New Harbour
Inner Harbour
Salt Island
Gogarth Bay
North Stack
Ynys Arw
Ynys Gwylan
Ynys Dulas
Ynys Moelfre
Ynys Feirig
Ynysoedd Gwylanod
Ynysoedd Dulyn
Ynys Llanddwyn
Ynys Llanddwyn
Ynys Llanddw



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12079-0828-01

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0 1 2 Miles

0 1 2 Kilometers

Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid
Scale@ A1: 1:50,000

Data Sources: Client, Natural Resources Wales, NatureScot. MMO

Service Layer Credits:

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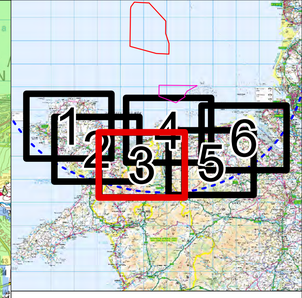

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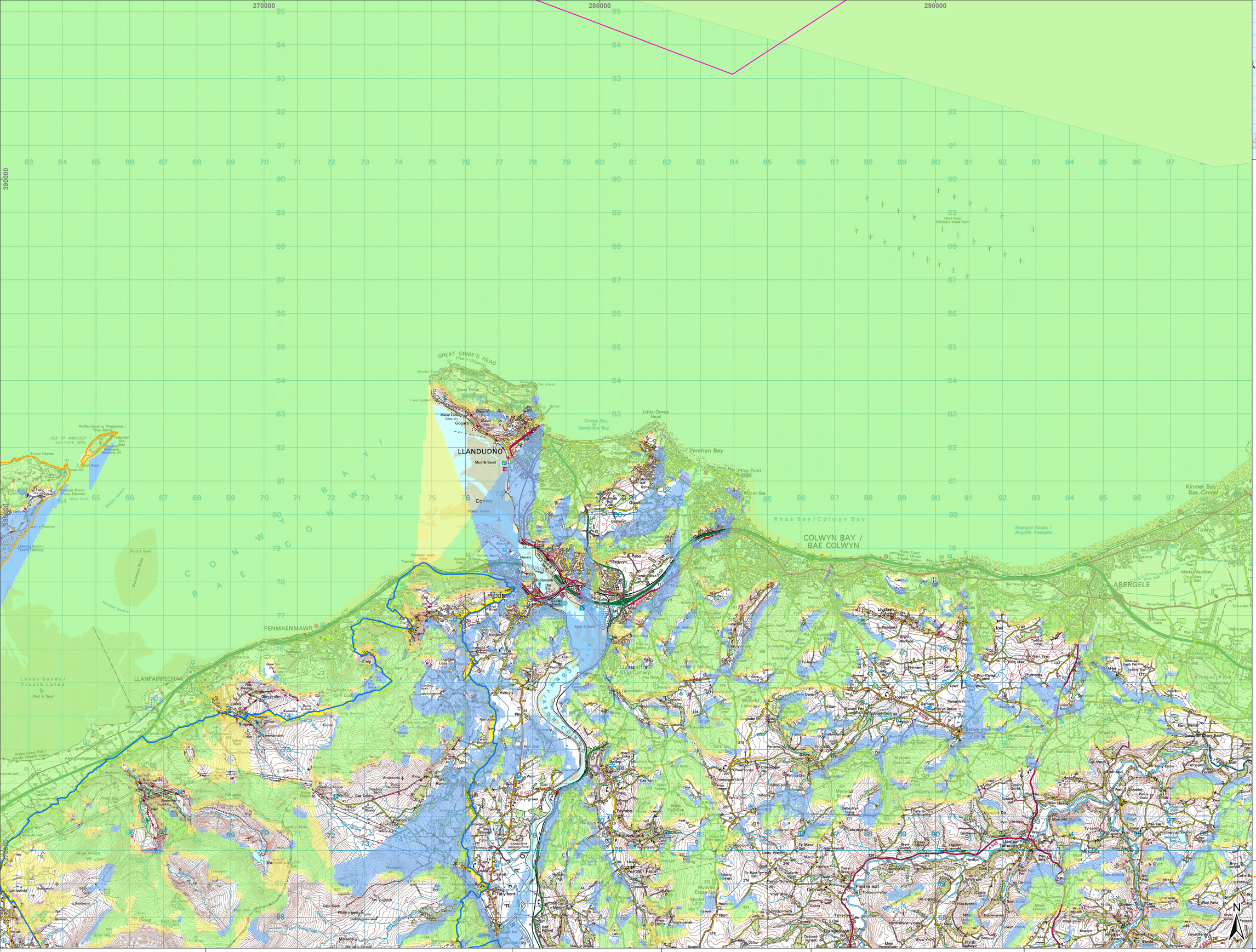
270000
280000
290000
390000
GREAT ORME'S HEAD
(Penrhyn Gogarth)
LLANDUDNO
Mud & Sand
Conwy
COLWYN BAY /
BAE COLWYN
Rhos Bay / Colwyn Bay
Penrhyn Bay
Little Orme's Head
Ormes Bay or Llandudno Bay
ABERGELE
PENMAENMAWR
LLANFAIRFECHAN
Lavan Sands / Traeth Lafan
Puffin Island or Priestholm / Ynys Seiriol
ISLE OF ANGLESEY / SIR YNYS MÔN
Trwyn Dinmor
Trwyn Du
Penmon Point / Trwyn Penmon
Kinmel Bay / Bae Cinmel
Rhyl Flats Offshore Wind Farm
Rhos Point
Abergele Roads / Angorfa Abergele
Llanddulas
Llysfaen
Old Colwyn
Towyn
Pensarn
Belgrano
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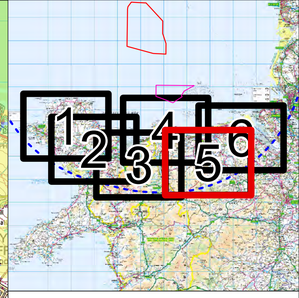
Gors Cott



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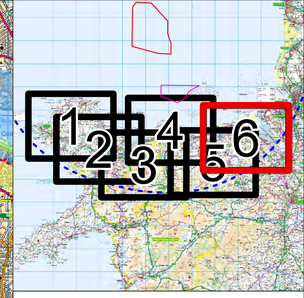

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