MONA OFFSHORE WIND PROJECT

Environmental Statement

Volume 7, Annex 9.2: Construction noise and vibration technical report

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~~February~~ ~~2024~~

F01_F02

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Prepared by:

RPS

Prepared for:

Mona Offshore Wind Ltd.

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Glossary

Term	Meaning
A-weighting	A frequency weighting devised to attempt to account for the fact that human response to sound is not equally sensitive to all frequencies. It consists of an electronic filter in a sound level meter which attempts to build this variability into the indicative sound level reading so that it will correlate, approximately, with the human response.
Ambient sound level, $L_{Aeq,T}$	The steady sound level which, over a period of time T, contains the same amount of A-weighted sound energy as the time varying sound over the same period. Also known as the equivalent continuous sound pressure level.
Attenuation	The reduction in magnitude of sound energy.
Basic Noise Level (BNL)	A measure of traffic source noise prior to development. It is calculated from traffic flows, road speed, and HGV percentage.
Decibel (dB)	A unit used to measure or compare the intensity of a sound by comparing it with a given reference level on a logarithmic scale.
Extrapolation	The extension of a graph, curve, or range of values by inferring unknown values from trends in the known data.
Fast Fourier Transform	A computational algorithm which allows for the conversion of a time signal to a representation in the frequency domain.
Geometric Divergence	The loss of energy from a wavefront as a consequence of geometrical spreading, observable as a decrease in wave amplitude. Spherical divergence decreases energy with the square of the distance. Cylindrical divergence decreases energy with the distance.
Ground factor, G	A dimensionless parameter which allows for the consideration of the acoustic properties of the ground surface between a sound source and the receptor.
Noise	An unwanted or unexpected sound.
Peak Particle Velocity	An indicator of the magnitude of ground vibration which refers to the movement of molecular particles within the ground.
Propagation	The transmission of acoustic energy through a medium via a sound wave.
Reflection	The phenomena of sound waves bouncing back off a surface or barrier.
Refraction (Atmospheric)	The deviation of a sound wave from a straight line as it passes through the atmosphere due to the variation in air density as a function of height.
Sound	Fluctuations of pressure within a medium (gas, solid or fluid) within the audible range of loudness and frequencies which excite the sensation of hearing.
Sound Power Level, L_w	The total sound energy emitted by a source per unit time.
Sound Pressure Level, L_p	The amount of force a sound wave exerts on a surface area perpendicular to the direction of travel. A measure of the variation of sound level over a distance.
Spectrum	The presentation of sound in terms of the amount of energy at different frequencies.
Transmission Loss	A measure of the reduction in sound level of a sound source as it propagates through a medium.
Wavenumber	The number of sound waves in a unit distance.

Acronyms

Acronym	Description
BNL	Base Noise Level
BS	British Standard
CoCP	Code of Construction Practice
CoPA	Control of Pollution Act
CRTN	Calculation of Road Traffic Noise
DMRB	Design Manual for Roads and Bridges
FFT	Fast Fourier Transform
GIS	Geographical Information Systems
IoA	Institute of Acoustics
ISO	International Organisation for Standardisation
LOAEL	Lowest Observed Adverse Effect Level
MDS	Maximum Design Scenario
NOEL	No Observed Effect Level
OS	Ordnance Survey
OSP	Offshore Substation Platform
PPV	Peak Particle Velocity

Units

Unit	Description
dB	Decibel
Hz	Hertz
kHz	Kilohertz
kJ	Kilojoules
kKm	Kilometres
m	Metres
mins	Minutes

1 CONSTRUCTION NOISE AND VIBRATION TECHNICAL REPORT

1.1 Introduction

~~1.1.1 Overview~~

1.1.1.1 This construction noise and vibration technical report provides the methodology and results of indicative calculations undertaken to assess the noise and vibration impacts on nearby receptors due to the construction of the Mona Offshore Wind Project. This report should be read in conjunction with Volume 3, Chapter 9: Noise and vibration of the Environmental Statement.

1.1.1.2 Baseline sound measurements, which inform the derivation of construction noise impact criteria, have only be undertaken within the Mona Onshore Development Area to characterise the baseline sound environment at the nearest noise-sensitive receptors within the construction noise and vibration study area.

1.1.1.3 No baseline vibration surveys were undertaken since vibration impacts are assessed against absolute criteria as opposed to criteria derived based on the existing environment which is the case for noise impacts.

1.1.2 Study area

1.1.2.1 The Mona Offshore Wind Project noise and vibration study area focuses on receptors (landward of Mean High Water Springs) where potential impacts are most likely to occur on receptors sensitive to noise and vibration.

1.1.2.2 A 1 km study area has been defined for the Mona Landfall due to the high noise emission levels and potential night-time works required for trenchless techniques at the Mona Landfall.

1.1.2.3 The study area along the Mona Onshore Cable Corridor has been defined as 300 m in line with the guidance in the Design Manual for Roads and Bridges (DMRB) – LA 111 – Noise and Vibration. This study area is greater than that presented in the Mona Offshore Wind Farm Environmental Impact Assessment Scoping Report (Mona Offshore Wind Ltd, 2022) and has been increased to better align with guidance.

1.1.2.4 The guidance in DMRB – LA 111 – Noise and Vibration has also been used to inform the 100 m study area adopted for the assessment of construction vibration impacts.

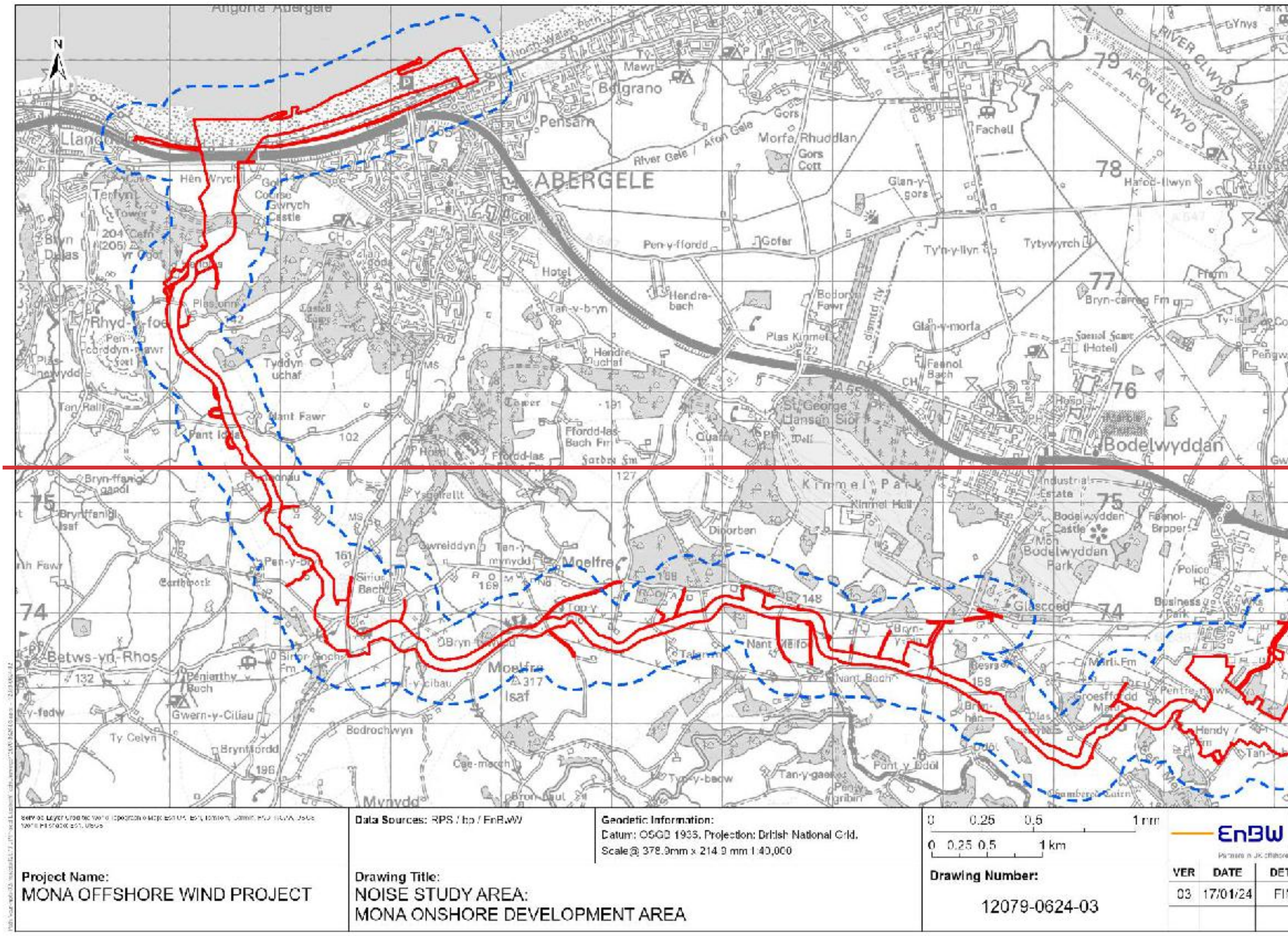
1.1.2.5 A study area of 50 km has been defined for the assessment of offshore piling noise to account for the potential for the long-range propagation of low frequency noise emissions which can travel large distances over water.

1.1.2.6 In summary, the noise and vibration study area relevant to this technical report is defined as:

- The area of land to be temporarily or permanently occupied during the construction of the Mona Offshore Wind project (hereafter referred to as the Mona Onshore Development Area)
- Noise sensitive receptors located within 1 km of the Mona Landfall (approximately 147 receptors) and Onshore Substation (approximately 40 receptors)

- Noise sensitive receptors located within 300 m of the Mona Onshore Development Area (excluding the Mona Landfall and Onshore Substation options) (approximately 932 receptors)
- Noise sensitive receptors located within 50 km of the Mona Array Area where construction piling is required (receptor count not available due to limited address data)
- Vibration sensitive receptors located within 100 m of construction activities (approximately 108 receptors).

1.1.2.7 The above descriptors are presented graphically in Figure 1-1 to Figure 1-5 below. All but two of the proposed study areas above are as set out in the Mona Offshore Wind Project Environmental Impact Assessment Scoping Report (Mona Offshore Wind Ltd, 2022). Full details of the amendments to the proposed noise and vibration study areas are provided in Volume 3, Chapter 9: Noise and vibration of the Environmental Statement.


ABERGELE
Belgrano
Pensarn
Morfa Rhuddlan
River Gele / Afon Gele
RIVER CLWYD / AFON CLWYD
Bodelwyddan
Kinmel Park
Moelfre
Glascoed
Betws-yn-Rhos
Rhyd-y-foel
Data Sources: RPS / bp / EnBW
Geodetic Information:
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Scale @ 378.9mm x 214.9 mm 1:40,000
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MONA OFFSHORE WIND PROJECT
Drawing Title:
NOISE STUDY AREA:
MONA ONSHORE DEVELOPMENT AREA
Drawing Number:
12079-0624-03
VER
DATE
03
17/01/24

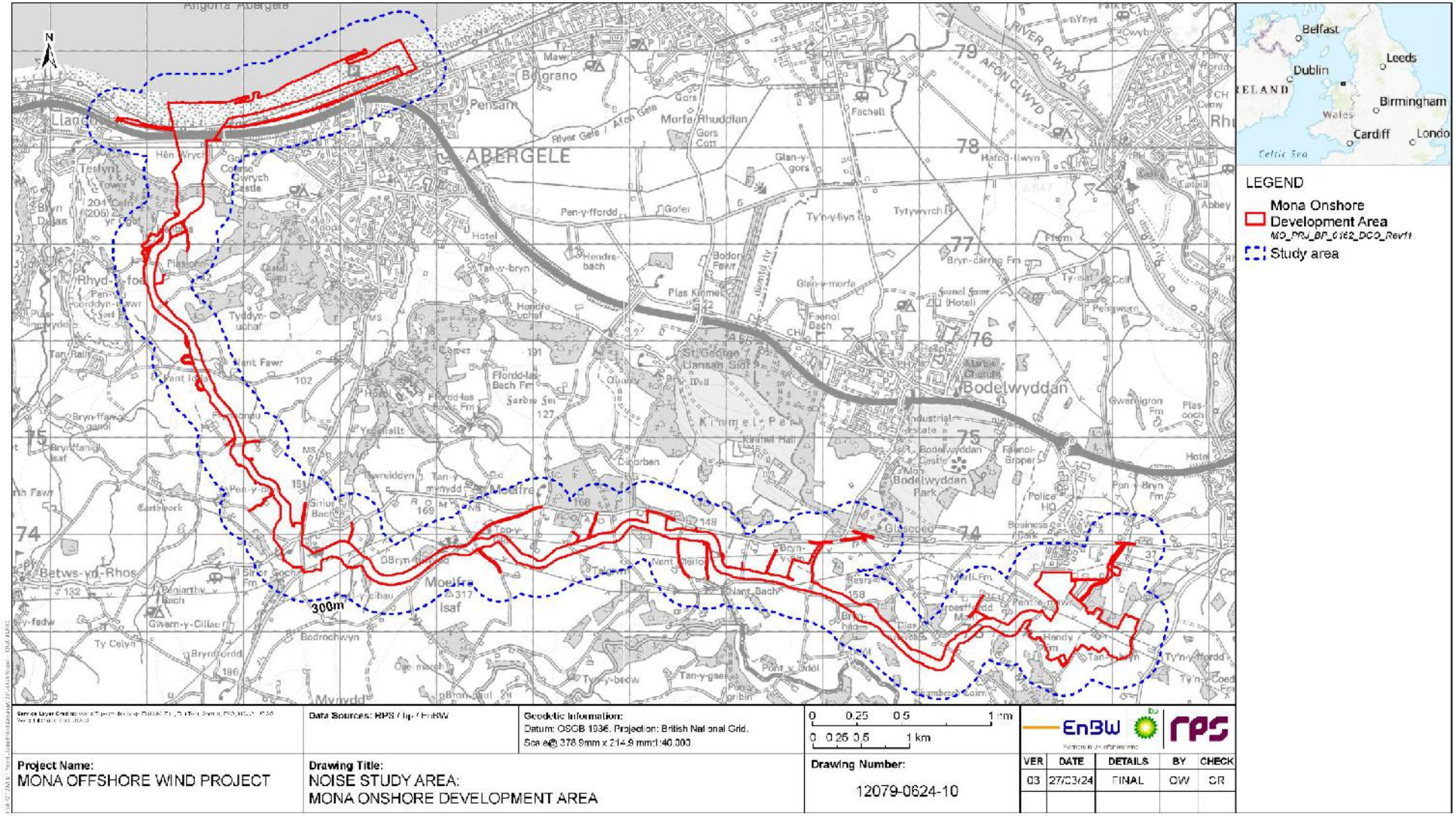
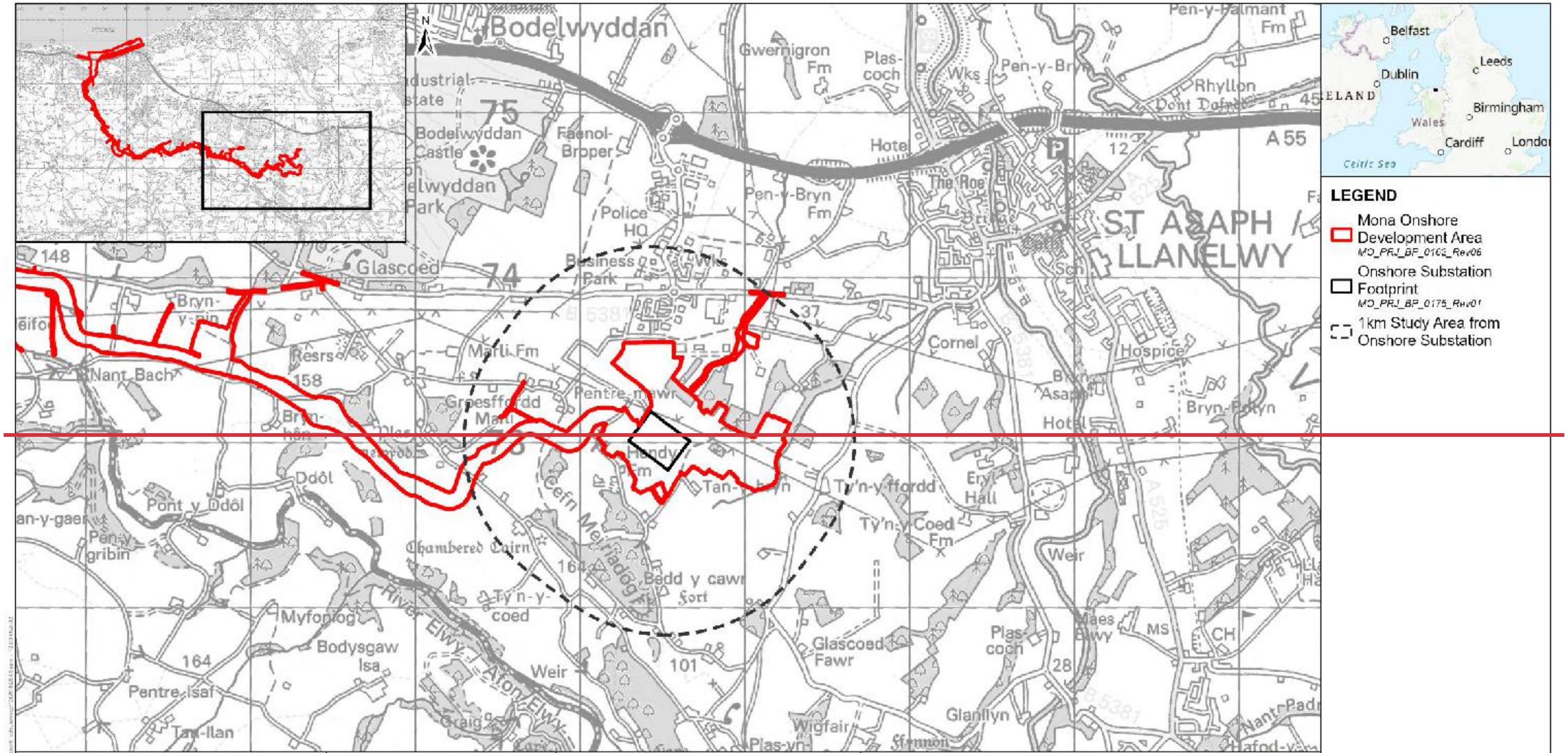


Figure 1-1: Noise study area –Mona Onshore Development Area


LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0108_Rev06
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
1km Study Area from Onshore Substation
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
London
Celtic Sea
Bodelwyddan
Gwernigron Fm
Plas-coch
Pen-y-Bryn
Pen-y-Palmant Fm
Rhyllon
Pont Dafydd
Industrial Estate
Bodelwyddan Castle
Faenol-Broper
Hotel
A 55
The Roe
Pen-y-Bryn Fm
Police HQ
ST ASAPH / LLANELWY
Glascoed
Business Park
B 5381
Bryn-y-Pin
Nant Bach
Cornel
Hospice
Marli Fm
Pentre-mawr
Groesffordd Marli
Hendy Fm
Tan-y-bryn
Ty'n-y-ffordd
Ty'n-y-Coed Fm
Pont y Ddôl
Ddôl
Chambered Cairn
Cefn Meiriadog
Bedd y cawr Fort
Ty'n-y-coed
Myfoniog
Bodysgaw Isa
River Elwy
Afon Elwy
Weir
Pentre-Isaf
Tan-llan
Graig
Glascoed Fawr
Plas-coch
Glanllyn
Wigfair
Plas-yn
Bryn-Polyn
Asaph
Hotel
Weir
MS
CH
Nant-Padrig
Hafod-y-
A 525
B 5381
148
158
164
101
28
12
74
75

Service Layer Credits: Contains Ordnance Survey data © Crown copyright and database right. Esri UK, Esri, HERE, Garmin, FAO, NOAA, USGS

Data Sources: RPS / bp / EnBW

Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale @ 378.9mm x 214.9 mm 1:25,000

0 0.1 0.2 0.4 mi
0 0.25 0.5 1 km

Project Name:
MONA OFFSHORE WIND PROJECT

Drawing Title:
NOISE STUDY AREA:
ONSHORE SUBSTATION

Drawing Number:
12079-0625-03

VER	DATE	DETAILS	BY	CHECK
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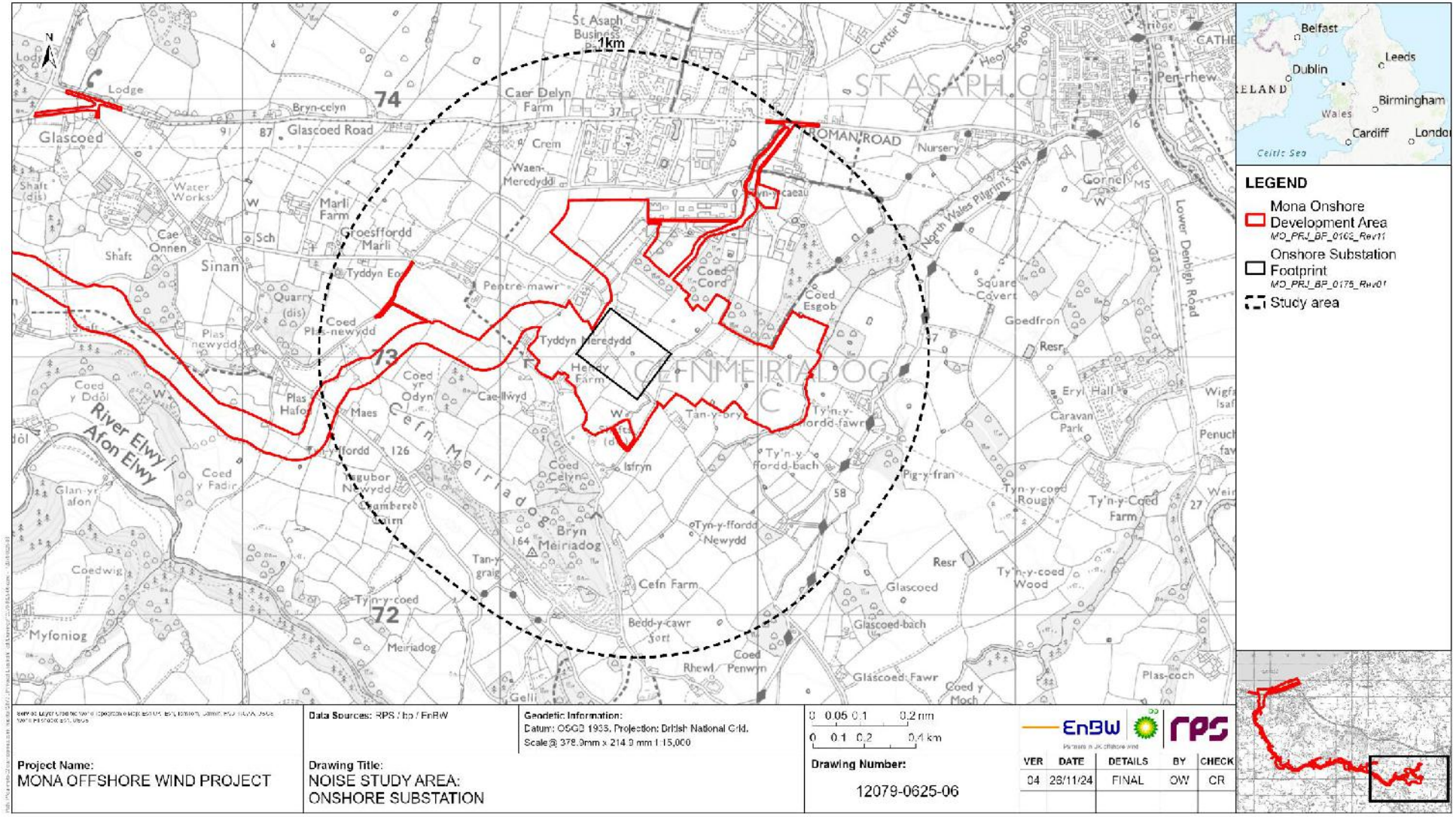
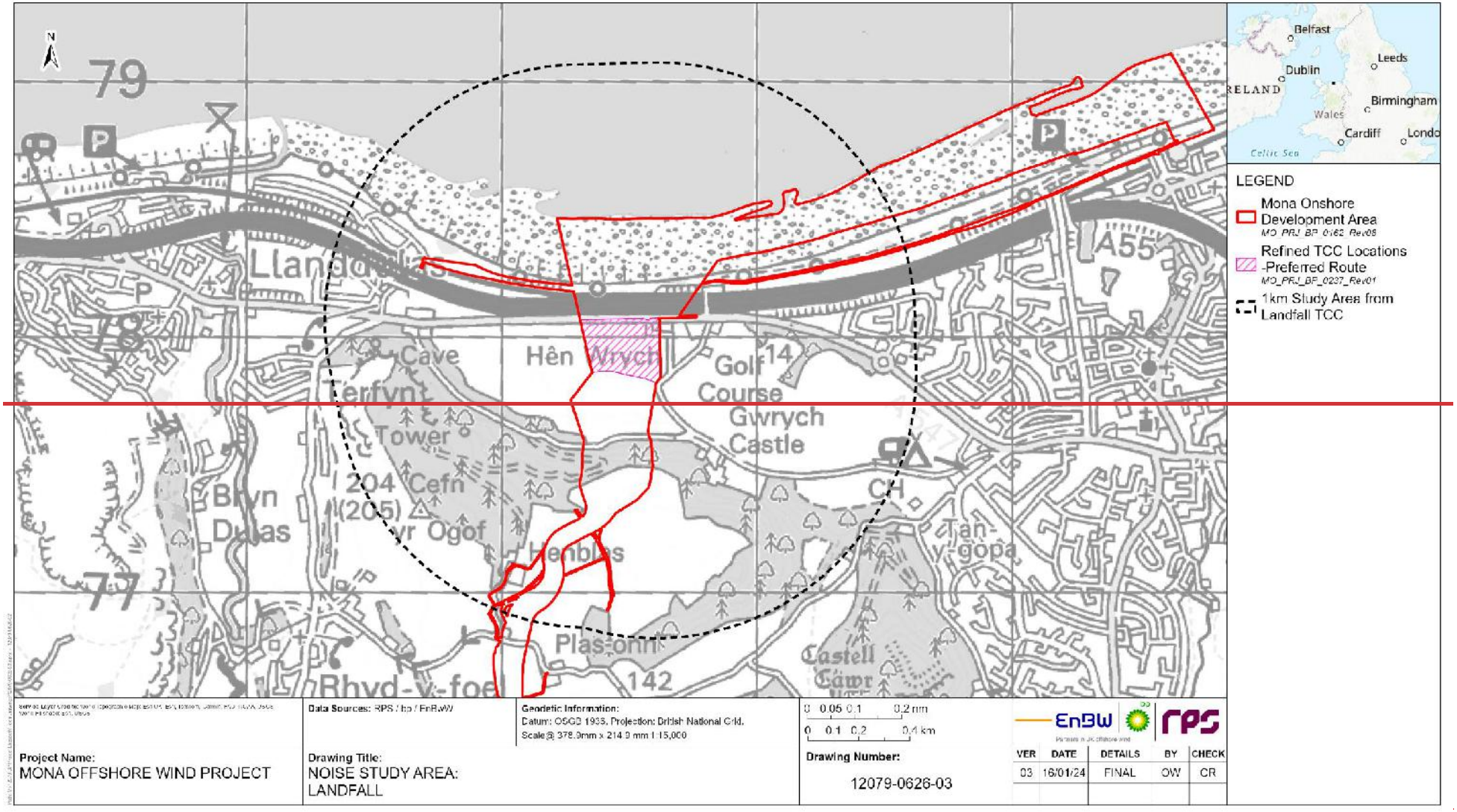


Figure 1-2: Noise study area –Onshore Substation.


79
78
77
A55
Llandudno
Cave
Hên Wrych
Golf Course
14
Gwrych Castle
Tower
204
(205)
Cefn yr Ogof
Bryn Dulas
Henblas
Plas-onn
142
Rhyd-y-foel
Castell Cawr
Tan-y-gopa
CH
Belfast
Dublin
Leeds
Birmingham
Wales
Cardiff
Celtic Sea
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Mona Onshore Development Area
MO_PRJ_BF_0162_Rev08
Refined TCC Locations -Preferred Route
MO_PRJ_BF_0237_Rev01
1km Study Area from Landfall TCC
Data Sources: RPS / bp / EnBW
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Scale@ 378.9mm x 214.9 mm 1:15,000
0 0.05 0.1 0.2 nm
0 0.1 0.2 0.4 km
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12079-0626-03
VER 03
DATE 16/01/24
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CHECK CR

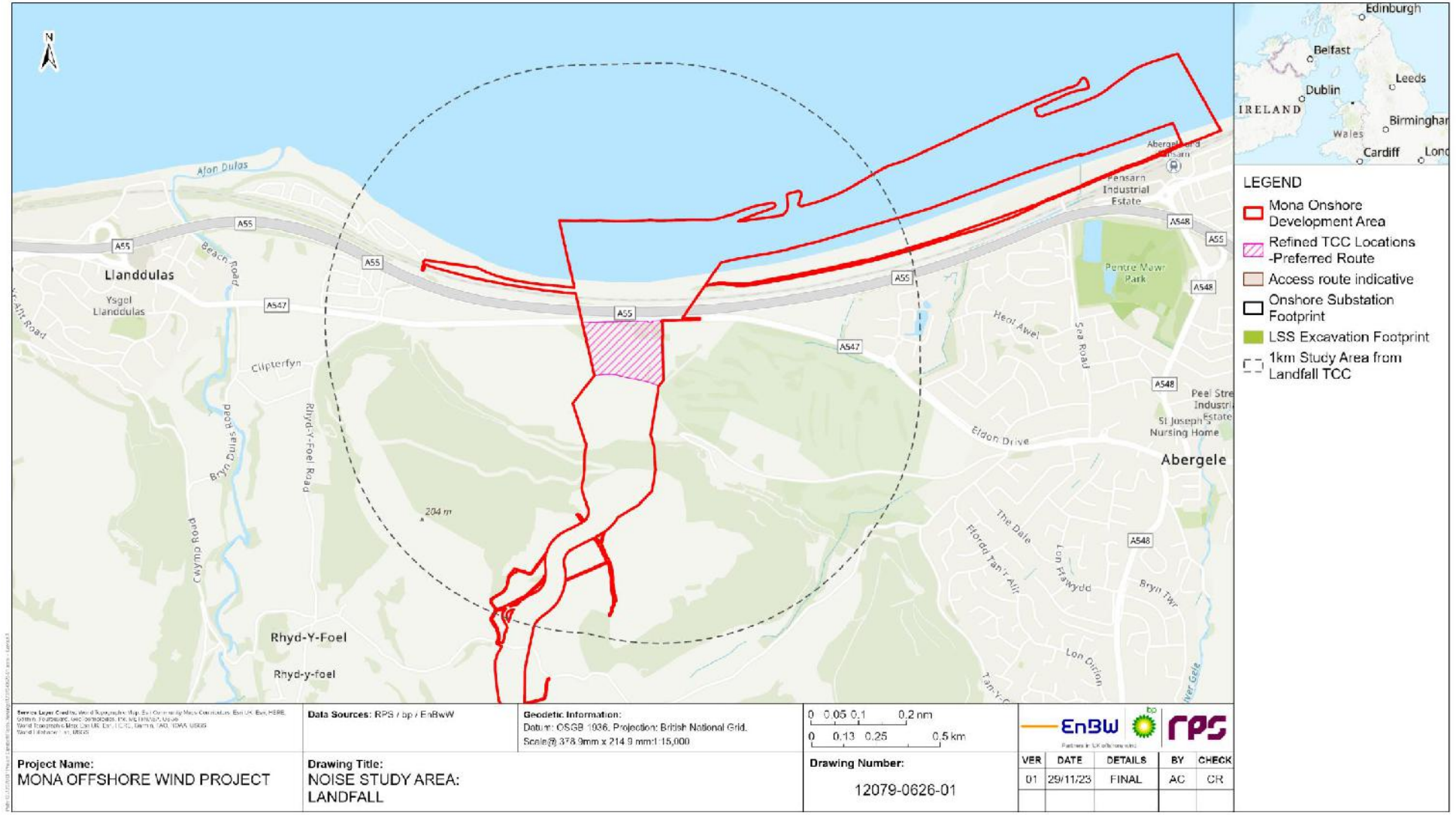
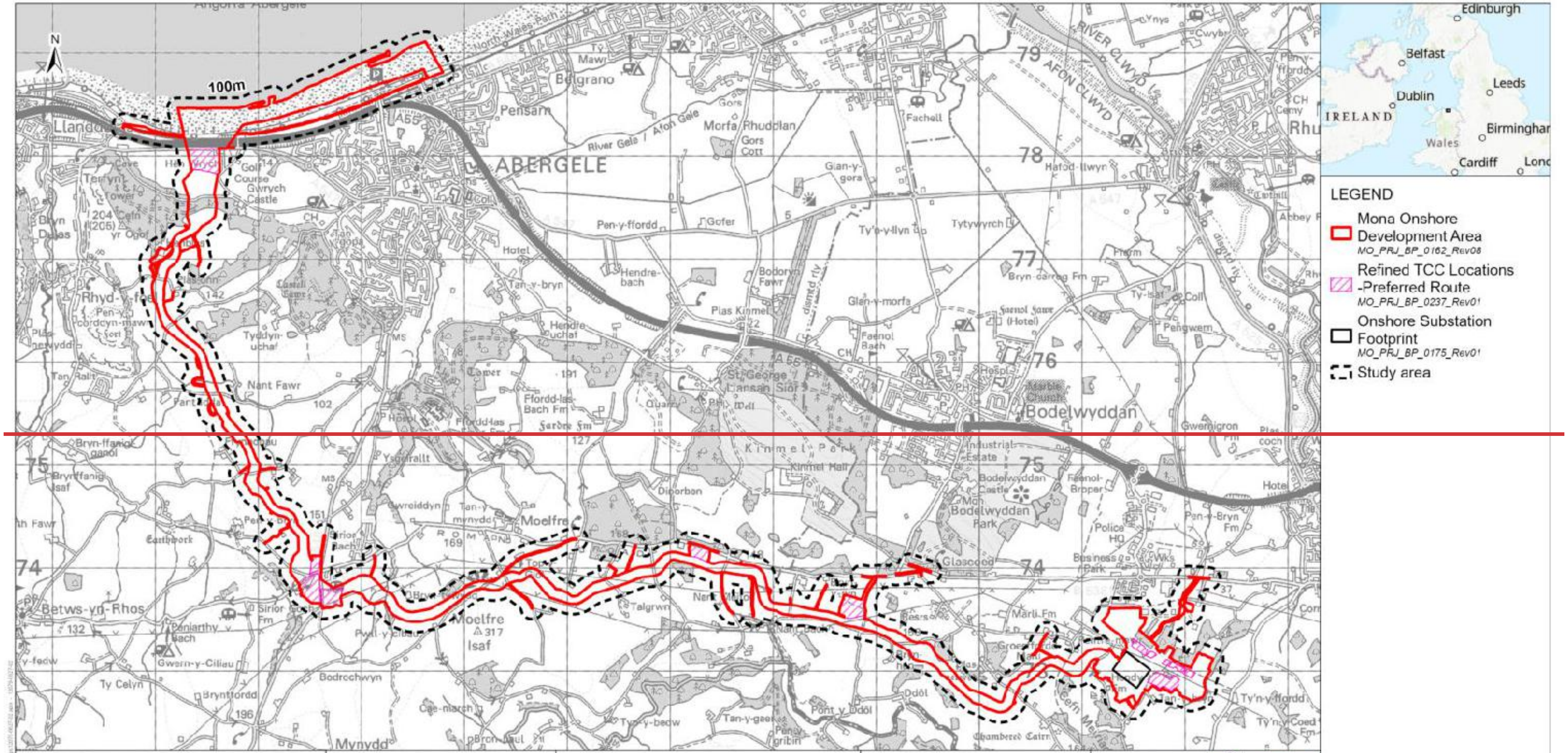


Figure 1-3: Noise study area – Landfall



Data Sources: RPS / bp / EnBW

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MONA OFFSHORE WIND PROJECT

Drawing Title:
VIBRATION STUDY AREA:
ONSHORE DEVELOPMENT AREA

Drawing Number:
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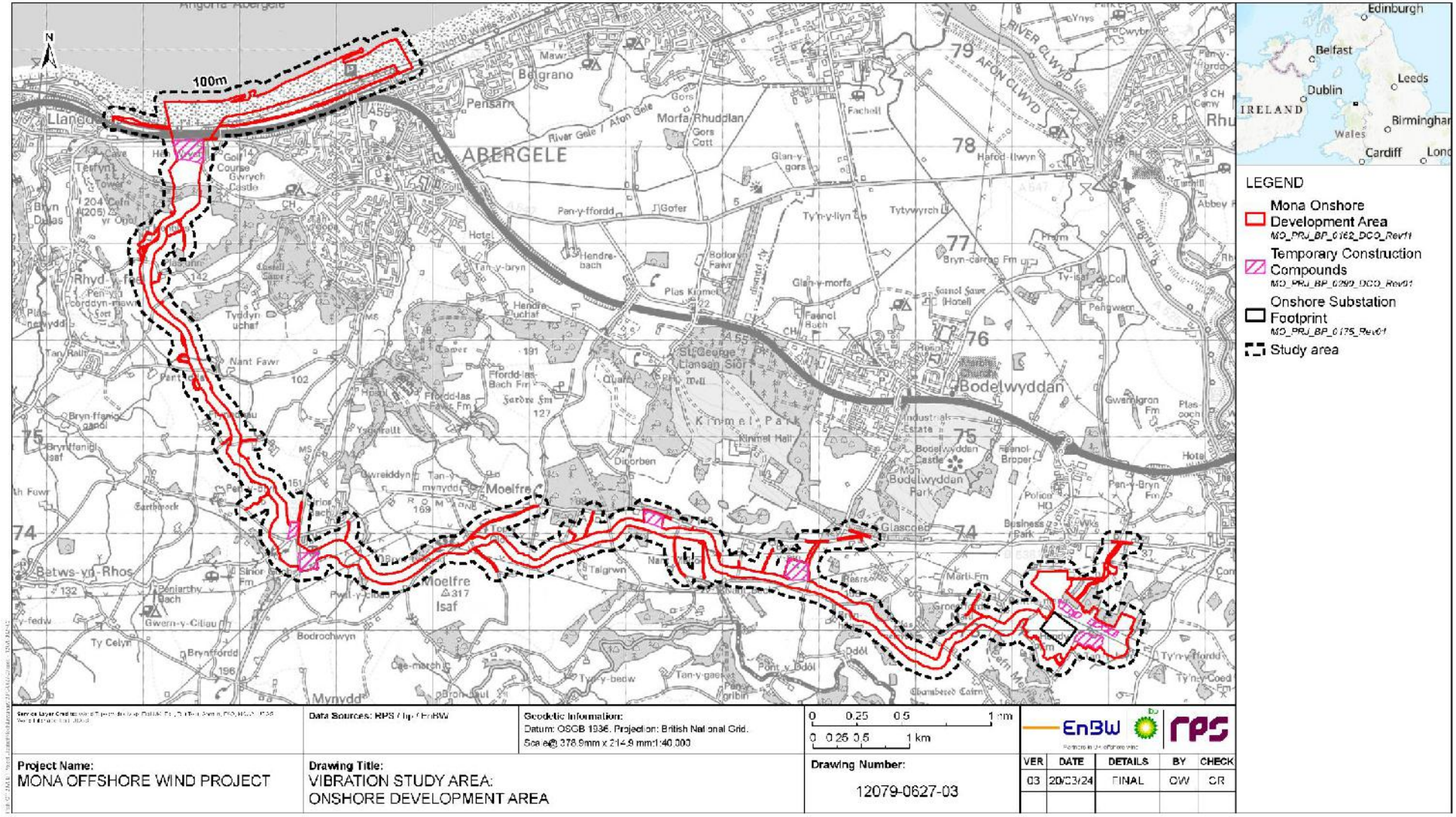


Figure 1.-4: Vibration study area – ~~piling at landfall~~Mona Onshore Development Area

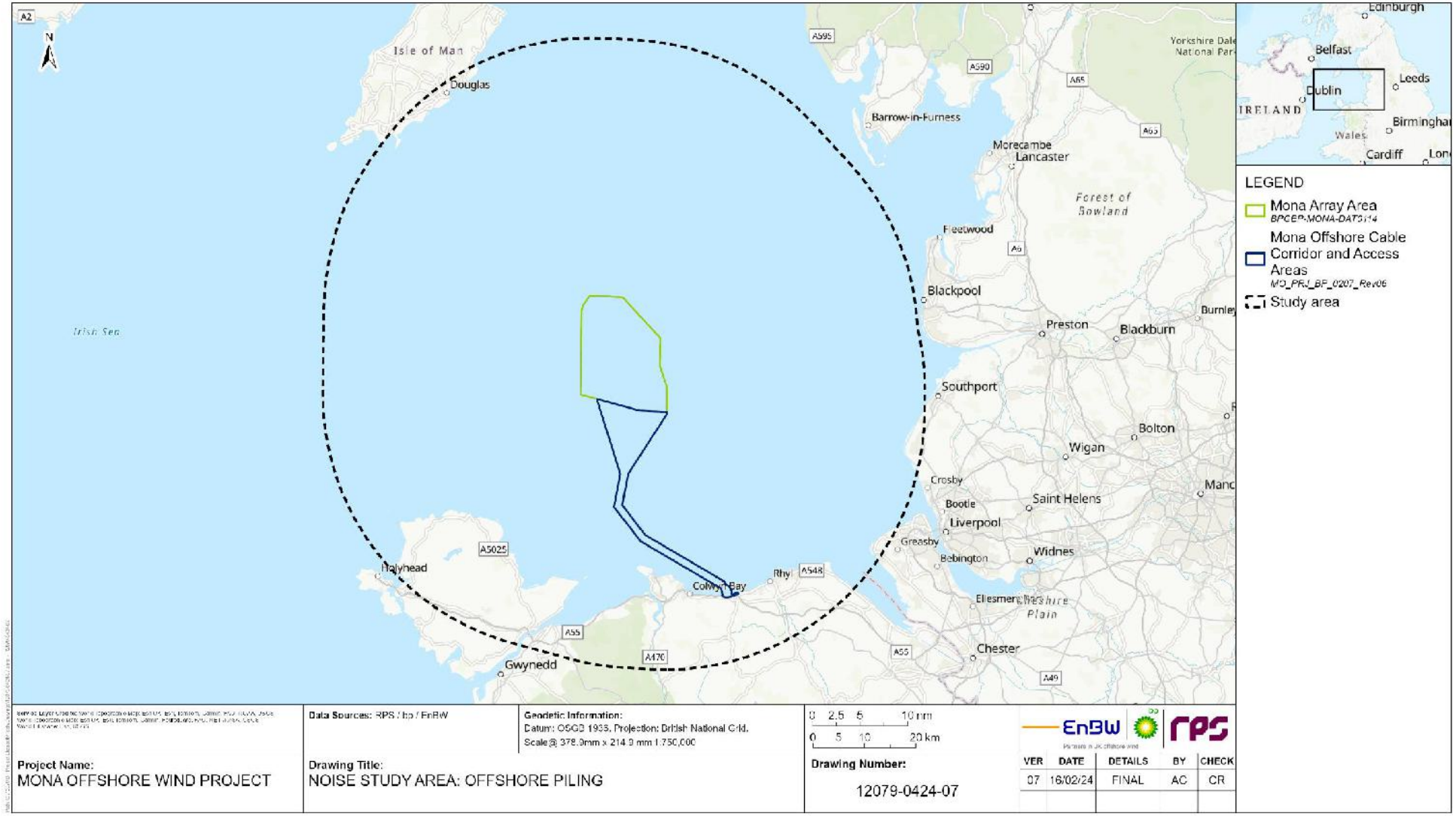


Figure 1-5: Noise study area – Offshore piling

1.2 Legislation and guidance

~~1.2.1 Overview~~

1.2.1.1 This section contains a summary of the relevant guidance and legislation for construction noise and vibration control.

1.2.2 Control of Pollution Act (CoPA) 1974

1.2.2.1 Section 60 of the CoPA refers to the control of noise on construction sites. It outlines legislation by which Local Authorities can control noise from construction sites and prevent noise disturbance.

1.2.2.2 British Standards (BS) 5228-1:2009+A1:2014 and BS 5228 2:2009+A1:2014 were approved within The Control of Noise (Code of Practice for Construction and Open Sites) Order 2015 as suitable guidance on appropriate methods for the control of noise from construction and open sites in exercise of the powers conferred on the Secretary of State by sections 71(1)(b), (2) and (3) of the CoPA.

1.2.2.3 The CoPA provides a Local Authority the power to serve a notice imposing requirements for the way in which construction works are to be carried out in their jurisdiction. This notice can specify the following:

- The plant or machinery permitted for use
- The hours during which construction work may be undertaken
- Limits for the emission levels of noise and vibration due to the works at any time or spatial position on site
- Any other change in circumstance.

1.2.2.4 Section 61 of the CoPA refers to prior consent for work on construction sites. It provides a method by which a contractor can apply for consent to undertake construction works in advance. Providing consent is granted, and compliance is maintained with the stated method and hours of work, no action may be taken by the Local Authority under Section 60.

1.2.2.5 Section 71 of the CoPA refers to the preparation and approval of codes of practice for minimising noise.

1.2.2.6 Section 72 of the CoPA refers to BPM, which is defined as:

'In that expression, 'practicable' means reasonably practicable, having regards among other things to local conditions and circumstances, to the current state of technical knowledge and to the financial implications'. Whilst 'Means' includes 'the design, installation, maintenance and manner and periods of operation of plant and machinery, and the design, construction and maintenance of buildings and acoustic structures.'

1.2.3 Environmental Protection Act (EPA) 1990

1.2.3.1 Section 79, Part of the EPA contains a list of matters that amount to statutory nuisances and places a duty on Local Authorities to regularly inspect areas in their jurisdiction to determine where statutory nuisances may exist.

1.2.3.2 The Local Authority must serve an abatement notice where it is satisfied that a statutory nuisance does not exist, or likely to occur/recur. Section 80 of the EPA

provides Local Authorities with the power to serve an abatement to prohibit or restrict its occurrence or recurrence; and to carry out works or other action necessary to abate the nuisance.

1.2.3.3 Section 82 of the EPA allows a Magistrates' court to act on a complaint made by any person on the grounds that they are aggrieved by a statutory nuisance, such as noise.

1.2.3.4 The procedures for appeals against abatement notices are detailed in the Statutory Nuisance (Appeals) Regulations 1995.

1.2.4 National Policy Statements (NPS)

1.2.4.1 There are currently six energy National Policy Statements (NPSs), three of which identify policy relevant to offshore wind development and the Mona Offshore Wind Project, specifically:

- Overarching NPS for Energy (NPS EN-1) which sets out the UK Government's policy for the delivery of major energy infrastructure (Department for Energy Security & Net Zero, ~~January 2024a~~November 2023a)
- NPS for Renewable Energy Infrastructure (NPS EN-3) (Department for Energy Security & Net Zero, ~~January 2024b~~November 2023b)
- NPS for Electricity Networks Infrastructure (NPS EN-5) (Department for Energy Security & Net Zero, ~~January 2024c~~November 2023c).

1.2.4.2 NPS EN-1 NPS EN-3 include guidance on what matters are to be considered in the assessment including the determination of any mitigation measures required.

1.2.4.3 NPS EN-5 outlines matters to be considered as part of the onshore assessment of electrical networks.

1.2.4.4 A full breakdown of the relevant provisions of each NPS and how each is considered in the assessment of noise and vibration impacts due to the Mona Offshore Wind Project is provided in Table 9.1 of Volume 3, Chapter 9: Noise and ~~vibration~~Vibration of the Environmental Statement.

1.2.5 Planning Policy Wales (Edition 11)

1.2.5.1 Planning Policy Wales (Edition 11) sets out the land use planning policies of the Welsh government to ensure the sustainable delivery of any new development and ensure positive impacts on the social, economic, and cultural well-being of Wales. Key provisions are summarised in ~~Table 1.1~~Table 9.4 below along with details as to how these have been addressed within this assessment.

Table 1.1: Summary of Planning Policy Wales (Edition 11) policy relevant to noise and vibration.

Summary of Planning Policy Wales (Edition 11) provision	How and where considered in the Environmental Statement
Paragraph 5.9.20 highlights the need to minimise impacts of Renewable and Low Carbon infrastructure on local communities, such as noise and air pollution, to safeguard the quality of life for existing and future generations.	The construction phase of the Mona Offshore Wind Project have been assessed using the principles in: • BS 5228-1:2009+A1:2014 – 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise' (British Standards Institution, 2014a) • BS 5228-2:2009+A1:2014 – 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration' (British Standards Institution, 2014b) • DMRB– LA111 – Noise and vibration (Highways England, Transport Scotland, Llwyodraeth Cymry, Department for Infrastructure, 2020). • Calculation of Road Traffic Noise (CRTN) (Department for Transport, 1988) The assessment of the construction and vibration impacts of the offshore and onshore elements of the Mona Offshore Wind Project is presented in section 1.4 and 1.5 of this technical report. The assessment of significant effects is presented in section 9.9 of Volume 3, Chapter 9: Noise and Vibration of the Environmental Statement.
Paragraph 6.7.18 states that early consideration is required to ascertain whether the location and design of proposed development is acceptable where air pollution or noise generating development is likely to affect a protected species or a tranquil urban green space.	Noise impacts on wildlife are assessed in Volume 3, Chapter 3: Onshore ecology of the Environmental Statement and Volume 3, Chapter 4: Onshore and intertidal ornithology of the Environmental Statement.
Paragraph 6.7.21 highlights the need to consider the existing soundscape as part of development strategies prior to determining planning applications.	A baseline sound survey has been undertaken at locations representative of the nearest and most exposed noise-sensitive receptors the Mona Landfall, the Mona Onshore Cable Corridor, and the Mona Onshore Substation. Details are provided in Volume 7, Annex 9.1: Baseline Sound Survey of the Environmental Statement. A summary of the baseline sound levels relevant to the assessment of construction noise impacts is provided in Table 1.6 of this technical report.

1.2.6 Local planning policies

1.2.6.1 The assessment of potential changes to noise and vibration has also been made with consideration to the specific policies set out in:

- Adopted Local Development Plans (LDPs) of Conwy County Borough Council (CCBC) (adopted in October 2013)
- Denbighshire County Council (DCC) (adopted in June 2013).

1.2.6.2 Key provisions are set out in Table 1.2 along with details as to how these have been addressed within the assessment.

Table 1.2: Local Planning Policy of relevant to noise and vibration.

Policy	Key provisions	How and where considered in the Environmental Statement
Conwy County Borough Council: Adopted Local Development Plan (October 2013)		
DP/1	Development will only be permitted where the risks of noise pollution have been accounted for and addressed.	The construction phase of the Mona Offshore Wind Project has been assessed using the principles in: • BS 5228-1:2009+A1:2014 – 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise' (British Standards Institution, 2014a) • BS 5228-2:2009+A1:2014 – 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration' (British Standards Institution, 2014b) • DMRB– LA111 – Noise and vibration (Highways England, Transport Scotland, Llwyodraeth Cymry, Department for Infrastructure, 2020). • Calculation of Road Traffic Noise (CRTN) (Department for Transport, 1988) The assessment of the construction and vibration impacts of the offshore and onshore elements of the Mona Offshore Wind Project is presented in section 1.4 and 1.5 of this technical report. The assessment of significant effects is presented in section 9.9 of Volume 3, Chapter 9: Noise and Vibration of the Environmental Statement.
NTE/1	Conservation of the natural environment by preventing, reducing, or remedying all forms of pollution including air, light, noise, soil, and water.	The construction phase of the Mona Offshore Wind Project has been assessed using the principles in: • BS 5228-1:2009+A1:2014 – 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise' (British Standards Institution, 2014a) • BS 5228-2:2009+A1:2014 – 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration' (British Standards Institution, 2014b) • DMRB– LA111 – Noise and vibration (Highways England, Transport Scotland, Llwyodraeth Cymry, Department for Infrastructure, 2020). • Calculation of Road Traffic Noise (CRTN) (Department for Transport, 1988) The assessment of the construction and vibration impacts of the offshore and onshore elements of the Mona Offshore Wind Project is presented in section 1.4 and 1.5 of this technical report. This assessment accounts for the noise reduction achieved via the implementation of BPM for construction noise and vibration such as localised acoustic screening and acoustic enclosures. Consideration is also given to the percentage of the relevant construction period during which each plant item will be in operation. The impacts have been determined by assuming plant items will be in operation close ~~to the boundary of the construction compounds adjacent~~ to the nearest and most exposed noise and vibration receptors. The assessment of significant effects is presented in section 9.9 of Volume 3, Chapter 9: Noise and Vibration of the Environmental Statement.
Denbighshire County Council: Adopted Local Development Plan (June 2013)		

Policy	Key provisions	How and where considered in the Environmental Statement
RD 1	Development will only be permitted where the development does not unacceptably affect the amenity of local residents by virtue of noise.	The construction phase of the Mona Offshore Wind Project has been assessed using the principles in: • BS 5228-1:2009+A1:2014 – 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise' (British Standards Institution, 2014a) • BS 5228-2:2009+A1:2014 – 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration' (British Standards Institution, 2014b) • DMRB– LA111 – Noise and vibration (Highways England, Transport Scotland, Llwyodraeth Cymry, Department for Infrastructure, 2020). • Calculation of Road Traffic Noise (CRTN) (Department for Transport, 1988) The assessment of the construction and vibration impacts of the offshore and onshore elements of the Mona Offshore Wind Project is presented in section 1.4 and 1.5 of this technical report. The assessment of significant effects is presented in section 9.9 of Volume 3, Chapter 9: Noise and Vibration of the Environmental Statement.
VOE 10	Development proposals which promote the provision of renewable energy technologies may be supported providing they are located so as to minimise visual, noise and amenity impacts and demonstrate no unacceptable impact upon the interests of nature conservation, and wildlife.	The assessment of the construction and vibration impacts of the offshore and onshore elements of the Mona Offshore Wind Project is presented in section 1.4 and 1.5 of this technical report. This assessment accounts for the noise reduction achieved via the implementation of BPM for construction noise and vibration such as localised acoustic screening and acoustic enclosures. Consideration is also given to the percentage of the relevant construction period during which each plant item will be in operation. The impacts have been determined by assuming plant items will be in operation close to the ~~boundary of the construction compounds adjacent to the~~ nearest and most exposed noise and vibration receptors. The assessment of significant effects is presented in section 9.9 of Volume 3, Chapter 9: Noise and Vibration of the Environmental Statement. Noise impacts on wildlife have been assessed in: • Volume 3, Chapter 3: Onshore ecology of the Environmental Statement; and • Volume 3, Chapter 4: Onshore and intertidal ornithology of the Environmental Statement.

1.2.7 British Standard 5228

1.2.7.1 British Standard (BS) comprises two parts:

- BS 5228-1:2009+A1:2014 – '*Code of practice for noise and vibration control on construction and open sites'* – Part 1: Noise
- BS 5228-2:2009+A1:2014 – '*Code of practice for noise and vibration control on construction and open sites'* – Part 2: Vibration.

1.2.7.2 The Standard provides guidance, information, and procedures for the control of noise and vibration from demolition and construction sites. BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014 gained approval as guidance on appropriate methods for minimising noise from construction and open sites under the relevant sections of the CoPA 1974.

1.2.7.3 There are no set standards for the definition of the significance of construction noise effects. However, noise example criteria are provided in BS 5228-1:2009+A1:2014 Annex E and vibration example criteria are provided in BS 5228-2:2009+A1:2014 Annex B.

1.2.7.4 BS 5228-1:2009+A1:2014 provides basic information and recommendations for methods of noise control relating to construction and open sites where work activities/operations generate significant noise levels. It includes sections on:

- Community relations
- Noise and persons on site
- Neighbourhood nuisance
- Project supervision
- The control of noise.

1.2.7.5 The annexes include information on legislative background, noise sources, remedies and their effectiveness (mitigation options); current and historic sound level data for on-site equipment and site activities; significance of noise effects; calculation procedures estimating sound emissions from sites and sound level monitoring; types of piling; and air overpressure.

1.2.7.6 BS 5228-2:2009+A1:2014 contains information and recommendations for basic methods of vibration control arising from construction and open sites where work activities/operations generate significant levels of vibration. It includes sections on community relations; vibration and persons on site; neighbourhood nuisance; project supervision; control of vibration and measurement. BS 5228-2:2009+A1:2014 refers to BS International Organisation for Standardisation (ISO) 4866:2010; BS 7385-2:1993; BS 6472-1:2008, and BS 6472-2:2008 for further advice on the significance of vibration.

1.2.8 Design Manual for Roads and Bridges (DMRB) – LA111 – Noise and vibration

1.2.8.1 The DMRB LA111 (Highways England, Transport Scotland, Llwyodraeth Cymru, Department for Infrastructure, 2020), provides on guidance on methods for assessing noise and vibration from construction traffic.

1.2.8.2 The magnitude of noise impacts is assessed using the predicted change in the Basic Noise Level (BNL) on the closest public roads to a receptor following the introduction of construction traffic.

1.2.8.3 The noise change is calculated using the methods outlined in the Calculation of Road Traffic Noise (CRTN) (Department for Transport, 1988) which considers the following:

- The change in traffic flow due to construction traffic
- Vehicle speed
- The percentage of Heavy Goods Vehicles (HGVs).

1.2.8.4 Paragraph 3.19 of DMRB LA111 states the following:

- ‘*Construction noise and construction traffic noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:*

– *10 or more days or nights in any 15 consecutive days or nights*
– *A total number of days exceeding 40 in any 6 consecutive months*.'

1.2.8.5 Additional guidance is provided for the determination of construction noise impact criteria in terms of the Lowest Observed Adverse Effect Level (LOAEL) and the Significant Observed Adverse Effect Level (SOAEL).

1.2.8.6 Whilst not adopted in Wales, the Planning Practice Guidance – Noise (PPG-N) (Department for Levelling Up, Housing and Communities, 2019) provides a useful definition of these terms. For reference, a summary is provided in Table 1.3 below.

Table 1.3: Description of LOAEL and SOAEL from PPG-N

Perception	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level (NOEL)			
Not noticeable	No effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level (LOAEL)			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

1.2.8.7 Criteria for the impacts of construction noise have been derived based on the guidance detailed in DMRB LA111 in conjunction with BS 5228-1:2009+A1:2014. Full details are provided in section 1.2.9.

1.2.9 Institute of Acoustics (IoA) – A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise – Supplementary Guidance Note 6: Noise Propagation Over Water for On-Shore Wind Turbines

1.2.9.1 ETSU-R-97 (1996) is the UK government's preferred method of assessing the impacts of noise from wind farms for planning purposes. The IoA produced a Good Practice Guide (2013) to supplement the ETSU-R-97 guidance.

1.2.9.2 The assessment procedure in the IoA guidance relates primarily to operational noise from wind turbines and thus isn't directly applicable to this assessment.

1.2.9.3 However, Supplementary Guidance Note 6 (2014) highlights the lack of published research or guidance on wind turbine noise propagation over water.

1.2.9.4 Guidance is presented in the form of a summary of the available published research to aid practitioners in the assessment of noise propagation over water, particularly long distances. The important variables to consider include:

- The distance between source and receiver
- The losses due to geometric divergence of the sound waves including a correction for the tendency of the sound waves to deviate from spherical spreading (a decay in the amplitude with the inverse of the square of the source-receiver separation) to cylindrical spreading (a decay in the amplitude with the inverse of the source-receiver separation) at distances greater than 700 m
- The ground reflections from the water surface
- Atmospheric absorption.

1.2.9.5 The relevant equations and how they've been applied is discussed in more detail in section 1.4.3 below.

1.3 Assessment criteria

~~1.3.1 Overview~~

1.3.1.1 Based on the guidance above, the following impact criteria have been adopted.

1.3.2 Construction noise

1.3.2.1 Impact criteria for construction noise have been determined in accordance with DMRB LA111 and Annex E of BS 5228-1:2009+A1:2014. Table 3.12 of DMRB LA111 provides the following guidance (as summarised in Table 1.4 below) for determining the LOAEL and SOAEL for construction noise and in Table 1.5 for determining the magnitude of impacts.

Table 1.4: Construction time period – LOAEL and SOAEL.

Time Period	LOAEL	SOAEL
Weekdays (7am-7pm) and Saturdays (7am-1pm)	Baseline noise levels, $L_{Aeq,T}$	Threshold level determined as per BS 5228-1:2009+A1:2014.

Time Period	LOAEL	SOAEL
Evening (7pm-11pm) and Weekends (1pm-11pm on Saturdays and 7am-11pm on Sundays)		
Night (11pm-7am)		

Table 1.5: Magnitude of impact and construction noise descriptions.

Magnitude of impact	Construction noise level
High	$L_{Aeq,T} \geq$ SOAEL + 5 dB
Medium	SOAEL $\leq L_{Aeq,T} <$ SOAEL +5 dB
Low	LOAEL $\leq L_{Aeq,T} <$ SOAEL
Negligible	$L_{Aeq,T} <$ LOAEL

1.3.2.2 The threshold levels which quantify the LOAEL and SOAEL have been derived from Example Method 2 in Annex E 3.3 of BS 5228-1:2009+A1:2014 which states the following:

'Noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB L_{Aeq}, from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect.'

1.3.2.3 Section 3 of DMRB LA 111 states provides alternative durations when considering the significance of effect of transient construction works. Since many of the construction works undertaken are indeed likely to be transient in nature, the following durations are considered in the assessment of significant effects:

'Construction noise and construction traffic noise shall constitute a significant effect where it is determined that a major or moderate magnitude of impact will occur for a duration exceeding:

1) 10 or more days in any 15 consecutive days or nights;

2) a total number of days exceeding 40 in any 6 consecutive months'

1.3.2.4 Given the low ambient sound climate in the area surrounding the Mona Onshore Development Area, the lower cut-off values above provide the SOAEL against which construction noise impacts will be assessed.

1.3.2.5 The impact criteria for receptors near the Mona Landfall, along the Onshore Cable Corridor, and around the Onshore Substation are presented in Table 1.6 below. Full details of the baseline sound survey positions and results can be found in Volume 7, Annex 9.1: Baseline ~~Noise~~Sound Survey of the Environmental Statement.

Table 1.6: Construction noise criteria

Measurement Position		LOAEL (dB)			SOAEL (dB)		
		Day $L_{Aeq,12h}$	Evening $L_{Aeq,4h}$	Night $L_{Aeq,8h}$	Day $L_{Aeq,12h}$	Evening $L_{Aeq,4h}$	Night $L_{Aeq,8h}$
Landfall	LT1	52	46	42	65	55	45
	LT2	53	50	46	65	55	45
Onshore Cable Corridor	LT9	44	36	35	65	55	45
	LT10	41	40	34	65	55	45
	LT11	48	40	38	65	55	45
	LT12	47	45	43	65	55	45
	LT13	39	37	36	65	55	45
	LT14	48	47	46	65	55	50
	LT15	40	39	37	65	55	45
	LT16	46	43	38	65	55	45
	LT17	48	38	37	65	55	45
	LT18	40	35	34	65	55	45
	LT19	47	39	38	65	55	45
Onshore Substation	LT20	43	42	37	65	55	45
	LT3	44	39	36	65	55	45
	LT4	45	41	40	65	55	45
	LT5	46	40	37	65	55	45
	LT6	45	41	38	65	55	45
	LT7	44	40	35	65	55	45
	LT8	43	39	36	65	55	45

1.3.3 Construction vibration

1.3.3.1 Impact criteria for vibration from construction have been identified based on guidance provided in DMRB LA111. The outline criteria (set out in Table 1.7) for peak particle velocity (PPV) can be used to identify potential significant impacts on nearby receptors.

Table 1.7: Construction vibration criteria.

(1) Vibration at these levels is unlikely to be tolerable for more than a very brief period and major effects could occur below these levels, particularly where impacts occur for longer periods.

Magnitude of impact	Vibration level, Peak Particle Velocity (PPV), mm/s
High	1 ≤ PPV < 10
Medium	0.3 ≤ PPV < 1
Low	PPV < 0.3
Negligible	1 ≤ PPV < 10

1.3.3.2 As with construction noise, the durations outlined in paragraph 1.3.2.3 above are considered in the assessment of significant effects as per in Section 3 of DMRB LA 111.

1.3.4 Construction traffic noise

1.3.4.1 Impact criteria for these changes have been obtained from the guidance in DMRB LA 111 and are presented in Table 1.8 below.

Table 1.8: Construction traffic criteria.

Magnitude of impact	Increase in Basic Noise Level (BNL) of closest public road used for construction traffic (dB)
High	BNL ≥ 5
Medium	3 ≤ BNL < 5
Low	1 ≤ BNL < 3
Negligible	BNL < 1

1.4 Offshore airborne noise assessment

1.4.1 Propagation model

1.4.1.1 Offshore construction activities include impact driven or drilled piled jacket foundations for the wind turbines and Offshore Substation Platforms (OSPs). The equipment required has high noise emission levels and the low frequency elements of the construction noise have the potential to travel long distances due to the acoustically reflective sea surface.

1.4.1.2 There are many outdoor sound propagation models available for the prediction of noise levels at receptors. Typically, these models account for losses due to physical effects such as geometrical divergence, atmospheric absorption, ground attenuation, reflections from surfaces, and barrier attenuation where each is appropriate.

1.4.1.3 However, long-range sound propagation from a noise source out at sea is likely to be influenced more greatly by meteorological effects such as the vertical temperature and velocity profiles which result in the downward refraction of sound waves. Prediction methods such as the Nord2000 and Harmonoise P2P model include meteorological corrections, however they can be limited in the approximation methods required to characterise these propagation effects. These standards are also primarily intended for use in sound propagation over land.

1.4.1.4 As an alternative, the parabolic wave equation is frequently adopted for long-range sound propagation since the surface impedance and roughness, sound speed profile, and atmospheric turbulence can all be accounted for in the calculations.

1.4.1.5 A numerical model has been developed which applies finite difference discretisation to the 2-Dimensional Crank-Nicholson Parabolic Equation (CNPE) shown below along with a brief definition for each term:

$$\frac{\partial \varphi}{\partial x} = i\left[\frac{1}{2k_0}\left(\frac{\partial^2}{\partial z^2} + (k^2 - k_0^2)\right)\right] \quad (1)$$

- k_0 and k are the reference wavenumber and wavenumber, respectively, defined as the number of wave cycles within a given distance
- $\varphi = \varphi(x, z)$ is the sound pressure level at a position (x, z) above the sea surface.

1.4.1.6 The numerical model developed has the benefit of increased computational efficiency by not requiring the discretisation of the sea surface and instead, defining the surface as a flat, totally reflective layer. Other key parameters accounted for include:

- A vertical sound speed profile which allows for the inclusion of downward sound refraction which bends the sound waves toward the receiver thereby presenting the maximum design scenario
- An effective sound speed which varies with temperature which is influential out at sea
- Atmospheric turbulence due to random fluctuations in wind speed which can result in higher sound pressure levels than expected.

1.4.1.7 Equation 1 has been solved numerically using finite difference methods to derive the transmission loss at terrestrial receptors at a height of 4.5 m, equivalent to the height of a first-floor window.

1.4.2 Source Levels

1.4.2.1 Appendix A of Volume 5, Annex 3.1: Underwater sound technical report of the Environmental Statement contains details of numerical modelling undertaken to estimate the excitation force of the hammer, the pile, and sound propagation in the water column. This detailed modelling was necessary since at the time the study was undertaken, the Maximum Design Scenario (MDS) was represented by an impact hammer with an energy of around 5,500 kJ. The MDS is now represented by the following hammer energies:

- OSPs and 16 wind turbine locations: 4,400 kJ
- 48 wind turbine locations: 3,000 kJ.

1.4.2.2 Due to the differences in the ways in which sound propagates in water compared to air, there is no direct relationship between the source noise levels determined for underwater sound propagation and the airborne source noise levels due to the impact hammer.

1.4.2.3 An estimation of the sound source levels has been using the radial velocity impulse response output by the numerical modelling undertaken by Seiche Ltd.

1.4.2.4 A Fast Fourier Transform (FFT) has been computed of the radial velocity response to obtain a frequency spectrum for the airborne sound power levels of the impact hammer. Extrapolation of the results provided by Seiche Ltd. show each strike to have an impulse response length of around 180 milliseconds (ms). Assuming up to 80 strikes per minute, the results of the analysis yield an airborne sound power level of for each impact hammer energy as presented in Table 1.9 below.

Table 1.9: Estimated sound power spectrum for the offshore piling activities.

Source	Sound power level (dB) at 1/1-octave band centre frequency (Hz)									dB(A)
	31.5	63	125	250	500	1k	2k	4k	8k	
Impact Piling Hammer (4,400 kJ)	122	133	146	138	127	124	120	114	111	**134**
Impact Piling Hammer (3,000 kJ)	121	131	144	136	125	122	118	112	109	**132**

1.4.3 Methodology

1.4.3.1 The MDS is represented by impact piling for the foundations of the Mona Offshore Wind Turbines and OPS. The following scenarios have been considered:

- Piled Jacket foundations for the wind turbines and OSP foundations using an impact hammer with a maximum energy of 4,400 kJ for up to 6 hrs 21 minutes
- Pile Jacket foundations for the wind turbine foundations using an impact hammer with maximum hammer energy of 3,000 kJ for up to 6 hrs and 21 minutes at two concurrent locations up to 15 km apart.

1.4.3.2 The parameters forming the basis of the maximum design scenario are presented in Table 1.10 below.

Table 1.10: Maximum design scenario for impact piling.

Parameter	Maximum design scenario
Pile diameter (m)	5
Penetration depth (m)	75
Hammer energy (kJ) (OSPs and 16x wind turbine locations)/(48x wind turbine locations)	4,400/3,000
Number of strikes	26,690
Total duration (mins)/(hours)	381/6.35
Number of concurrent events	2
Minimum spacing between turbines/concurrent events (m)	15,000

1.4.3.3 The piling process involves the following:

- **Initiation:** The initial strikes of the pile starting at as low a strike-rate as possible
- **Soft start:** Increasing the strike rate to approximately 10% of the maximum hammer energy
- **Standard operation:** The strike rate is increased to the standard operational value.

1.4.3.4 The maximum design scenarios for the impact piling schedule is presented in Table 1.11 and Table 1.12 below.

Table 1.11: Maximum design scenario for impact piling schedule (OSPs and 16 wind turbine locations).

Stage	Duration (mins)	Hammer energy (kJ)	Strike rate (per minute)	Number of strikes	Description
Initiation	10	320	1	10	Preparing the piles (alignment etc.) with 1 strike every 90 seconds.
Soft start	20	440	10	200	Soft start at low hammer energy
Ramp up	20	440-4,400	15	300	Increase in hammer energy after soft start
Maximum power	331	4,400	80	26,480	Driving piles at maximum hammer energy

Table 1.12: Maximum design scenario for impact piling schedule (48 wind turbine locations).

Stage	Duration (mins)	Hammer energy (kJ)	Strike rate (per minute)	Number of strikes	Description
Initiation	10	320	1	10	Preparing the piles (alignment etc.) with 1 strike every 90 seconds.
Soft start	20	320	10	200	Soft start at low hammer energy
Ramp up	20	320-3,000	15	300	Increase in hammer energy after soft start
Maximum power	331	3,000	80	26,480	Driving piles at maximum hammer energy

1.4.3.5 Numerical modelling has been used to predict noise impacts in the frequency range of 31.5 Hz and 250 Hz. Beyond 250 Hz, the number of points per element required to undertake the calculations, and thereby the computational time, increases significantly. In the frequency range defined, the attenuation effects due to air absorption are less. Moreover, the CNPE method shows that the attenuation rate is slower under downward refraction and the sound propagates cylindrically and reduces at a rate proportional to inverse of the distance. This is slower than the rate of attenuation for a point source which reduces at a rate proportional to the inverse of the square of the distance.

1.4.3.6 Indicative calculations of the noise impacts in the frequency range between 500 Hz and 8 kHz have been undertaken in line with the guidance in the IoA's Supplementary Guidance Note 6, as discussed in section 1.2.9 above. This equation does not fully

account for the effects of cylindrical propagation due to downward refraction but does account for air absorption which is the more prevalent propagation losses associated with this frequency range.

1.4.3.7 The guidance provides the following equation to calculate the variation in noise level L_s from wind turbines with distance r from the source, also accounting for the frequency dependent absorption coefficient ΔL_a as defined in ISO 9613-2:1996.

$$L = L_s - 20\log_{10}(r) - 11 + 3 - \Delta L_a + 10\log_{10}\left(\frac{r}{700}\right) \quad (2)$$

1.4.3.8 Indicative calculations of the noise impacts have been undertaken in line with the guidance in ISO 9613-2:1996 in downwind conditions at various distances to assess where the impacts change. A temperature of 15°C and relative humidity of 15% have been assumed to calculate the atmospheric attenuation coefficients. The -11 dB term in equation 2 above relates to the losses associated with a wave spreading spherically away from the source with no influence from any reflecting surfaces. The +3 dB term in equation 2 accounts for the increase in sound level due to constructive interference between the direct and reflected waves off a totally reflecting surface.

1.4.4 Results

1.4.4.1 The results show that no high impacts are predicted at distances greater than 4 km from the boundary of the Mona Array Area, with no medium impacts beyond 9 km.

1.4.4.2 The nearest onshore receptors along the North Wales coast are approximately 30 km from the boundary of the Mona Array Area and thus impacts due to offshore construction are predicted to be negligible overall.

1.5 Onshore construction noise and vibration assessment

1.5.1 Methodology

Construction noise

1.5.1.1 The construction noise impacts have been predicted based upon a construction plant list for each of the various activities required within the Mona Onshore Development Area. The full list of plant for each scenario is presented in Appendix A. The source data presented in Appendix A has been corrected for the 'on-time' which has been defined as the proportion of the day, evening, or night-time period for which the plant is likely to be in operation.

1.5.1.2 The construction working hours proposed are 7am to 7pm from Monday to Saturday. As such, the assessment has been undertaken with reference to the Saturday criteria for daytime only activities since receptors are likely to be more sensitive on weekends. Construction noise impacts due to trenchless techniques have been assessed against the night-time criteria due to the potential for night-time working.

1.5.1.3 Mitigation measures will be adopted via the implementation of a construction noise and vibration plan (see the Outline Construction Nosie and Vibration Plan (Document reference J 26.3)). Table B.1 in Annex B of BS 5228-1:2009+A1:2014 outlines typical losses associated with construction noise mitigation measures. A summary is provided in Table 1.13 below.

Table 1.13: Noise reduction levels for typical construction plant mitigation.

Mitigation measure	Indicative reduction in noise level	Justification/source
Localised acoustic screening.	Up to 10 dB	The effectiveness of an acoustic barrier is dependent upon the difference in path length between the sound travelling the shortest path between source and receiver and the increased path over the top of a barrier. Section F.2.2.2 of BS 5228:2009+A1:2014 states: '*if there is a barrier or other topographic feature between the source and the receiving position, assume an approximate attenuation of 5 dB when the top of the plant is just visible to the receiver over the noise barrier and of 10 dB when the noise screen completely hides the sources from the receiver.'*
Enhanced sound reduction equipment on diesel or petrol engines.	Between 5 and 10 dB	Table B.1, Annex B, BS 5228 - 1:2009+A1:2014
Ventilated enclosures around breakers and rock drills.	Up to 20 dB	Table B.1, Annex B, BS 5228 - 1:2009+A1:2014
Ventilated acoustic shed for the use of rotary drills and boring plant.	Up to 15 dB	Table B.1, Annex B, BS 5228 - 1:2009+A1:2014
Electric or hybrid construction plant.	Variable.	The use of electrically powered construction equipment would reduce the noise emitted from engines and exhausts. However, the actual noise reduction is dependent upon the equipment used.

1.5.1.4 Other effective mitigation measures which may be used as alternative measures or in conjunction with the measures outlined in Table 1.13 above include:

- Limiting the use of loud equipment during the night-time
- Increasing the distance between concurrent construction works
- Positioning plant items away from noise-sensitive receptors
- Avoiding the simultaneous operation of loud plant items, where possible.

1.5.1.5 Two methodologies have been adopted to determine the potential noise impacts depending on whether the activity is likely to be concentrated within a single area or spread along sections of the Onshore Cable Corridor, as detailed below.

Construction activities concentrated within one area

1.5.1.6 Construction activities likely to be concentrated within one area have been modelled using 3D acoustic modelling software (SoundPLAN v8.2). The works assessed using this method include:~~The construction plant has been assumed to be situated within the temporary construction compounds and the sources have been modelled along the boundary closest to receptors to represent the maximum design scenario with an average height of 2 m above local ground level.~~

~~1.5.1.7 An acoustic barrier of height 2.4 m has been included in the model around the perimeter of the construction compounds. This barrier is likely to take the form of a spoil bund constructed of the material removed during construction. The works assessed using this method include:~~

- Establishing access and temporary construction compounds
- Transition Joint Bay (TJB) and joint bay excavation
- TJB and joint bay base construction
- Jointing of cables in TJBs and joint bays
- Backfill over TJB and joint bays
- Trenchless technique compounds entry/exit pits
- Onshore Substation construction:
  - Groundworks
  - Building foundation works
  - Building fabrication and plant installation.

1.5.1.7 The locations of construction plant associated with these activities in the model are as follows:

- Establishing access and temporary construction compounds – construction plant situated in temporary construction compound areas
- Transition Joint Bay construction at Landfall – construction plant situated in proposed landfall compound within Work No 10
- Joint bay construction along Onshore Cable Corridor –construction plant situated 10 m offset from the Onshore Cable Corridor boundary. Joint bay locations have been included in the model where there is the potential for these to be situated close to noise sensitive receptors along the Onshore Cable Corridor
- Trenchless Techniques – construction plant situated within all potential trenchless techniques compound locations (Volume 5, Annex 4.3: Onshore Crossing Schedule of the ES). Both the “trenchless” and “trenching or trenchless” locations have been included in the modelling.
- Onshore Substation construction: construction plant situated in Onshore Substation platform area within Work No 22

Transient construction activities along the Mona Onshore Cable Corridor

1.5.1.8 There are some construction activities which are likely to be more transient in nature than those listed above and thus spread along sections of the Onshore Cable Corridor. It is not known exactly where these works will occur at any given time and, as such, there would be a high degree of uncertainty in the output of any 3D acoustic model of the construction noise impacts.

1.5.1.9 An alternative method has been adopted whereby any construction activities which are likely to be transient and spread along the sections of the Onshore Cable Corridor have been predicted at various distances to determine where the impact magnitudes change within the proposed noise and vibration study areas.

1.5.1.10 Subsequent analysis of the number of residential receptors where a significant impact is predicted has been undertaken using Ordnance Survey (OS) Address Base Plus data and Geographic Information System (GIS) software. The impact magnitude bands are inserted as spatial buffers around the Mona Onshore Development Area at the distance at which the impact magnitude changes. The number of receptors within each band is then calculated to determine where effects may occur.

1.5.1.11 The works assessed using this method include:

- Site ~~preparation~~clearance
  - Fencing
  - Topsoil strip and bunding.
- Haul road construction
- Trench excavation and duct installation
- Trench backfill
- Trench route and topsoil reinstatement
- Haul road removal.

Construction vibration

1.5.1.12 The use of vibratory rollers for the dynamic compaction during the construction of the haul road, construction compounds, and Onshore Substation platform has been assessed to determine the likelihood of adverse impacts on nearby receptors.

1.5.1.13 The assessment has been undertaken with reference to the guidance in Table E.1 of BS 5228-2:2009+A1:2014. This guidance provides empirically derived formula for the prediction of vibration impacts arising from mechanised construction works. During start up and run down, the resultant PPV v_{res} may be calculated using the following equation:

$$v_{res} = k_t\sqrt{n_d}\left[\frac{A}{x + L_d}\right]^{1.5} \quad (3)$$

1.5.1.14 The impacts with distance during steady state vibratory compaction works may be predicted using the following:

$$v_{res} = k_s\sqrt{n_d}\left[\frac{A^{1.5}}{(x + L_d)^{1.3}}\right] \quad (4)$$

- v_{res}: PPV (mm/s)
- k_t and k_s: scaling factors associated with the probability of exceedance
- n_d: number of vibrating drums
- A: maximum amplitude of drum vibration (mm)
- x: source-receiver separation distance along the ground surface (m)
- L_d: vibrating roller drum width (m).

1.5.1.15 It is understood that vibratory piling may be required for the installation of the trenchless technique entry and exit pits, as well as for the construction of the Mona Onshore Substation platform. The potential vibration impacts have been predicted based on the guidance in Table E.1 of BS 5228-2:2009+A1:2014 which provides the following equation for the prediction of vibration impacts with distance due to vibratory piling:

$$v_{res} = \frac{k_v}{x^{\delta}} \quad (4)$$

- v_{res}: PPV (mm/s)
- k_v: scaling factors associated with the probability of exceedance
- x: source-receiver separation distance along the ground surface (m)
- δ: dimensionless empirical constant
  - Start up and run down: δ = 1.2
  - All operations: δ = 1.3
  - Steady state operations: δ = 1.4.

Construction traffic

1.5.1.16 Indicative baseline traffic flows on key highway links within the traffic and transport study area are presented in Volume 3, Chapter 8: Traffic and Transport of the Environmental Statement.

1.5.1.17 These initial figures have been predicted using a mixture of site-specific surveys, comprising traffic counts over a two-week period, and detailed desktop reviews of existing studies and datasets.

1.5.1.18 The change in the BNL due to the introduction of addition vehicles onto local highways as part of the construction of the Mona Offshore Wind Project has been calculated using the method outlined in CRTN, as detailed in paragraph 1.2.8.3.

1.5.1.19 The 18-hour BNL $L_{10.18h}$ is calculated using the linear equation for Chart 3 of CRTN reproduced in equation 2 below. This equation is empirically and depends upon the traffic flow Q at a mean speed of V = 75 km/h assuming no HGVs.

$$L_{10,18hr} = 29.1 + 10\log_{10} Q \quad (5)$$

1.5.1.20 This BNL is corrected adjusted by a correction C to account for variations in mean traffic speed V and the percentage of HGVs p using the empirically derived equation in Chart 4 of CRTN, as given by equation 6 below.

$$C = 33\log_{10}\left(V + 40 + \frac{500}{V}\right) + 10\log_{10}\left(1 + \frac{5p}{V}\right) - 68.8 \quad (6)$$

1.5.2 Results

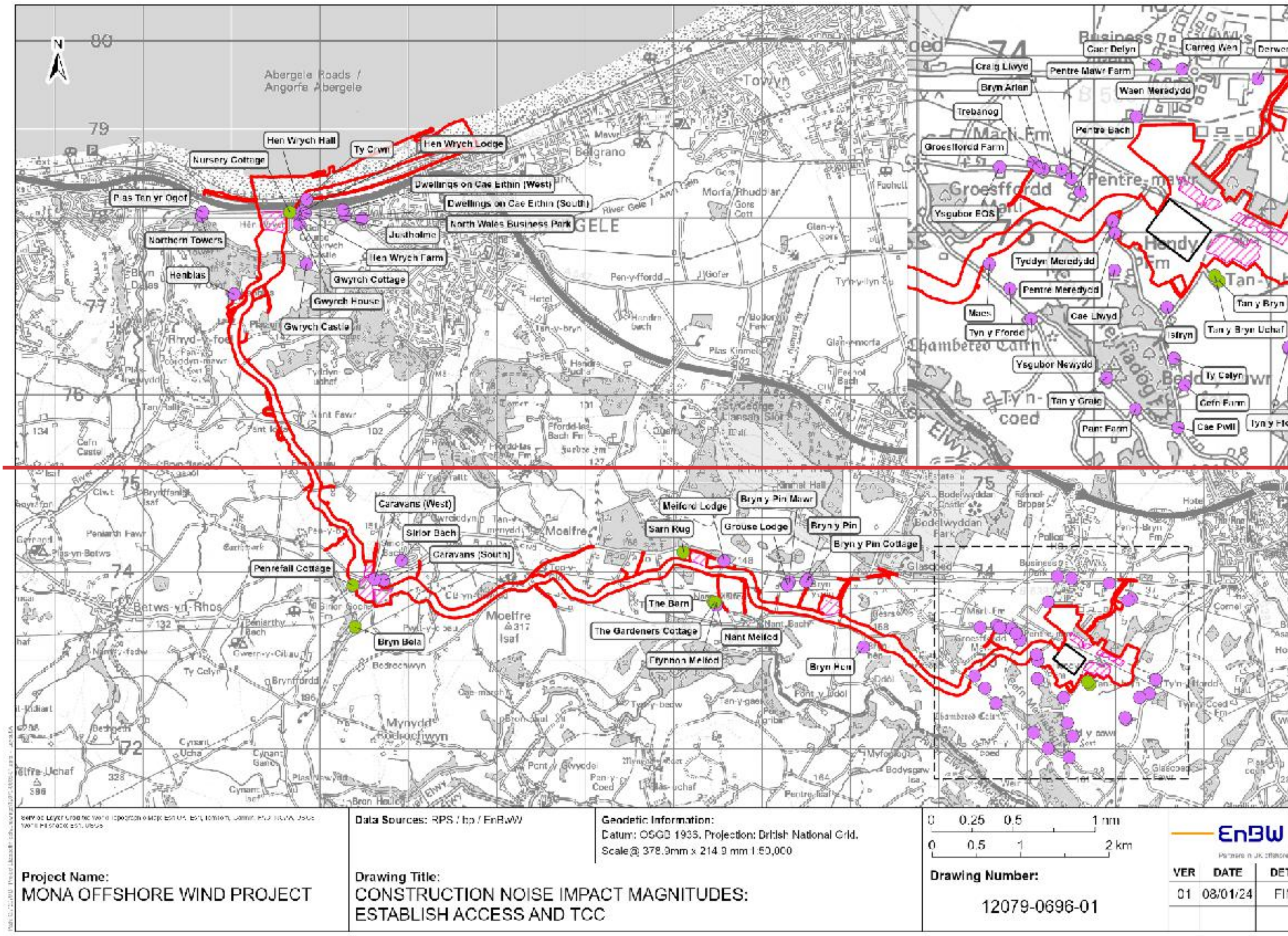
Construction noise

1.5.2.1 The results of the 3D acoustic modelling are presented in Figure 1-6 to Figure 1-27 below, with full results tabulated in Appendix B. The relevant construction periods are as follows:

- Day:
  - 7am to 7pm on weekdays
  - 7am to 1pm on Saturdays
- Evening and weekends:
  - 7pm to 11pm on weekdays
  - 1pm to 11pm on Saturdays
  - 7am to 11pm on Sundays
- Night:
  - 11pm to 7am every day

1.5.2.2 It is understood that only trenchless techniques at Landfall and Gwyrch Wood have the potential to require night-time working. However, it is further understood that generators and dewatering pumps may be required to operate 24/7 at all joint bay locations and thus an assessment has been undertaken of ~~these two items in operation~~dewatering of joint bay excavations during the night-time period.

~~1.5.2.3 The results of the assessment show that low impacts are predicted when the measures outlined in Table 1.13 are adopted when undertaking the works.~~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Ty Crwn
Hen Wrych Lodge
Nursery Cottage
Plas Tan yr Ogof
Dwellings on Cae Eithin (West)
Dwellings on Cae Eithin (South)
North Wales Business Park
Northern Towers
Jasthelme
Hen Wrych Farm
Henblas
Gwrych Cottage
Gwrych House
Gwrych Castle
Caravans (West)
Sirior Bach
Caravans (South)
Penrefail Cottage
Bryn Bela
Meifod Lodge
Bryn y Pin Mawr
Sarn Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
The Barn
The Gardeners Cottage
Nant Meifod
Ffynnon Meifod
Bryn Hen
Craig Llwyd
Caer Delyn
Carreg Wen
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Trebanog
Pentre Bach
Groesffordd Farm
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Maes
Cae Llwyd
Tyn y Fforde
Tan y Bryn
Tan y Bryn Uchaf
Ysgubor Newydd
Ty Celyn
Tan y Graig
Cefn Farm
Pant Farm
Cae Pwll
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Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
ESTABLISH ACCESS AND TCC
Drawing Number:
12079-0696-01
VER
DATE
01
08/01/24

~~Figure 1.6~~

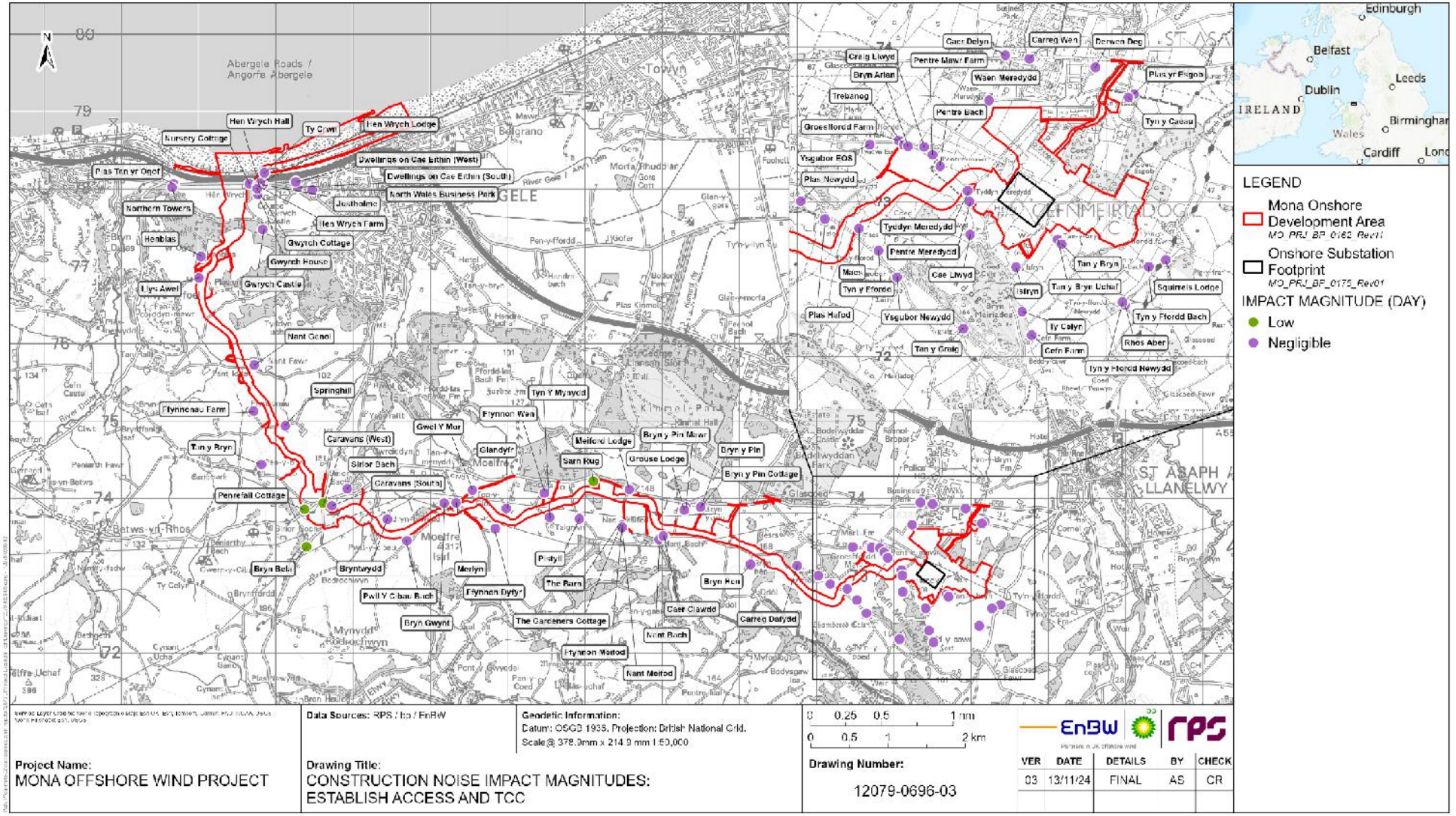
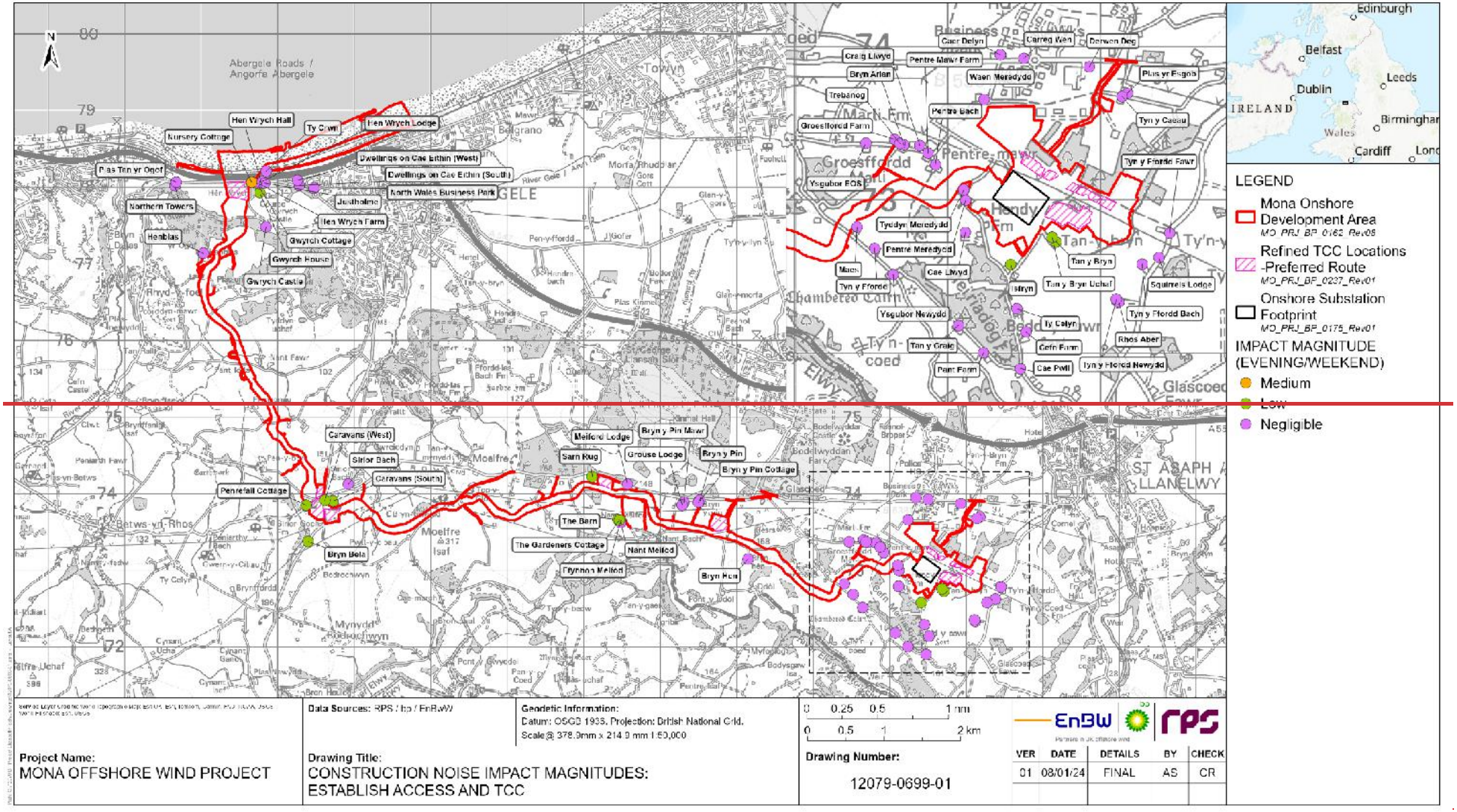


Figure 1-6: Daytime construction noise impact magnitudes: Establish access and TCC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Hen Wrych Hall
Ty Gwyn
Hen Wrych Lodge
Nursery Cottage
Dwellings on Cae Erbin (West)
Dwellings on Cae Erbin (South)
Plas Tan yr Ogof
North Wales Business Park
Northern Towers
Justholme
Hen Wrych Farm
Henblas
Gwrych Cottage
Gwrych House
Gwrych Castle
Caravans (West)
Meifod Lodge
Bryn y Pin Mawr
Sirior Bach
Sam Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
Caravans (South)
Penrefail Cottage
The Barn
The Gardeners Cottage
Nant Meifod
Plymton Meifod
Bryn Bela
Bryn Hir
Caer Delyn
Carreg Wen
Derwen Deg
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Plas yr Eglwys
Trebanog
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Fforde Fawr
Ysgubor FOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Tyn y Fforde
Istryn
Tan y Bryn Uchaf
Squirrels Lodge
Ysgubor Newydd
Ty Celyn
Tyn y Fforde Bach
Tan y Graig
Cefn Farm
Rhos Aber
Pant Farm
Cae Pwll
Tyn y Fforde Newydd
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
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Medium
Low
Negligible
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Geodetic Information:
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Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES: ESTABLISH ACCESS AND TCC
Drawing Number:
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VER 01
DATE 08/01/24
DETAILS FINAL
BY AS
CHECK CR

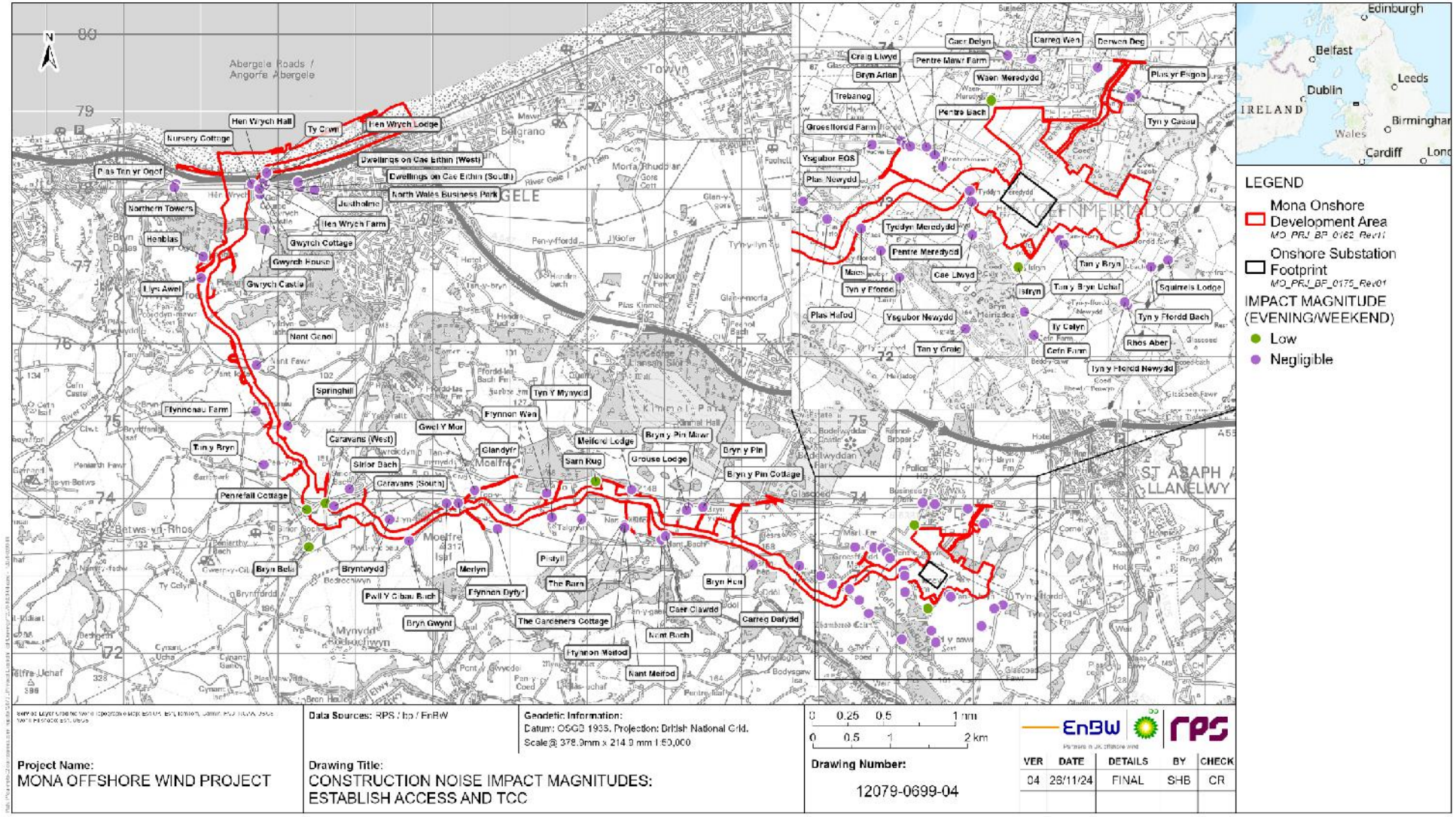
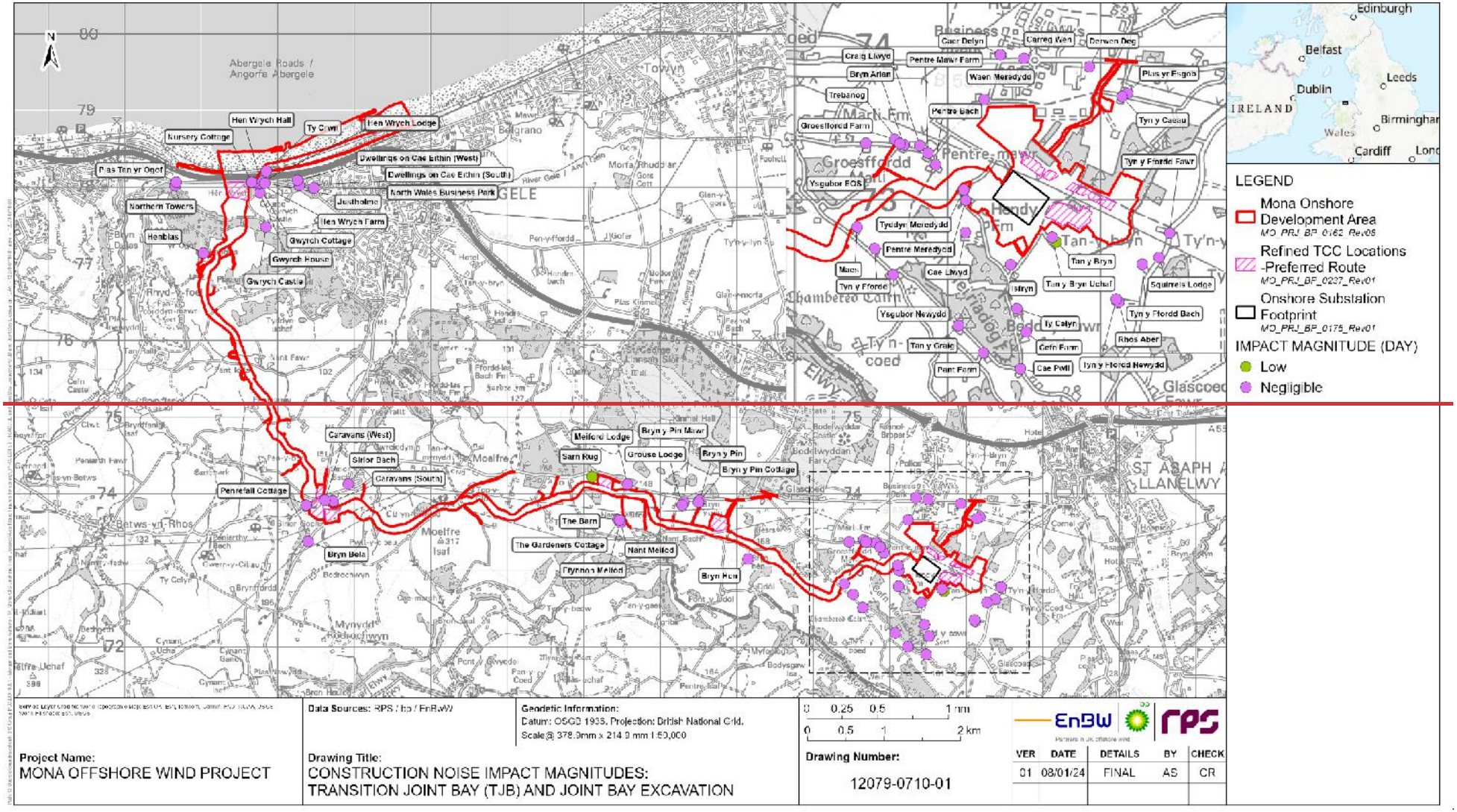


Figure 1-7: Evening/weekend construction noise impact magnitudes: Establish access and TCC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Hen Wrych Hall
Ty Gwyn
Hen Wrych Lodge
Nursery Cottage
Dwellings on Cae Erbin (West)
Dwellings on Cae Erbin (South)
Plas Tan yr Ogof
North Wales Business Park
Northern Towers
Justholme
Hen Wrych Farm
Henblas
Gwrych Cottage
Gwrych House
Gwrych Castle
Caravans (West)
Meifod Lodge
Bryn y Pin Mawr
Sarn Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
Sirior Bach
Caravans (South)
Penrefail Cottage
The Barn
The Gardeners Cottage
Nant Meifod
Ffynnon Meifod
Bryn Bela
Bryn Hir
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Trebanog
Pentre Bach
Groesffordd Farm
Ysgubor FOS
Tyddyn Meredydd
Pentre Meredydd
Maes
Tyn y Fforde
Cae Llwyd
Ysgubor Newydd
Tan y Graig
Paint Farm
Carreg Wen
Derwen Deg
Waen Meredydd
Plas yr Eglwys
Tyn y Caeau
Tyn y Fforde Fawr
Tan y Bryn
Tan y Bryn Uchaf
Squirrels Lodge
Tyn y Fforde Bach
Rhos Aber
Tyn y Fforde Newydd
Cae Pwll
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (DAY)
Low
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
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Scale@ 378.9mm x 214.9 mm 1:50,000
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0 0.5 1 2 km
Project Name:
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Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
TRANSITION JOINT BAY (TJB) AND JOINT BAY EXCAVATION
Drawing Number:
12079-0710-01
VER 01
DATE 08/01/24
DETAILS FINAL
BY AS
CHECK CR

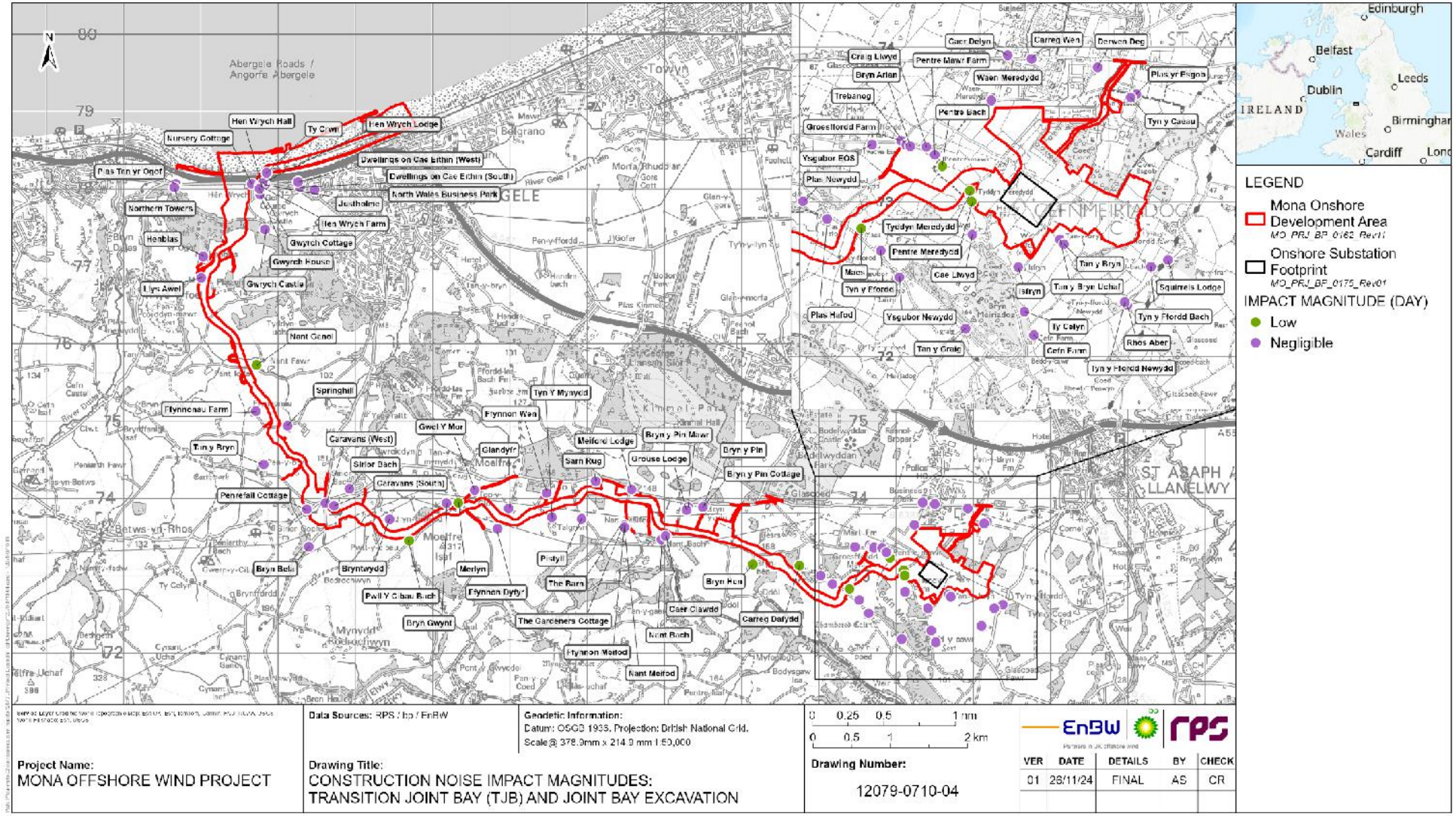
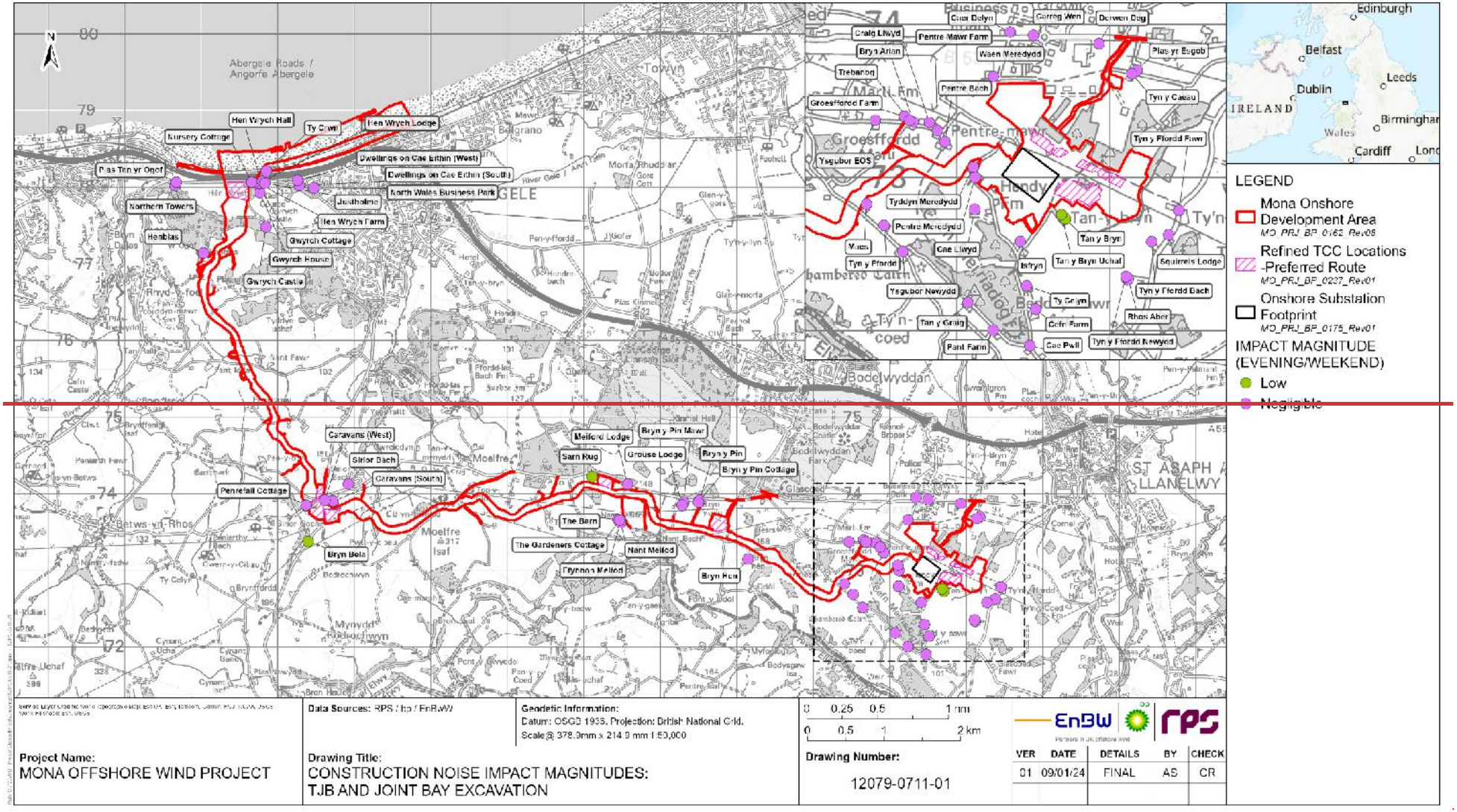


Figure 1-8: Daytime construction noise impact magnitudes: TJB and joint bay excavation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Hen Wrych Hall
Ty Gwyn
Hen Wrych Lodge
Nursery Cottage
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Dwellings on Cae Erthin (South)
Plas Tan yr Ogof
North Wales Business Park
Northern Towers
Justholme
Hen Wrych Farm
Henblas
Gwrych Cottage
Gwrych House
Gwrych Castle
Caravans (West)
Meiford Lodge
Bryn y Pin Mawr
Sirior Bach
Sam Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
Caravans (South)
Penrefail Cottage
The Barn
The Gardeners Cottage
Nant Meiled
Ffynnon Meiled
Bryn Bela
Bryn Hen
Cae Dolyn
Correg Wen
Derwen Deg
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Plas yr Esgob
Trebanog
Pentre Bach
Groesffordd Farm
Tyn y Caeau
Ysgubor EOS
Tyn y Ffordd Fawr
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Cae Llwyd
Tyn y Ffordd
Isfryn
Tan y Bryn Uchaf
Squirrels Lodge
Ysgubor Newydd
Tyn y Ffordd Bach
Ty Golyn
Tan y Graig
Cefn Farm
Rhos Aber
Pant Farm
Cae Pwll
Tyn y Ffordd Newydd
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (EVENING/WEEKEND)
Low
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
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Scale@ 378.9mm x 214.9 mm 1:50,000
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0 0.5 1 2 km
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Drawing Title:
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Drawing Number:
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VER 01
DATE 09/01/24
DETAILS FINAL
BY AS
CHECK CR

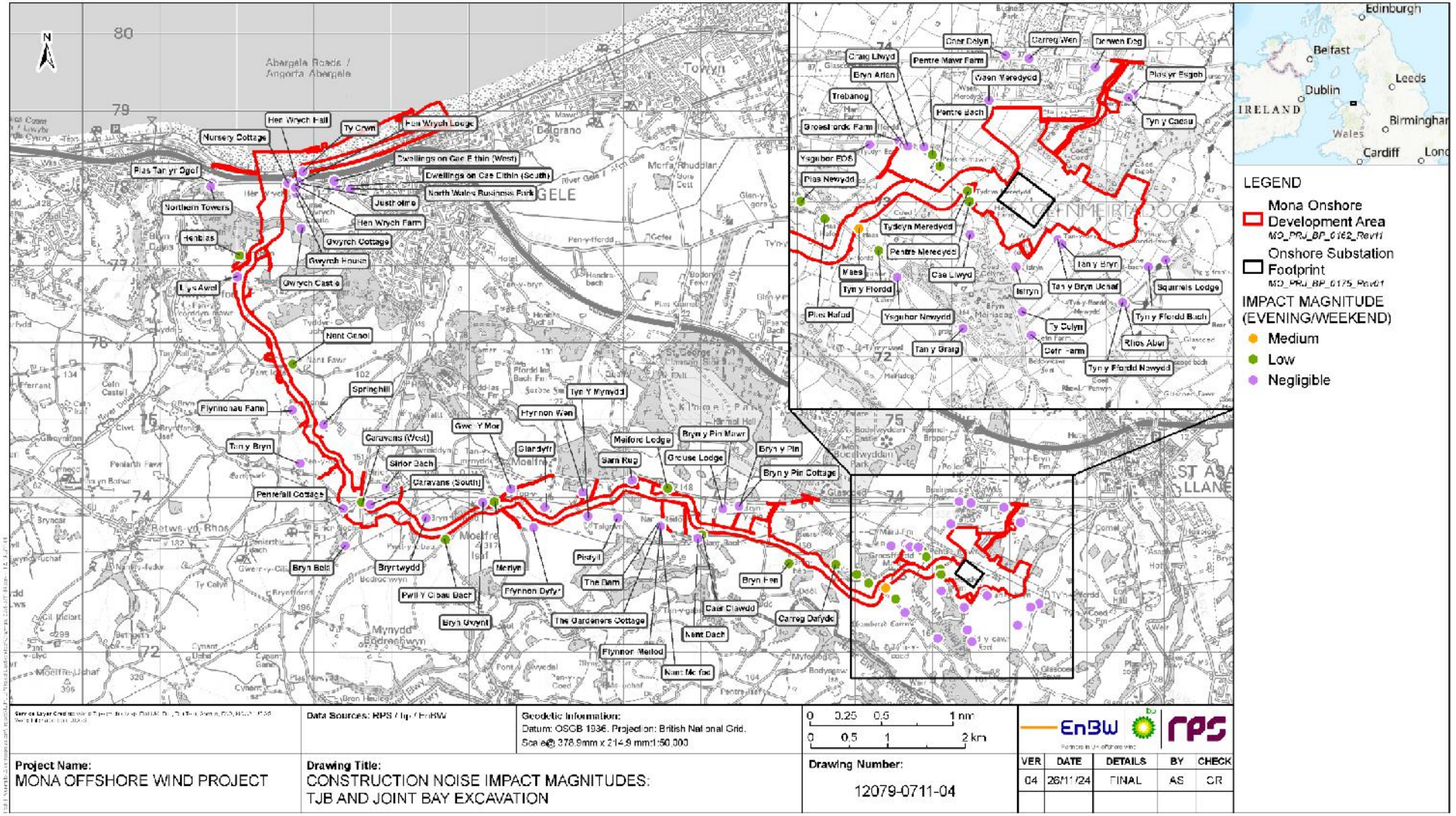
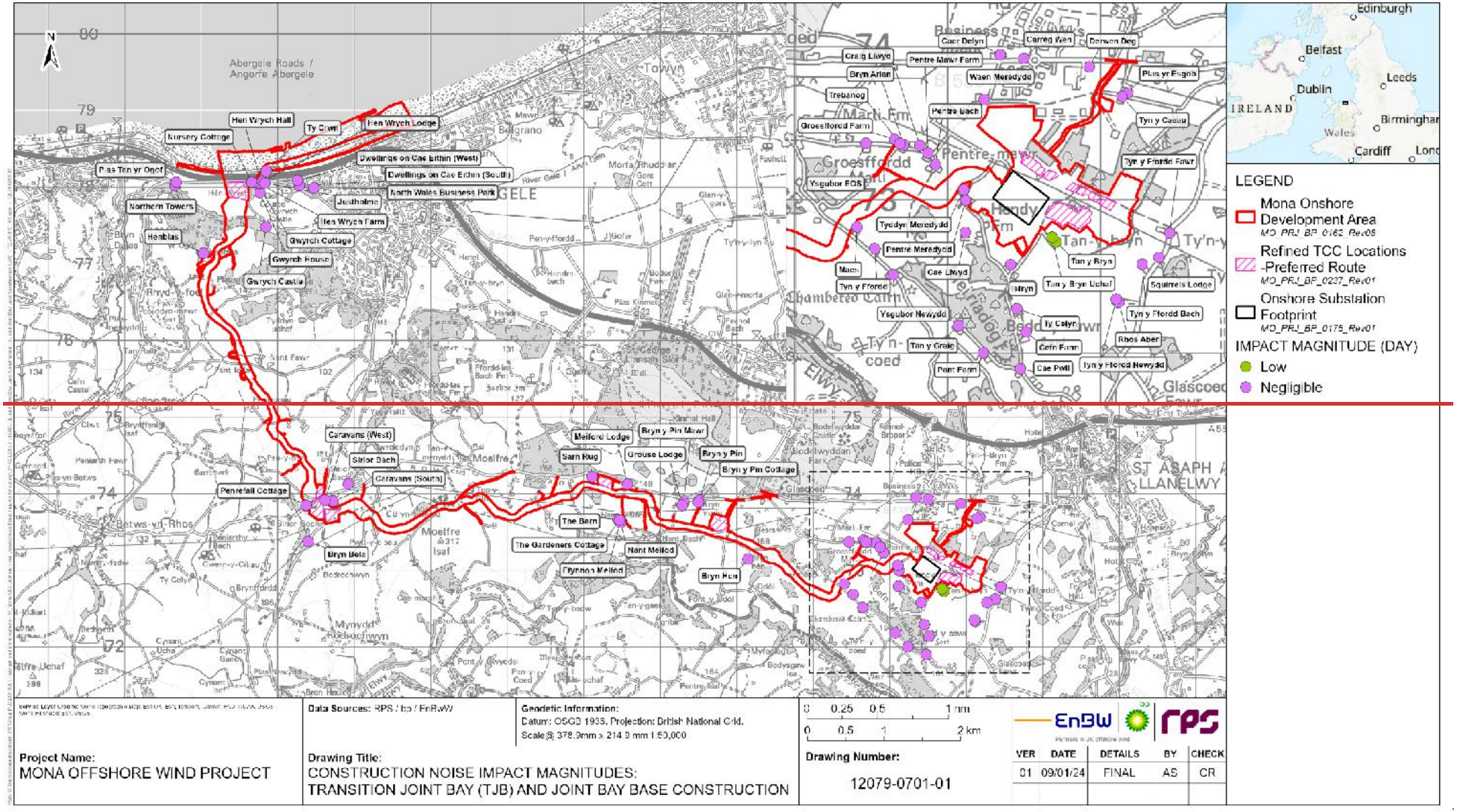


Figure 1-9: Evening/weekend construction noise impact magnitudes: TJB and joint bay excavation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Ty Gwyn
Hen Wrych Lodge
Nursery Cottage
Dwellings on Cae Erbin (West)
Dwellings on Cae Erbin (South)
Plas Tan yr Ogof
North Wales Business Park
Northern Towers
Justholme
Hen Wrych Farm
Henblas
Gwrych Cottage
Gwrych House
Gwrych Castle
Caravans (West)
Meifod Lodge
Bryn y Pin Mawr
Sirior Bach
Sam Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
Caravans (South)
Penrefail Cottage
The Barn
The Gardeners Cottage
Nant Meifod
Ffynnon Meifod
Bryn Bela
Bryn Hir
Carreg Wen
Derwen Deg
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Plas yr Eglwys
Trebanog
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Fforde Fawr
Ysgubor FOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Tyn y Fforde
Istryn
Tan y Bryn Uchaf
Squirrels Lodge
Ysgubor Newydd
Ty Celyn
Tyn y Fforde Bach
Tan y Graig
Cefn Farm
Rhos Aber
Pant Farm
Cae Pwll
Tyn y Fforde Newydd
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (DAY)
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Negligible
Data Sources: RPS / bp / EnBW
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Scale@ 378.9mm x 214.9 mm 1:50,000
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0 0.5 1 2 km
Project Name:
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Drawing Title:
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Drawing Number:
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VER 01
DATE 09/01/24
DETAILS FINAL
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CHECK CR

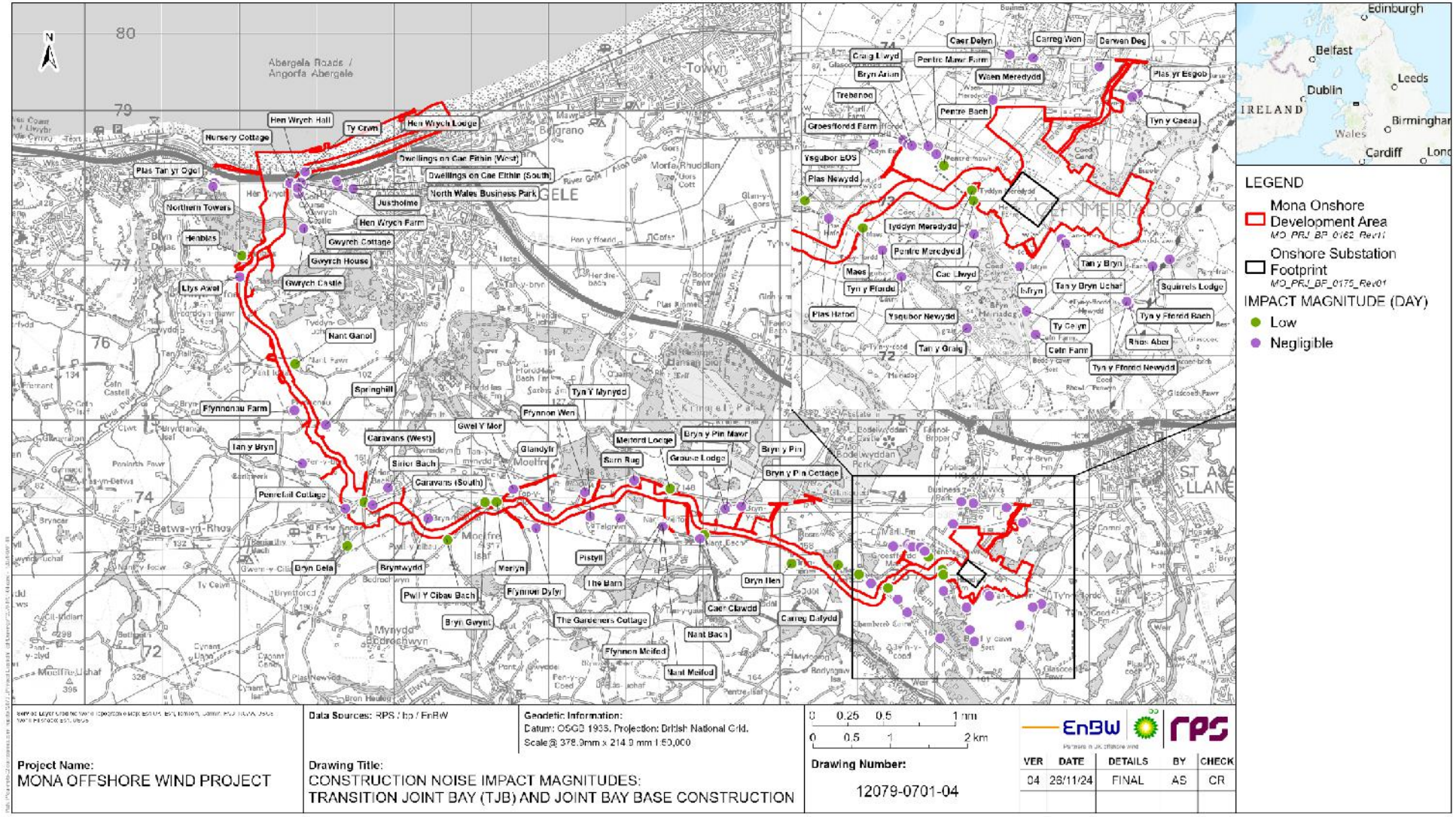
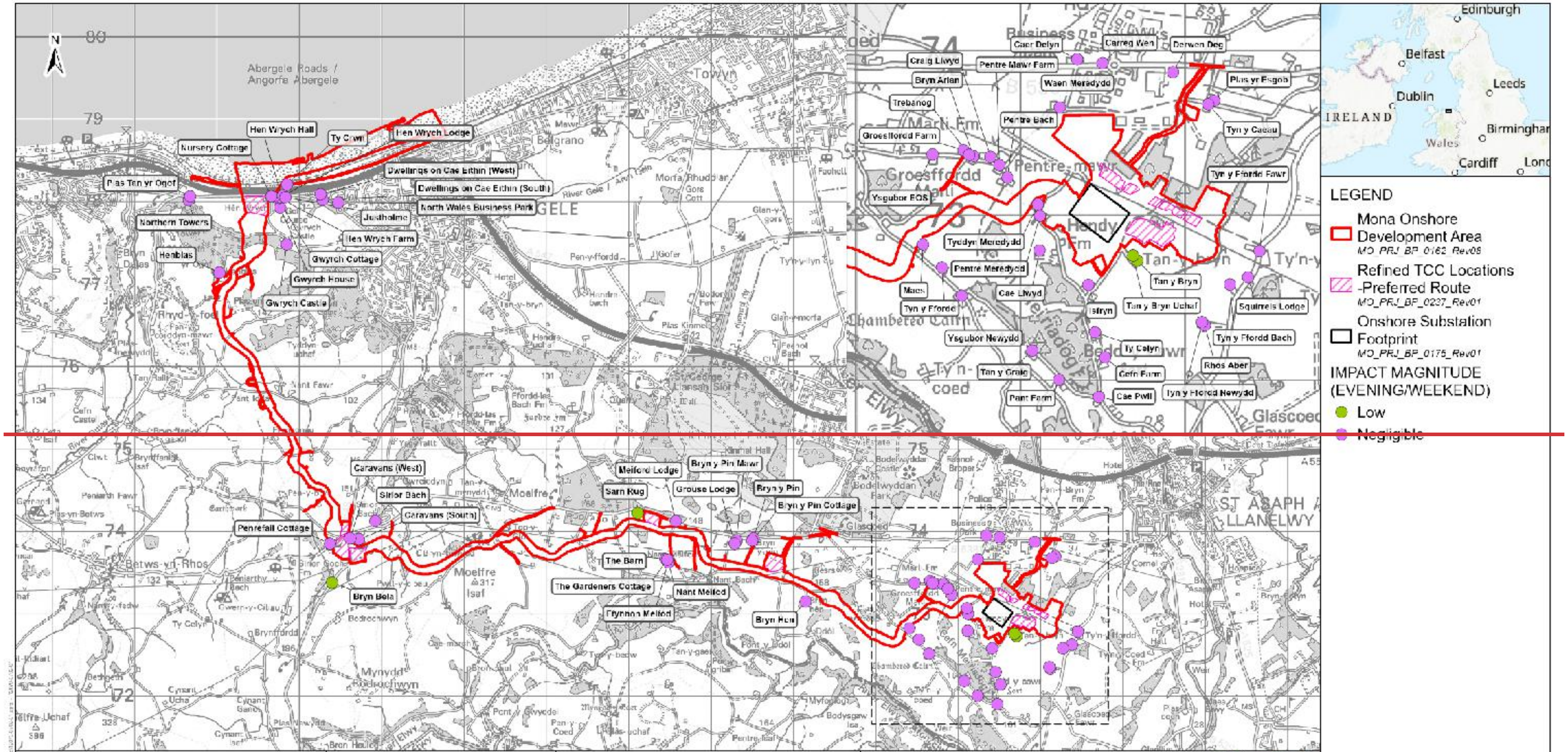


Figure 1-10: Daytime construction noise impact magnitudes: TJB and joint bay base construction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MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (EVENING/WEEKEND)
Low
Negligible
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
Hen Wrych Hall
Ty Crwn
Hen Wrych Lodge
Nursery Cottage
Plas Tan yr Ogof
Dwellings on Cae Eithin (West)
Dwellings on Cae Eithin (South)
North Wales Business Park
Judholme
Northern Towers
Hen Wrych Farm
Henblas
Gwyrch Cottage
Gwyrch House
Gwyrch Castle
Caravans (West)
Sirior Bach
Caravans (South)
Penrefail Cottage
Bryn Bela
Meifod Lodge
Bryn y Pin Mawr
Sarn Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
The Barn
The Gardeners Cottage
Nant Meifod
Ffynnon Meifod
Bryn Hen
Caer Delyn
Carreg Wen
Derwen Deg
Craig Llwyd
Pentre Mawr Farm
Bryn Arien
Waen Meredydd
Plas yr Esgob
Trebanog
Pentre Bach
Groesffordd Farm
Tyn y Caeau
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Tyn y Fforod
Bryn
Tan y Bryn Uchaf
Squirrels Lodge
Ysgubor Newydd
Ty Celyn
Tyn y Ffordd Bach
Rhos Aber
Tan y Graig
Cefn Farm
Pant Farm
Cae Pwll
Tyn y Ffordd Newydd
ST ASAPH / LLANELWY
Abergele Roads / Angorfa Abergele

Data Sources: RPS / bp / EnBW

Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale @ 378.9mm x 214.9 mm 1:50,000

0 0.25 0.5 1 mi
0 0.5 1 2 km

Project Name:
MONA OFFSHORE WIND PROJECT

Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
TJB AND JOINT BAY BASE CONSTRUCTION

Drawing Number:
12079-0702-01

VER	DATE	DETAILS	BY	CHECK
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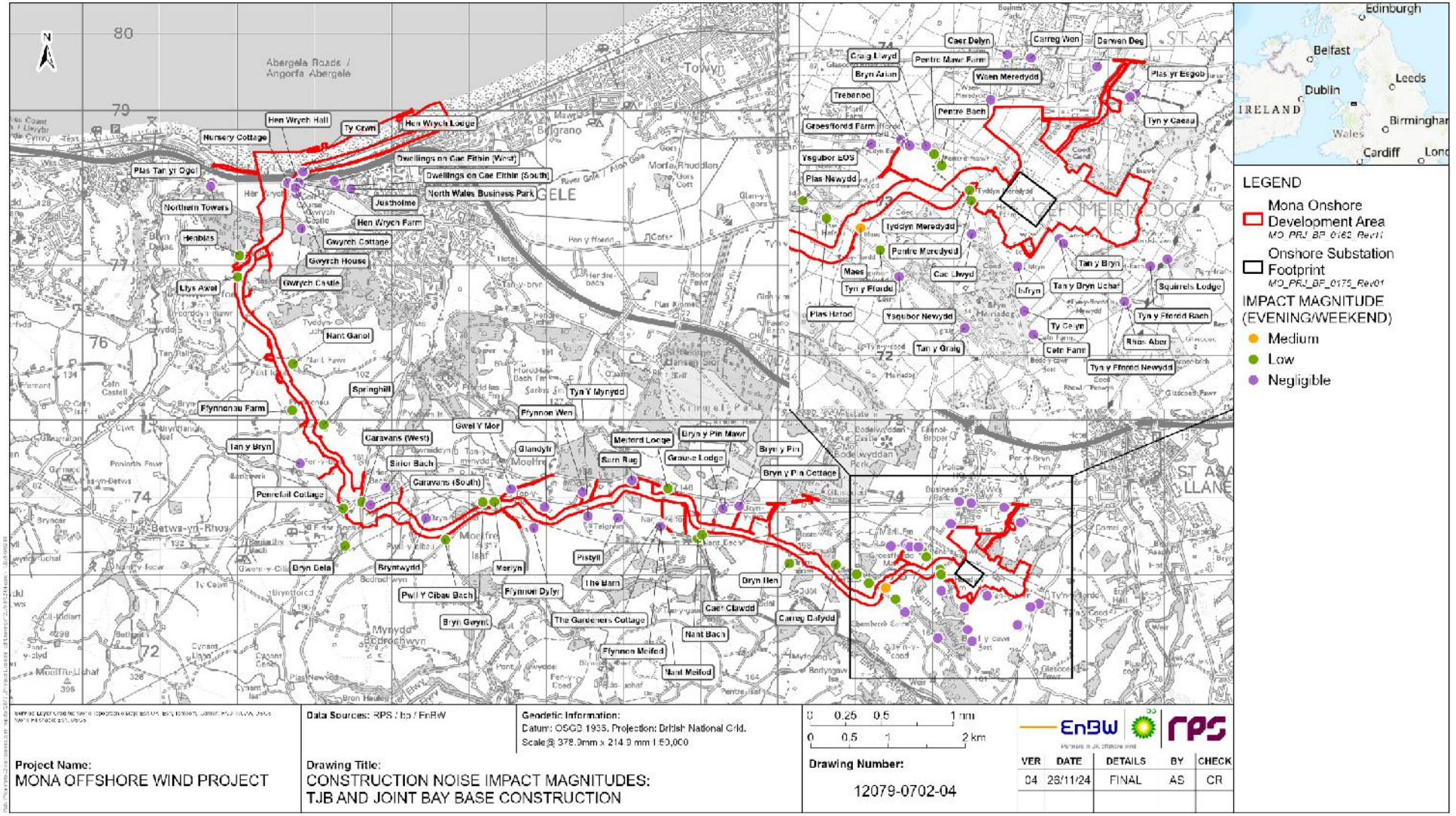
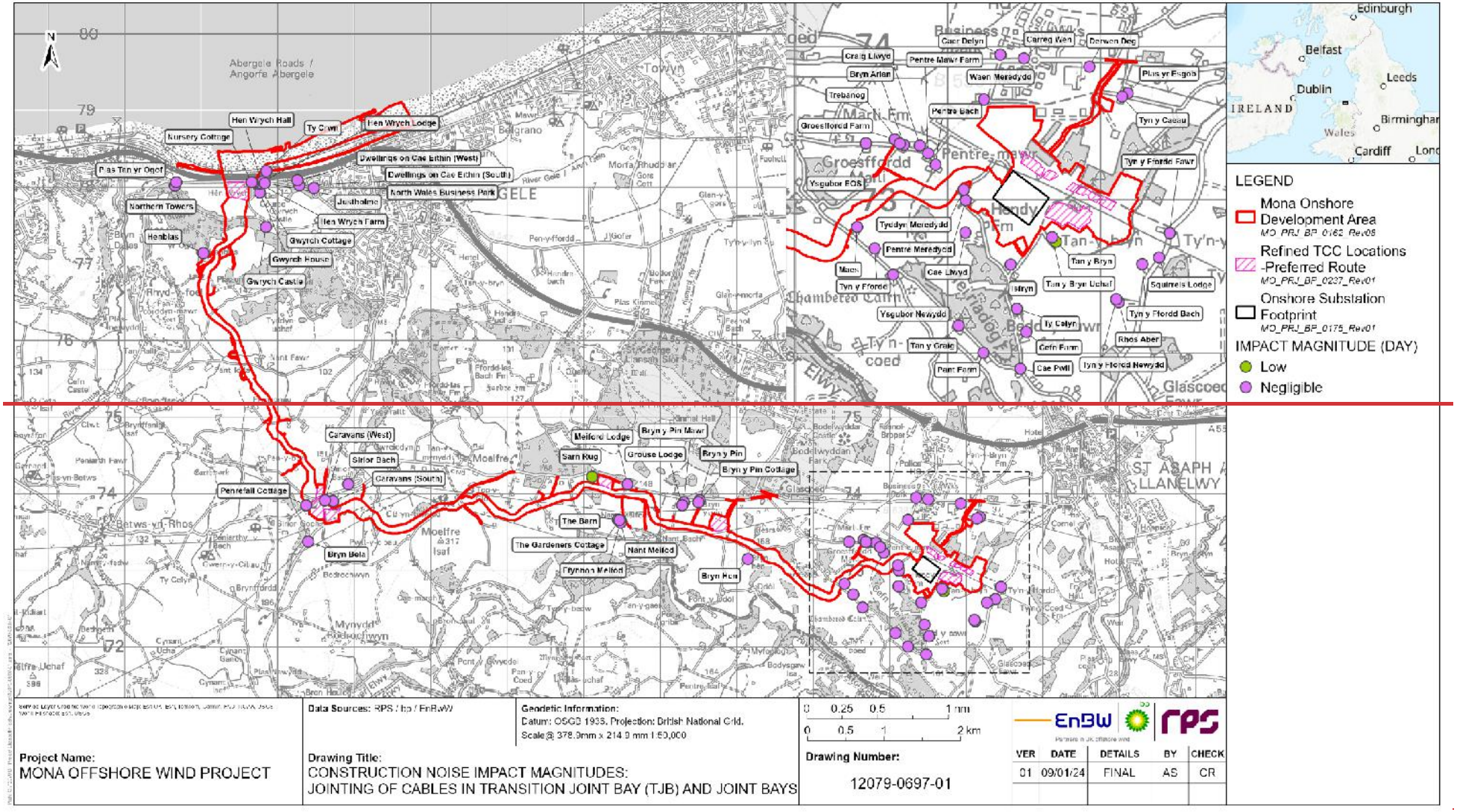


Figure 1-11: Evening/weekend construction noise impact magnitudes: TJB and joint bay base construction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Ty Gwyn
Hen Wrych Lodge
Nursery Cottage
Dwellings on Cae Erbin (West)
Dwellings on Cae Erbin (South)
Plas Tan yr Ogof
North Wales Business Park
Northern Towers
Justholme
Hen Wrych Farm
Henblas
Gwrych Cottage
Gwrych House
Gwrych Castle
Caravans (West)
Meifod Lodge
Bryn y Pin Mawr
Sirior Bach
Sam Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
Caravans (South)
Penrefail Cottage
The Barn
The Gardeners Cottage
Nant Meifod
Ffynnon Meifod
Bryn Bela
Bryn Hir
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Trebanog
Pentre Bach
Groesffordd Farm
Ysgubor FOS
Tyddyn Meredydd
Pentre Meredydd
Maes
Cae Llwyd
Tyn y Fforde
Ysgubor Newydd
Tan y Graig
Paint Farm
Tan y Bryn
Tan y Bryn Uchaf
Istryn
Ty Celyn
Cefn Farm
Cae Pwll
Tyn y Fforde Newydd
Squirrels Lodge
Tyn y Fforde Bach
Rhos Aber
Tyn y Fforde Fawr
Plas yr Eglwys
Tyn y Caeau
Carreg Wen
Derwen Deg
Cae Delyn
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (DAY)
Low
Negligible
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Data Sources: RPS / bp / EnBW
Geodetic Information:
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Scale@ 378.9mm x 214.9 mm 1:50,000
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
JOINTING OF CABLES IN TRANSITION JOINT BAY (TJB) AND JOINT BAYS
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0 0.5 1 2 km
Drawing Number:
12079-0697-01
VER 01
DATE 09/01/24
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BY AS
CHECK CR

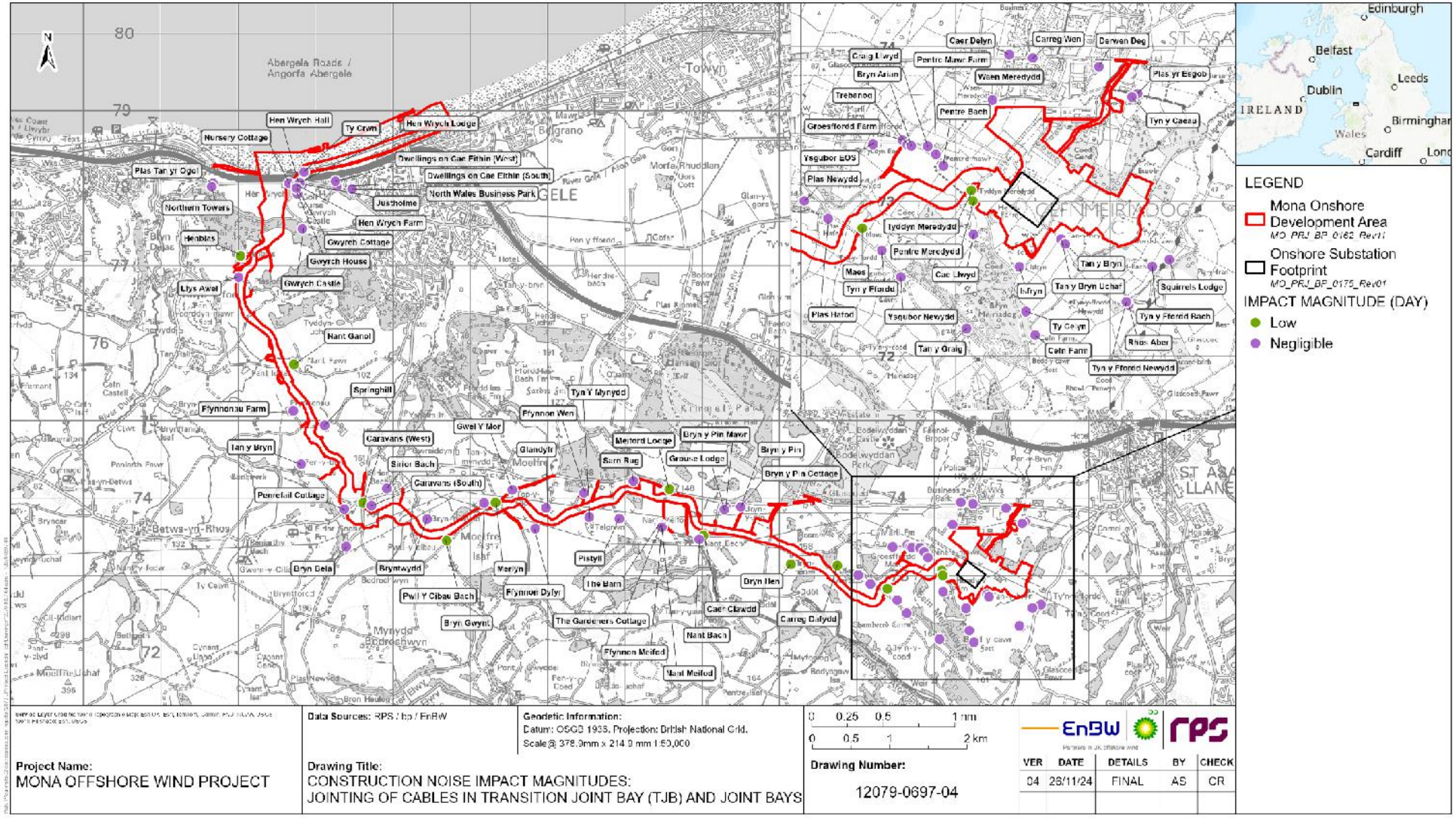
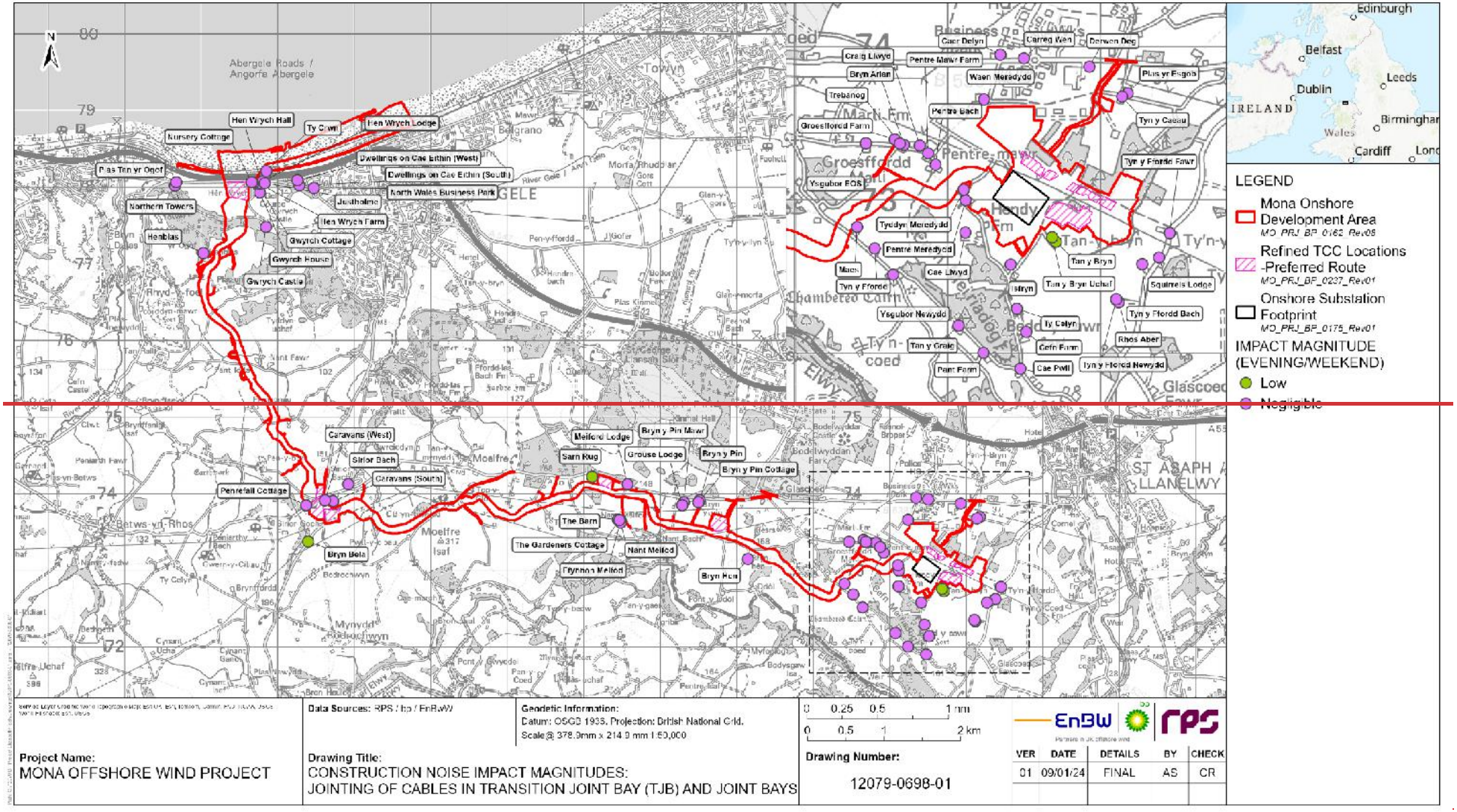


Figure 1-12: Daytime construction noise impact magnitudes: Jointing of cables in TJB and joint bays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Hen Wrych Hall
Ty Gwyn
Hen Wrych Lodge
Nursery Cottage
Dwellings on Cae Erbin (West)
Dwellings on Cae Erbin (South)
Plas Tan yr Ogof
North Wales Business Park
Northern Towers
Justholme
Hen Wrych Farm
Henblas
Gwrych Cottage
Gwrych House
Gwrych Castle
Caravans (West)
Meifod Lodge
Bryn y Pin Mawr
Sirior Bach
Sam Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
Caravans (South)
Penrefail Cottage
The Barn
The Gardeners Cottage
Nant Meifod
Ffynnon Meifod
Bryn Bela
Bryn Hir
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Trebanog
Pentre Bach
Groesffordd Farm
Ysgubor FOS
Tyddyn Meredydd
Pentre Meredydd
Maes
Cae Llwyd
Tyn y Fforde
Istryn
Ysgubor Newydd
Tan y Graig
Paint Farm
Tan y Bryn
Tan y Bryn Uchaf
Ty Celyn
Cefn Farm
Cae Pwll
Tyn y Fforde Newydd
Squirrels Lodge
Tyn y Fforde Bach
Rhos Aber
Tyn y Fforde Fawr
Plas yr Eglwys
Tyn y Caeau
Darreg Wen
Derwen Deg
Caer Delyn
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (EVENING/WEEKEND)
Low
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
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Scale@ 378.9mm x 214.9 mm 1:50,000
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0 0.5 1 2 km
Project Name:
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Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
JOINTING OF CABLES IN TRANSITION JOINT BAY (TJB) AND JOINT BAYS
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VER 01
DATE 09/01/24
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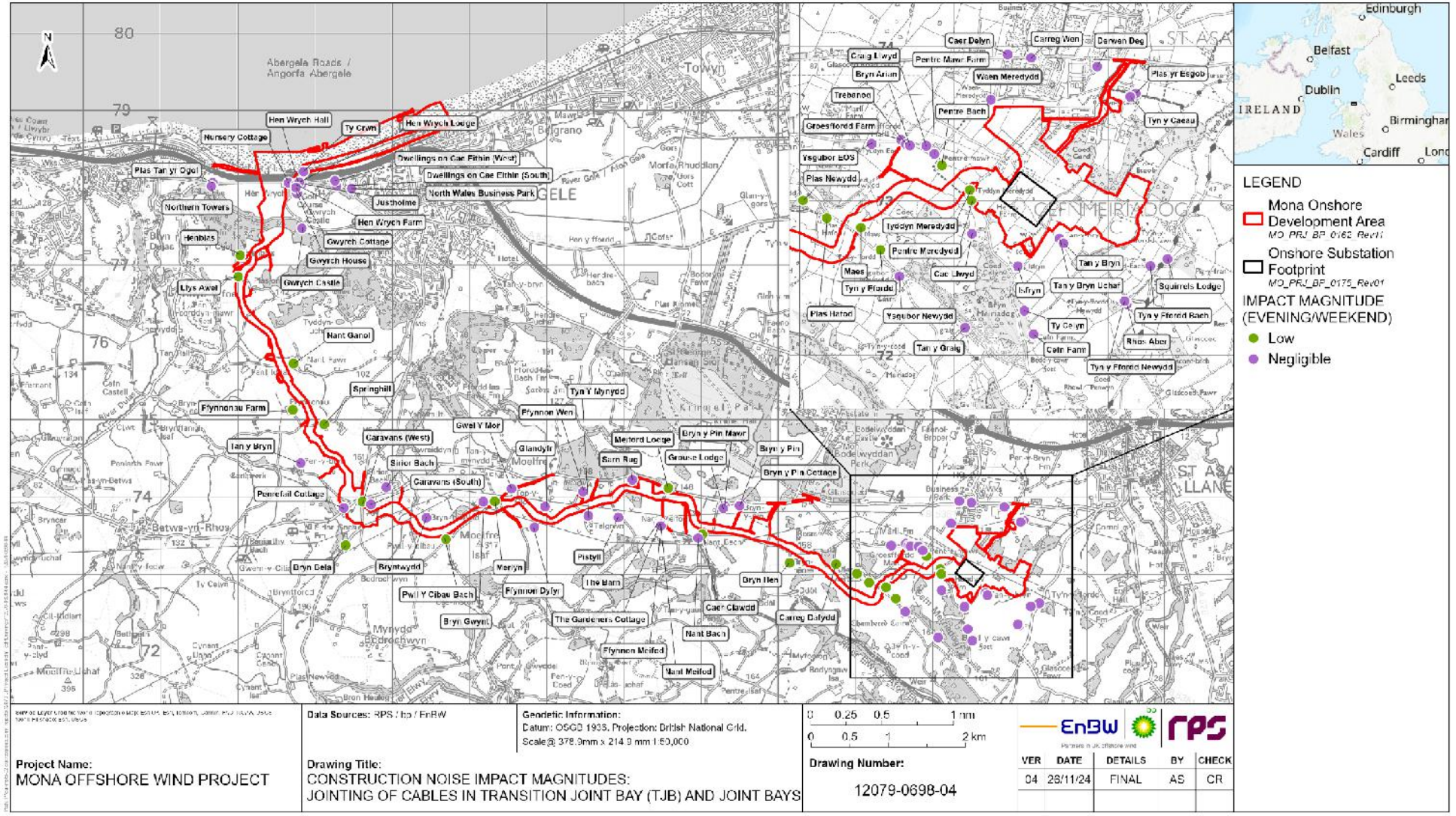
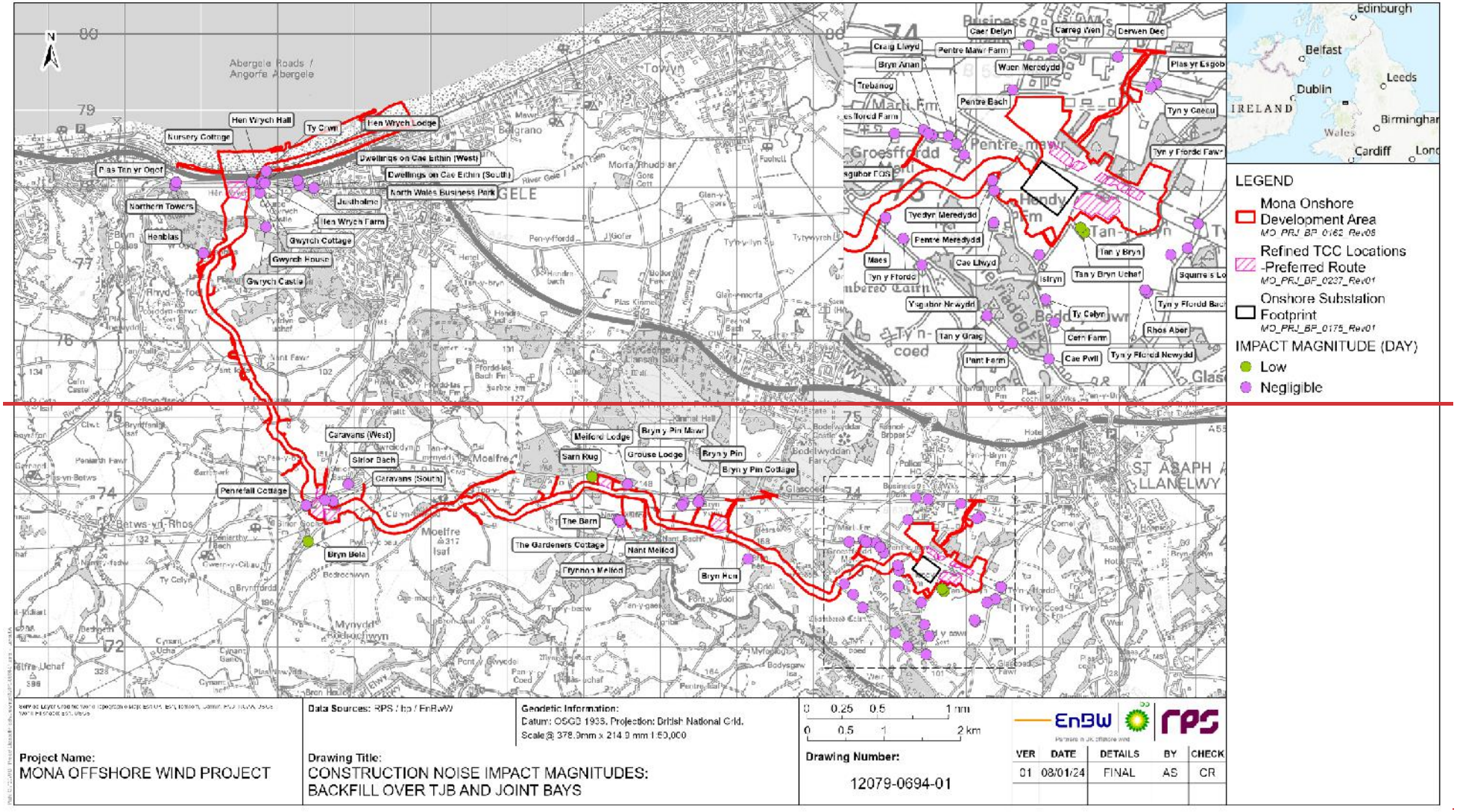


Figure 1-13: Evening/weekend construction noise impact magnitudes: Jointing of cables in TJB and joint bays


LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev08
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (DAY)
Low
Negligible
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
BACKFILL OVER TJB AND JOINT BAYS
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale@ 378.9mm x 214.9 mm 1:50,000
Drawing Number:
12079-0694-01
VER 01
DATE 08/01/24
DETAILS FINAL
BY AS
CHECK CR

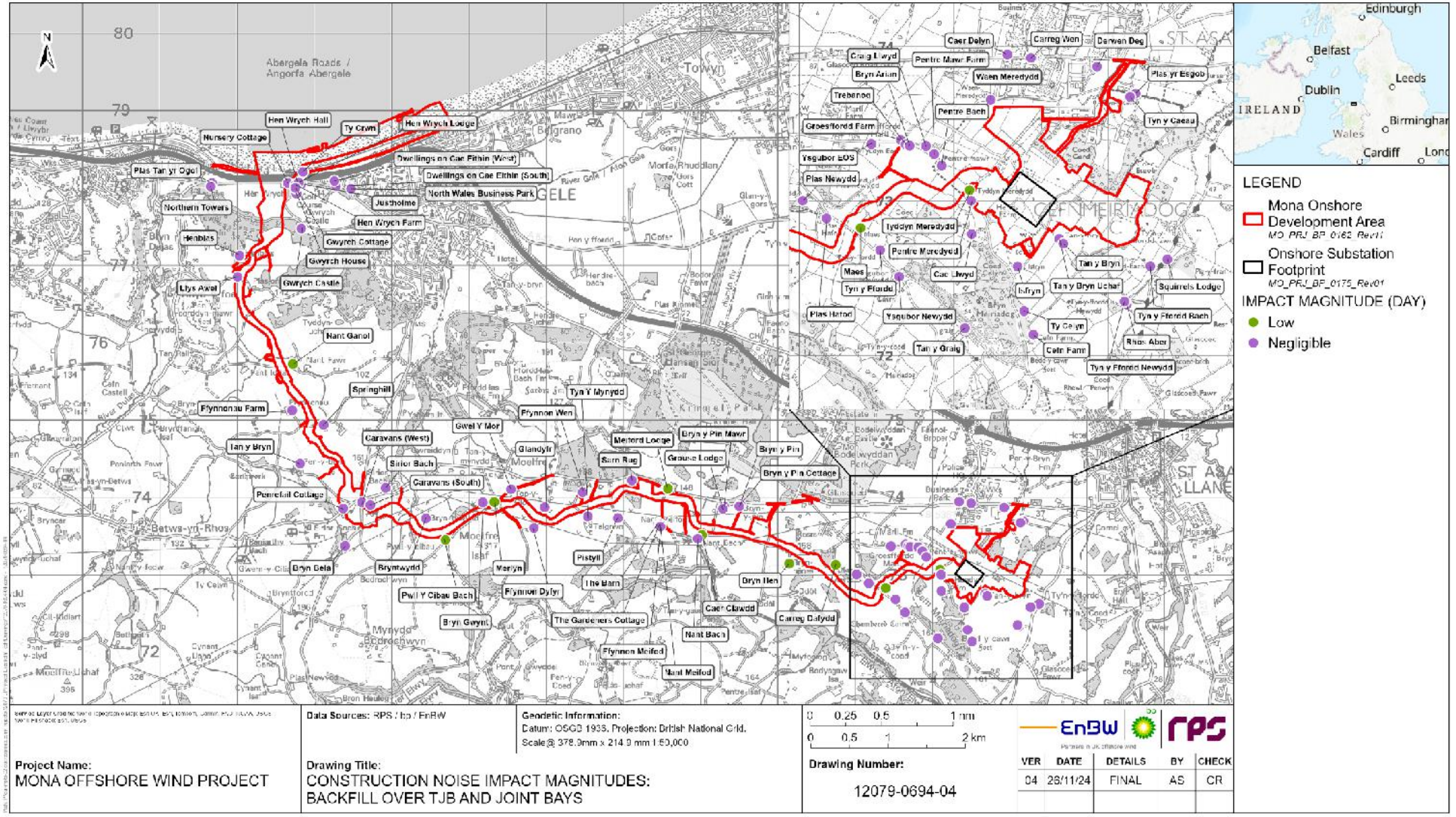
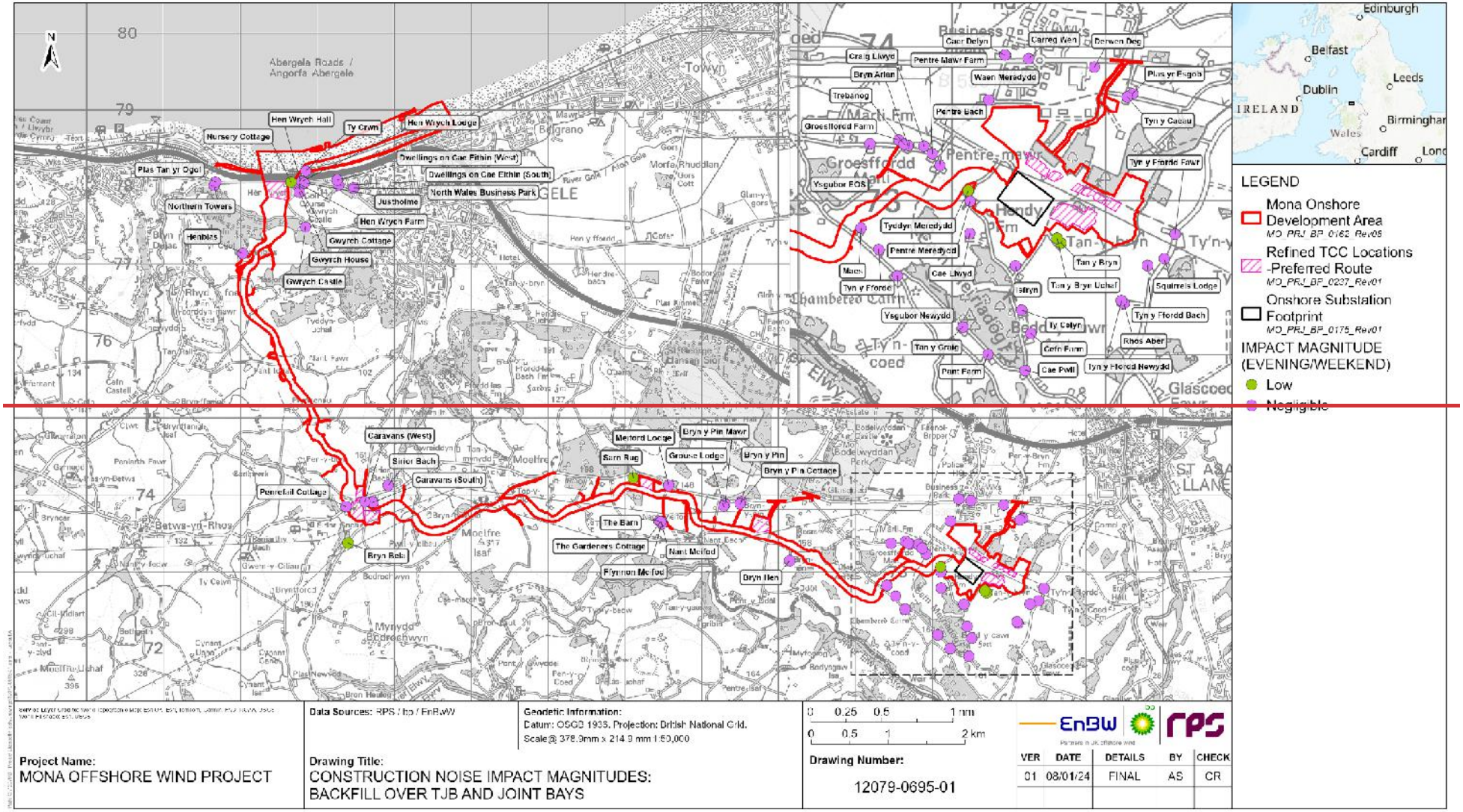


Figure 1-14: Daytime construction noise impact magnitudes: Backfill over TJB and joint bays


Hen Wrych Hall
Ty Crwn
Hen Wrych Lodge
Nursery Cottage
Dwellings on Cae Ethin (West)
Dwellings on Cae Ethin (South)
Plas Tan yr Ogof
North Wales Business Park
Northern Towers
Justholme
Hen Wrych Farm
Henblas
Gwyrch Cottage
Gwyrch House
Gwyrch Castle
Caravans (West)
Sinior Bach
Caravans (South)
Penrefail Cottage
Bryn Bela
Melford Lodge
Bryn y Pin Mawr
Sarn Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
The Barn
The Gardeners Cottage
Nant Melford
Plymton Melford
Bryn Hen
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Trebanog
Groesffordd Farm
Ysgubor FOS
Tyddyn Meredydd
Pentre Meredydd
Maes
Tyn y Fforde
Ysgubor Newydd
Tan y Graig
Cae Pwll
Tyn y Fforde Newydd
Carreg Wen
Derwen Deg
Waen Meredydd
Pentre Bach
Tyn y Caeau
Tyn y Fforde Fawr
Tan y Bryn
Tan y Bryn Uchaf
Squirrels Lodge
Tyn y Fforde Bach
Rhos Aber
Ty Celyn
Cefn Farm
Plant Farm
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (EVENING/WEEKEND)
Low
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale@ 378.9mm x 214.9 mm 1:50,000
0 0.25 0.5 1 mm
0 0.5 1 2 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
BACKFILL OVER TJB AND JOINT BAYS
Drawing Number:
12079-0695-01
VER 01
DATE 08/01/24
DETAILS FINAL
BY AS
CHECK CR

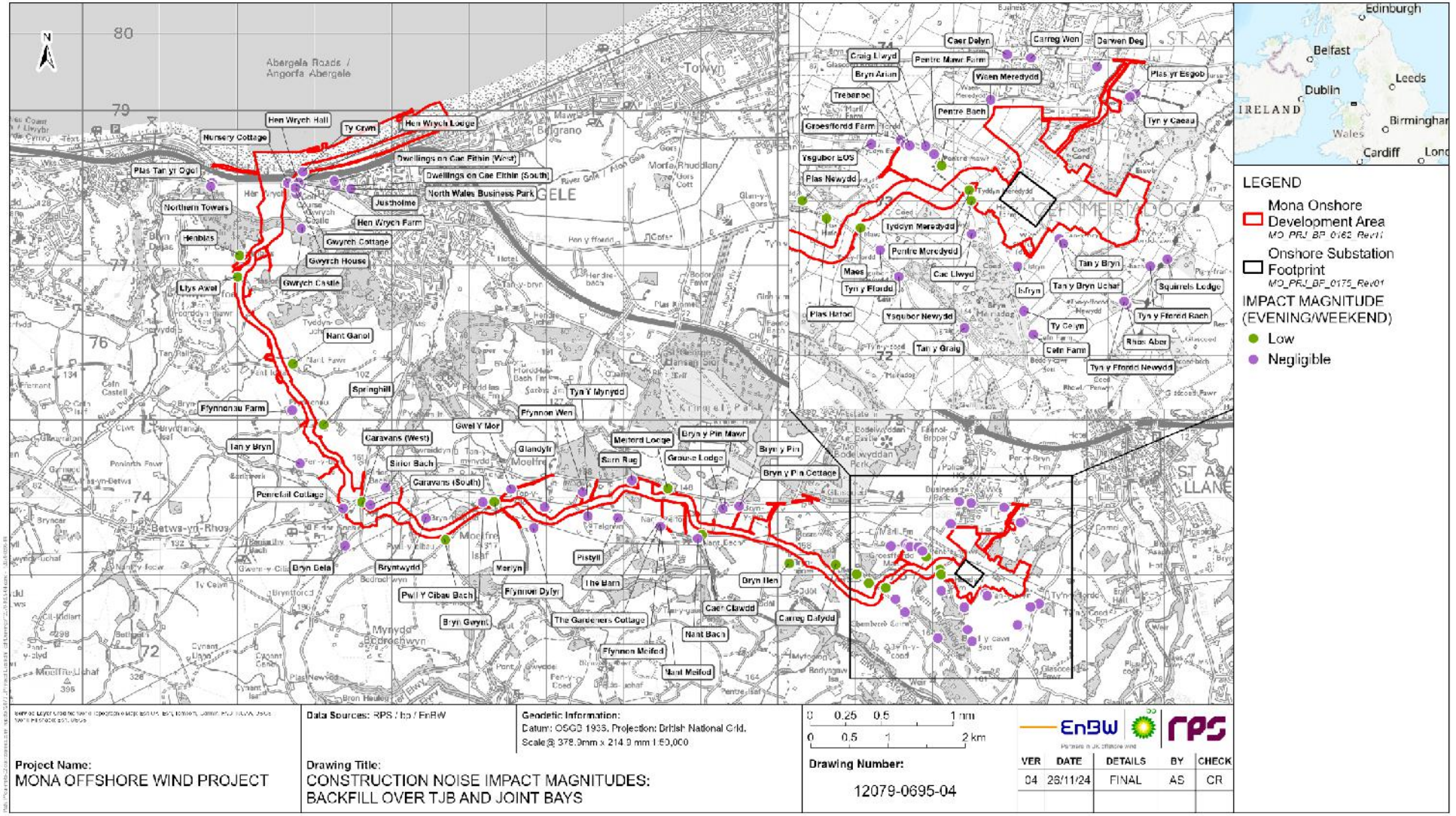
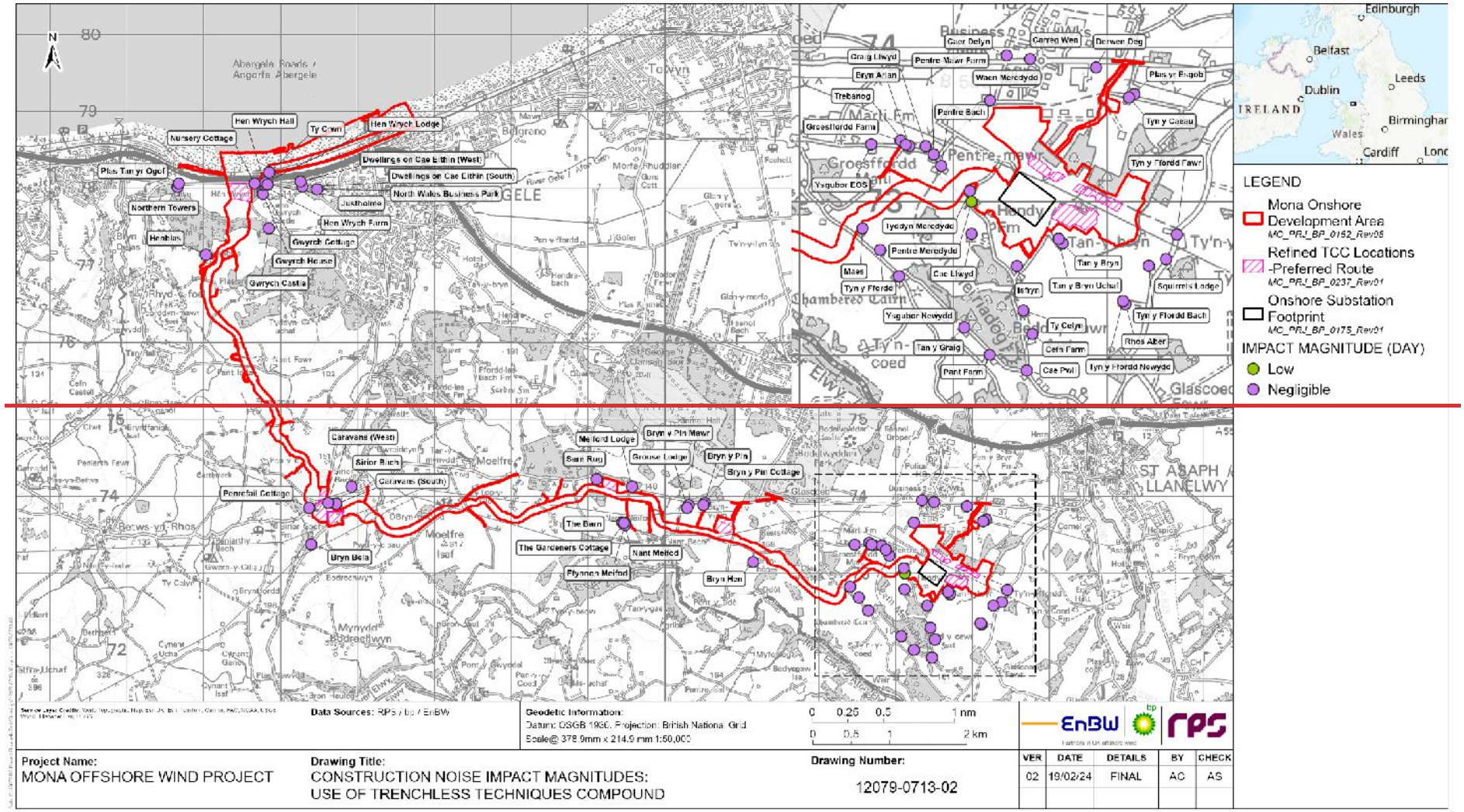


Figure 1-15: Evening/weekend construction noise impact magnitudes: Backfill over TJB and joint bays


Hen Wrych Hall
Ty Cwm
Hen Wrych Lodge
Nursery Cottage
Dwellings on Cae Elthin (West)
Dwellings on Cae Elthin (South)
North Wales Business Park
Plas Tan yr Ogof
Northern Towers
Justholme
Hen Wrych Farm
Henblas
Gwyrch Cottage
Gwyrch House
Gwyrch Castle
Caravans (West)
Caravans (South)
Sarior Bach
Penrefail Cottage
Bryn Bela
Melford Lodge
Sarn Rug
Grouse Lodge
Bryn y Pin Mawr
Bryn y Pin
Bryn y Pin Cottage
The Barn
The Gardeners Cottage
Nant Melford
Plynnon Melford
Bryn Hen
Caer Delyn
Carreg Wen
Derwen Dog
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Plas yr Eirgob
Trebanog
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Maes
Tyn y Ffordd
Cae Llwyd
Tan y Bryn
Tan y Bryn Uchaf
Squirrels Lodge
Isfryn
Ysgubor Newydd
Ty Celyn
Tyn y Ffordd Bach
Tan y Graig
Cefn Farm
Rhos Aber
Pant Farm
Cae Pwl
Tyn y Ffordd Newydd
Edinburgh
Belfast
Dublin
Leeds
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MC_PRJ_BP_0152_Rev08
Refined TCC Locations -Preferred Route
MC_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MC_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (DAY)
Low
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936. Projection: British National Grid
Scale@ 378.9mm x 214.9 mm 1:50,000
0 0.25 0.5 1 nm
0 0.5 1 2 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
USE OF TRENCHLESS TECHNIQUES COMPOUND
Drawing Number:
12079-0713-02
VER 02
DATE 19/02/24
DETAILS FINAL
BY AC
CHECK AS

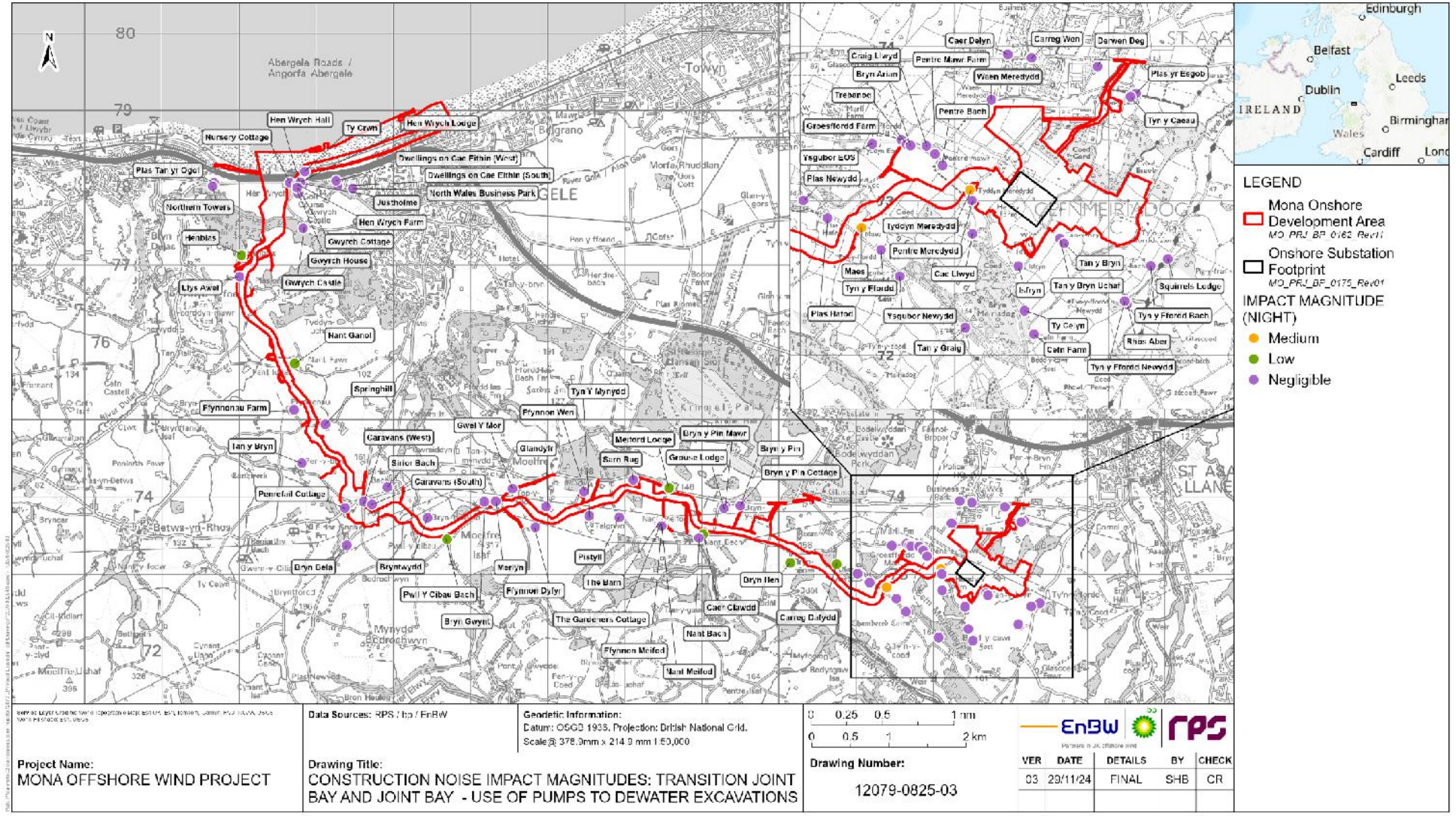


Figure 1-16: Night-time construction noise impact magnitudes: Dewatering of TJB and joint bay excavations

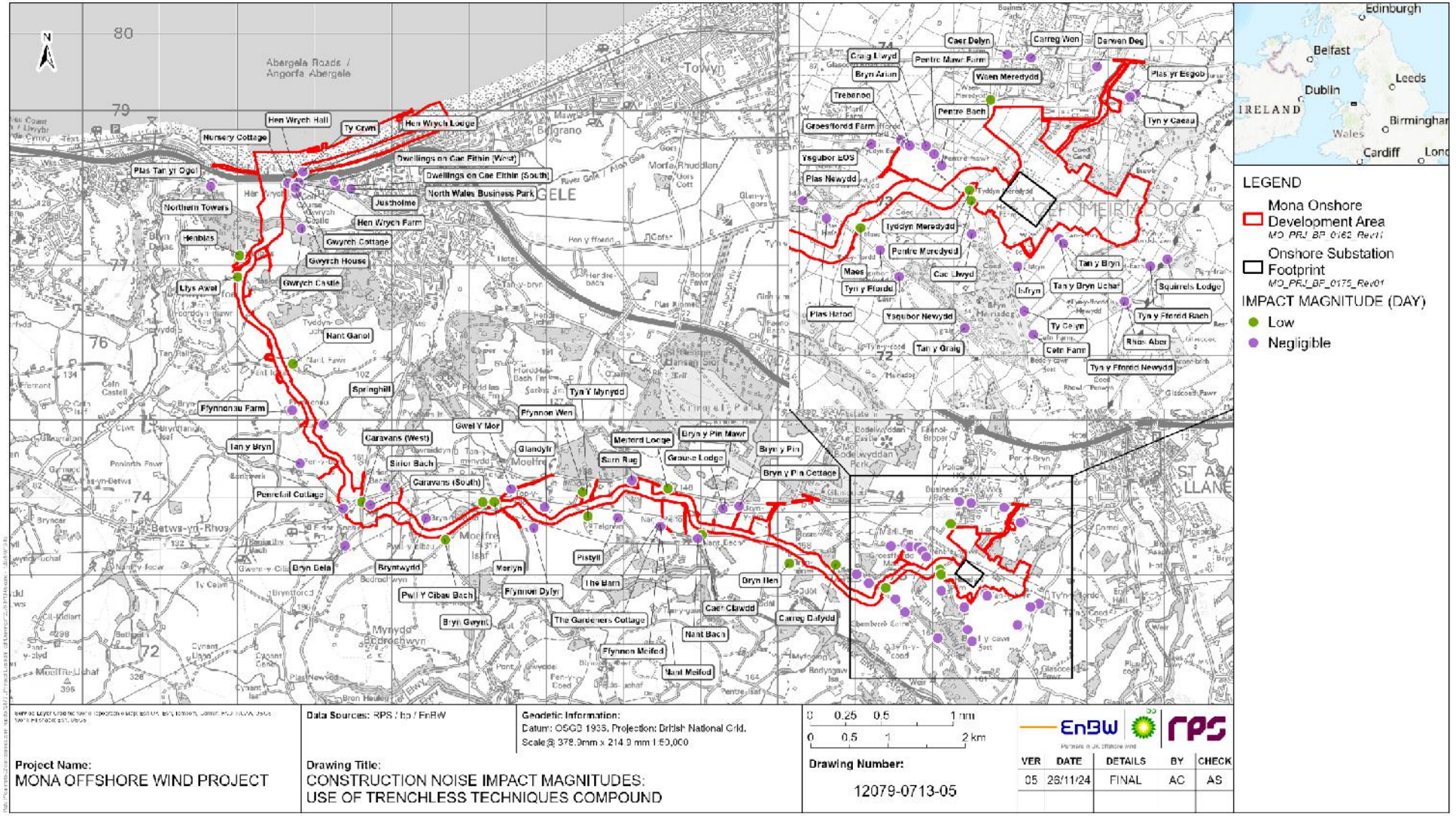
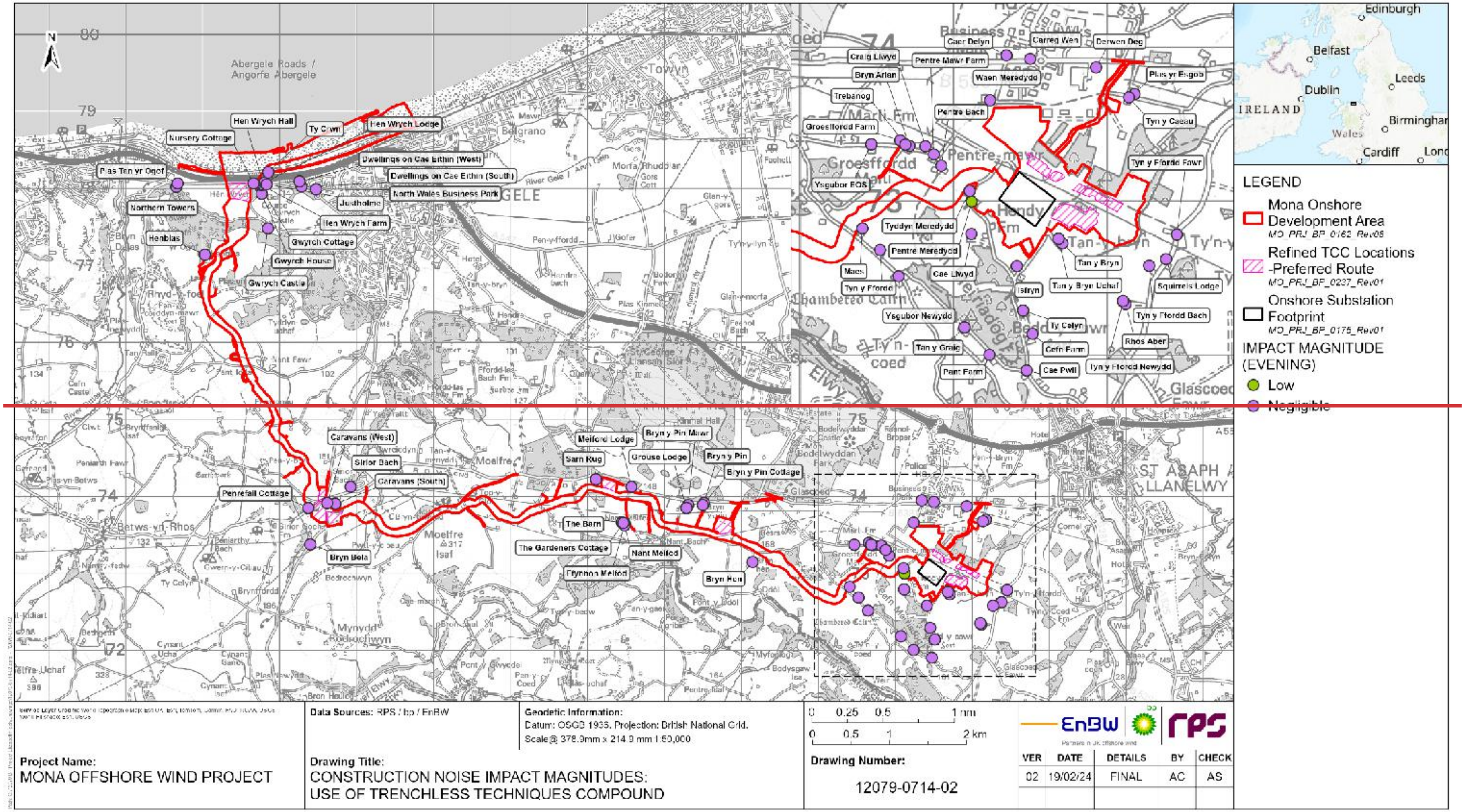


Figure 1-17: Daytime construction noise impact magnitudes: Use of trenchless techniques compound


LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev08
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (EVENING)
Low
Negligible
Hen Wrych Hall
Ty Crwn
Hen Wrych Lodge
Nursery Cottage
Dwellings on Cae Eithin (West)
Dwellings on Cae Eithin (South)
Plas Tan yr Ogof
North Wales Business Park
Northern Towers
Judholme
Hen Wrych Farm
Henblas
Gwrych Cottage
Gwrych House
Gwrych Castle
Caravans (West)
Sirior Bach
Caravans (South)
Penrefail Cottage
Bryn Bela
Meiford Lodge
Bryn y Pin Mawr
Sarn Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
The Barn
The Gardeners Cottage
Nant Meifod
Ffynnon Meifod
Bryn Hen
Craig Llwyd
Caer Delyn
Carreg Wen
Derwen Deg
Pentre Mawr Farm
Bryn Arlen
Waen Meredydd
Plas yr Esgob
Trebanog
Pentre Bach
Groesffordd Farm
Tyn y Caeau
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Tyn y Ffordd
Isfryn
Tan y Bryn Uchaf
Squirrels Lodge
Ysgubor Newydd
Tyn y Ffordd Bach
Ty Celyn
Rhos Aber
Tan y Graig
Cefn Farm
Pant Farm
Cae Pwll
Tyn y Ffordd Newydd
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale @ 378.9mm x 214.9 mm 1:50,000
0 0.25 0.5 1 mi
0 0.5 1 2 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
USE OF TRENCHLESS TECHNIQUES COMPOUND
Drawing Number:
12079-0714-02
VER DATE DETAILS BY CHECK
02 19/02/24 FINAL AC AS

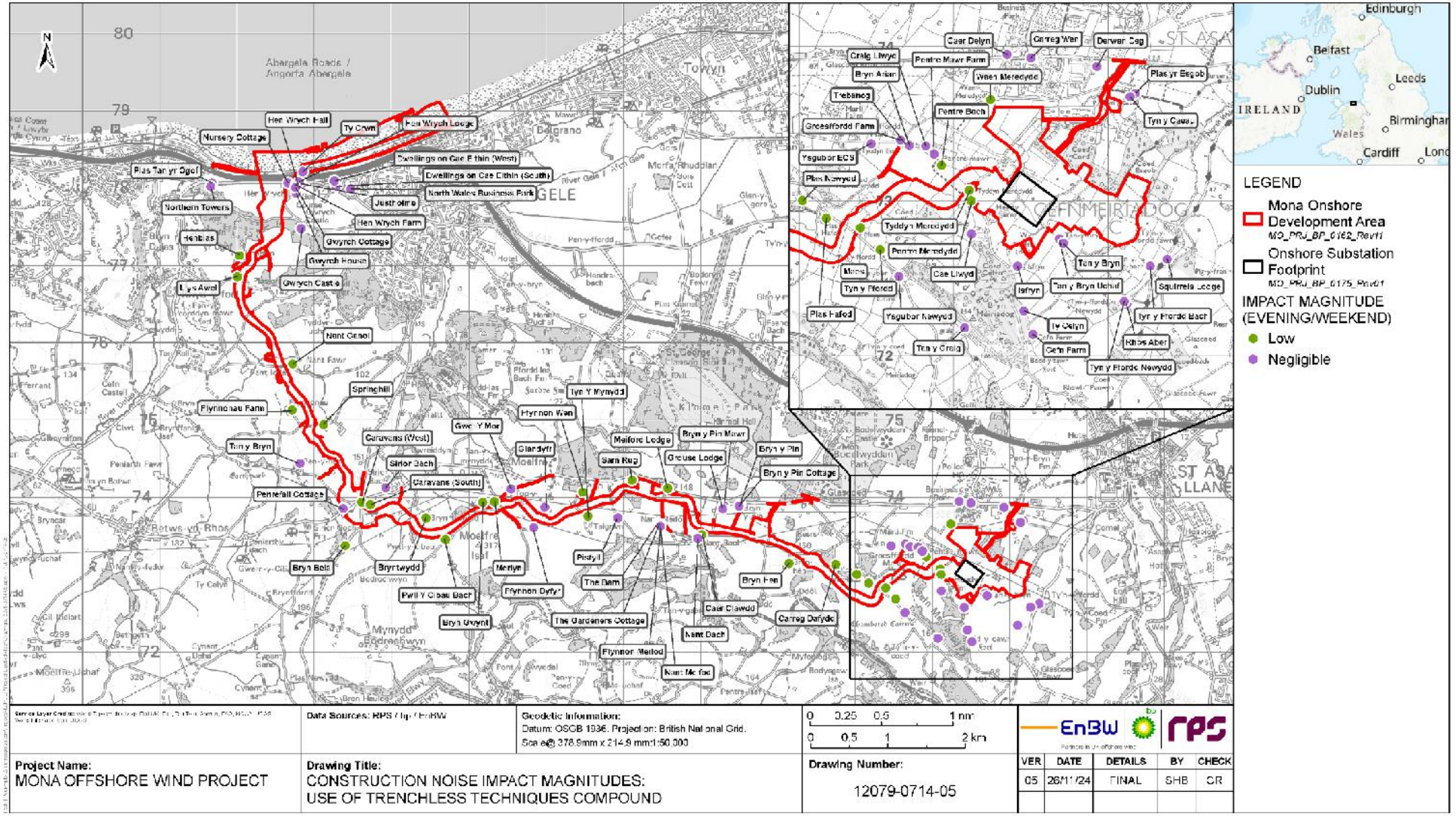
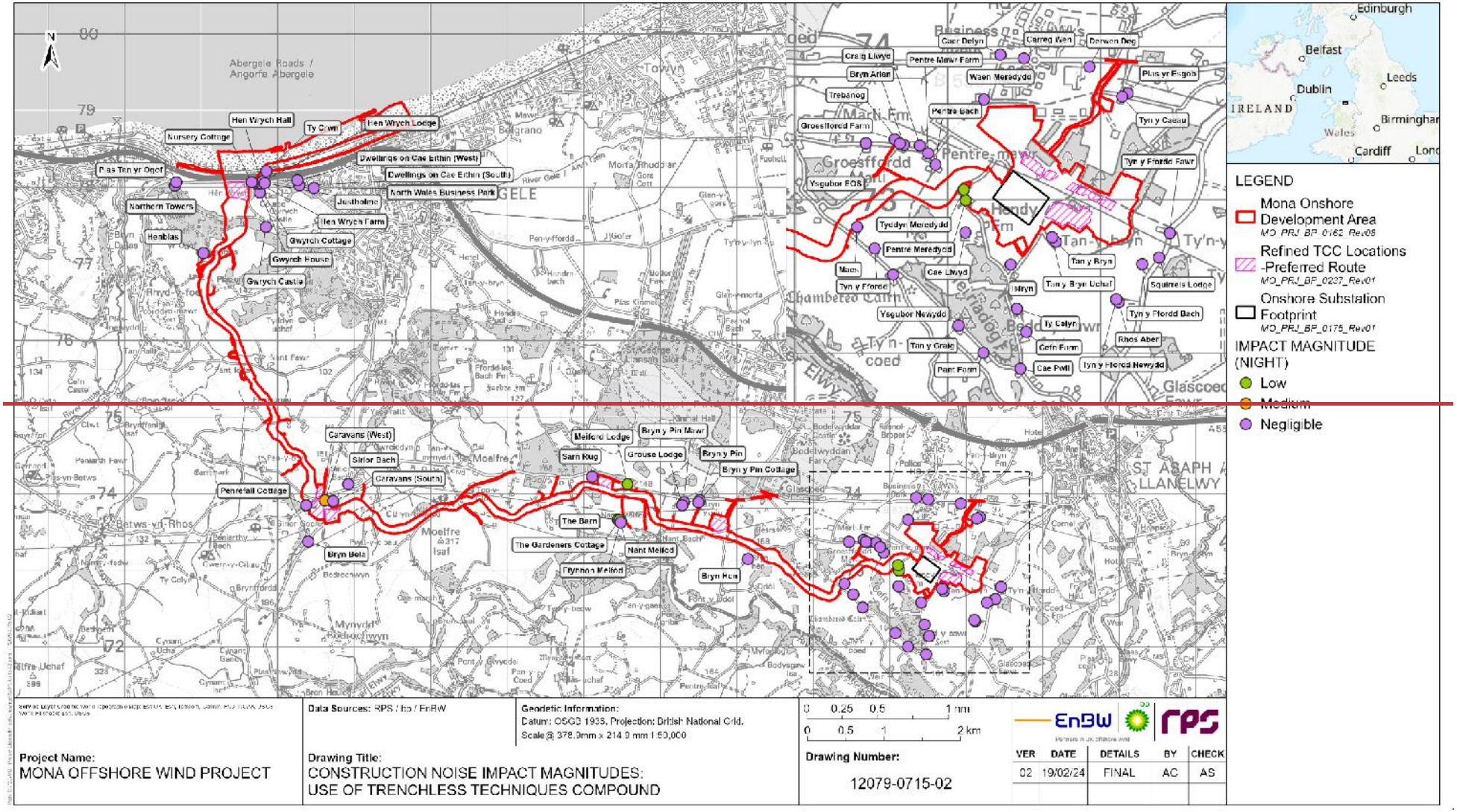


Figure 1-18: Evening/weekend construction noise impact magnitudes: Use of trenchless techniques compound


Abergele Roads / Angorfa Abergele
Hen Wrych Hall
Ty Gwyn
Hen Wrych Lodge
Nursery Cottage
Dwellings on Cae Erbin (West)
Dwellings on Cae Erbin (South)
Plas Tan yr Ogof
North Wales Business Park
Northern Towers
Justholme
Hen Wrych Farm
Henblas
Gwrych Cottage
Gwrych House
Gwrych Castle
Caravans (West)
Meifod Lodge
Bryn y Pin Mawr
Sirior Bach
Sam Rug
Grouse Lodge
Bryn y Pin
Bryn y Pin Cottage
Caravans (South)
Penrefail Cottage
The Barn
The Gardeners Cottage
Nant Meifod
Plymton Meifod
Bryn Bela
Bryn Hen
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Trebanog
Pentre Bach
Groesffordd Farm
Ysgubor FOS
Tyddyn Meredydd
Pentre Meredydd
Maes
Tyn y Fforde
Cae Llwyd
Istryn
Ysgubor Newydd
Tan y Graig
Paint Farm
Caer Delyn
Carreg Wen
Derwen Deg
Waen Meredydd
Plas yr Eglwys
Tyn y Cassiu
Tyn y Fforde Fawr
Tan y Bryn
Tan y Bryn Uchaf
Squirrels Lodge
Tyn y Fforde Bach
Ty Celyn
Rhos Aber
Cefn Farm
Cae Pwll
Tyn y Fforde Newydd
Glascoed
ST ASAPH / LLANELWY
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (NIGHT)
Low
Medium
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale@ 378.9mm x 214.9 mm 1:50,000
0 0.25 0.5 1 mm
0 0.5 1 2 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
USE OF TRENCHLESS TECHNIQUES COMPOUND
Drawing Number:
12079-0715-02
VER 02
DATE 19/02/24
DETAILS FINAL
BY AC
CHECK AS

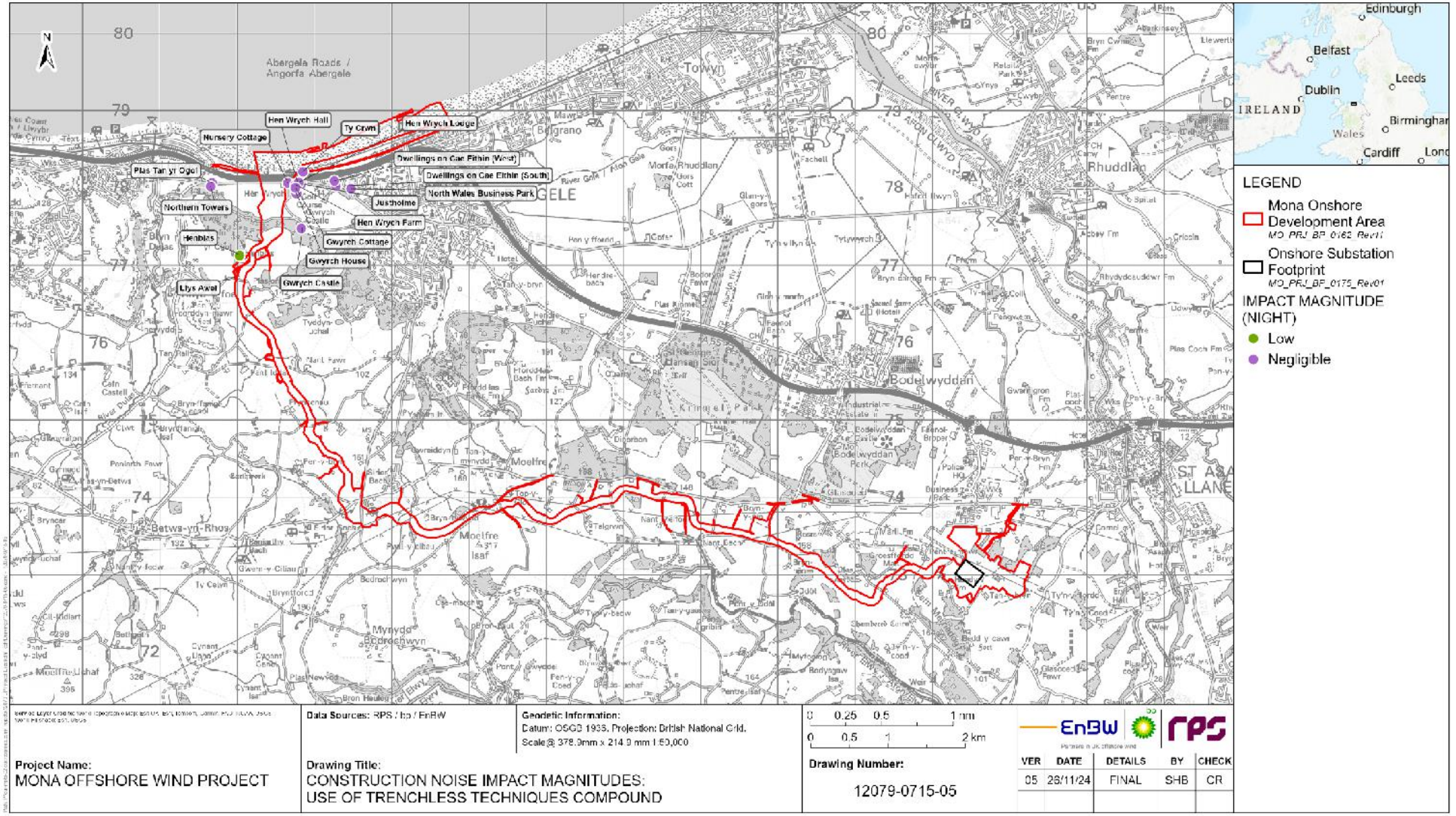
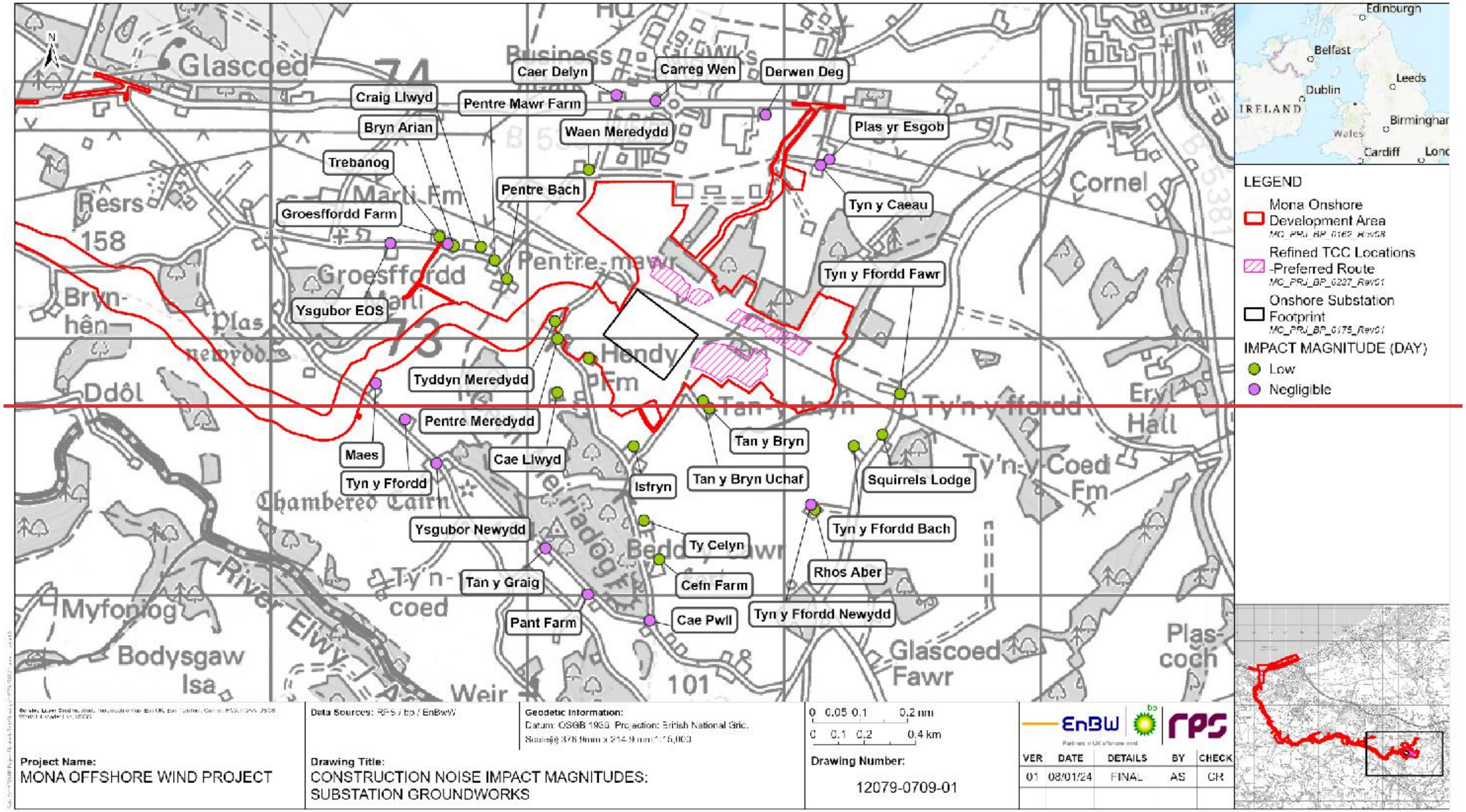


Figure 1-19: Night-time construction noise impact magnitudes: Use of trenchless techniques compound


Caer Delyn
Carreg Wen
Derwen Deg
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Plas yr Esgob
Trebanog
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Tyn y Ffordd
Isfryn
Tan y Bryn Uchaf
Squirrels Lodge
Ysgubor Newydd
Ty Celyn
Tyn y Ffordd Bach
Rhos Aber
Tan y Graig
Cefn Farm
Pant Farm
Cae Pwll
Tyn y Ffordd Newydd
Glascoed
Groesffordd
Pentre-mawr
Hendy Fm
Cornel
Ddôl
Myfoniog
Bodysgaw Isa
River Elwy
Chambered Cairn
Glascoed Fawr
Plas-coch
Eryl Hall
Ty'n-y-Coed Fm
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MC_PRJ_BP_0162_Rev08
Refined TCC Locations -Preferred Route
MC_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MC_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (DAY)
Low
Negligible
Data Sources: RPS / bp / EnBwW
Geodetic Information:
Datum: OSGB 1936. Projection: British National Grid.
Scale@ 378.9mm x 214.9 mm 1:15,000
0 0.05 0.1 0.2 nm
0 0.1 0.2 0.4 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
SUBSTATION GROUNDWORKS
Drawing Number:
12079-0709-01
VER DATE DETAILS BY CHECK
01 08/01/24 FINAL AS CR

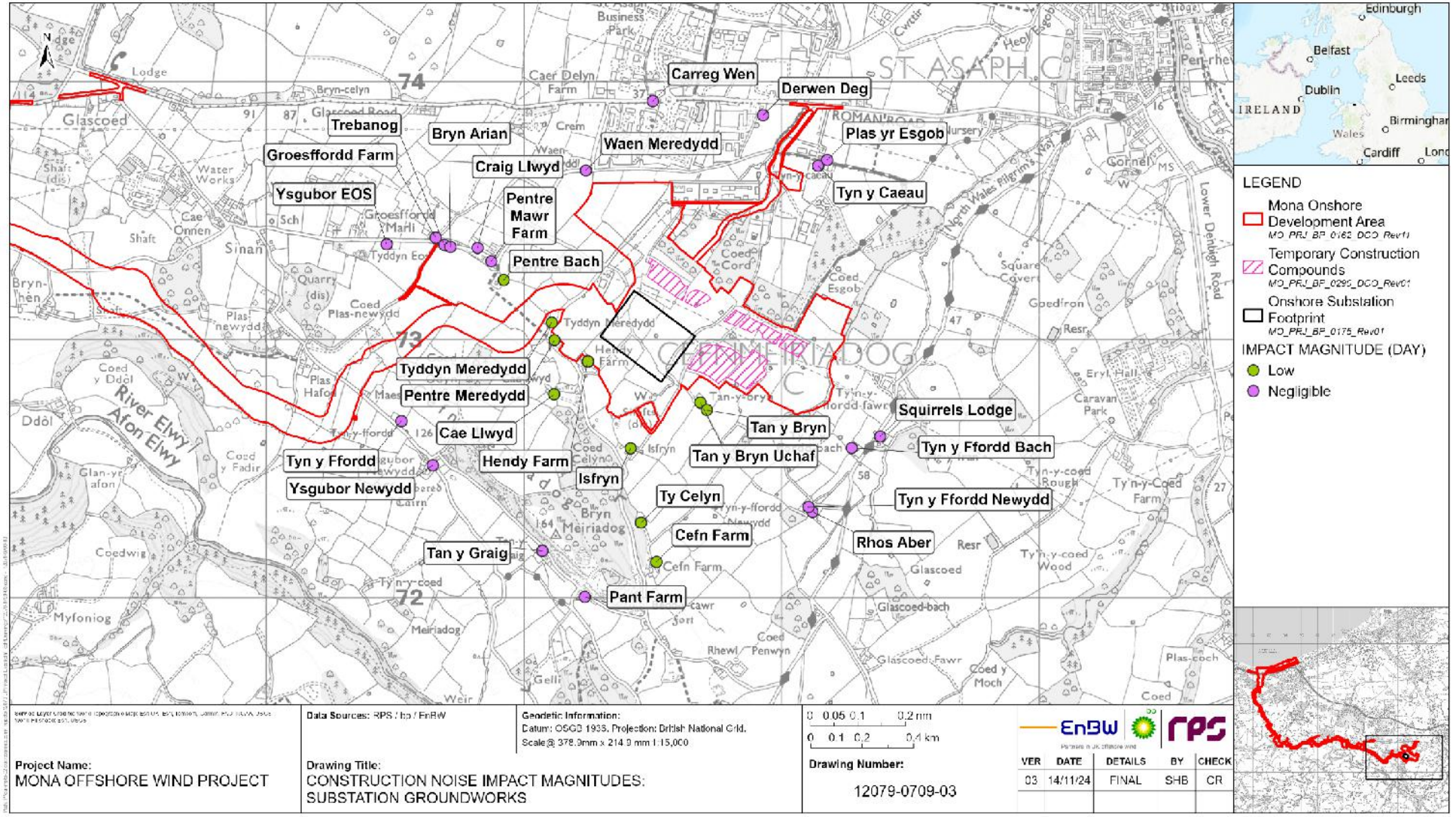
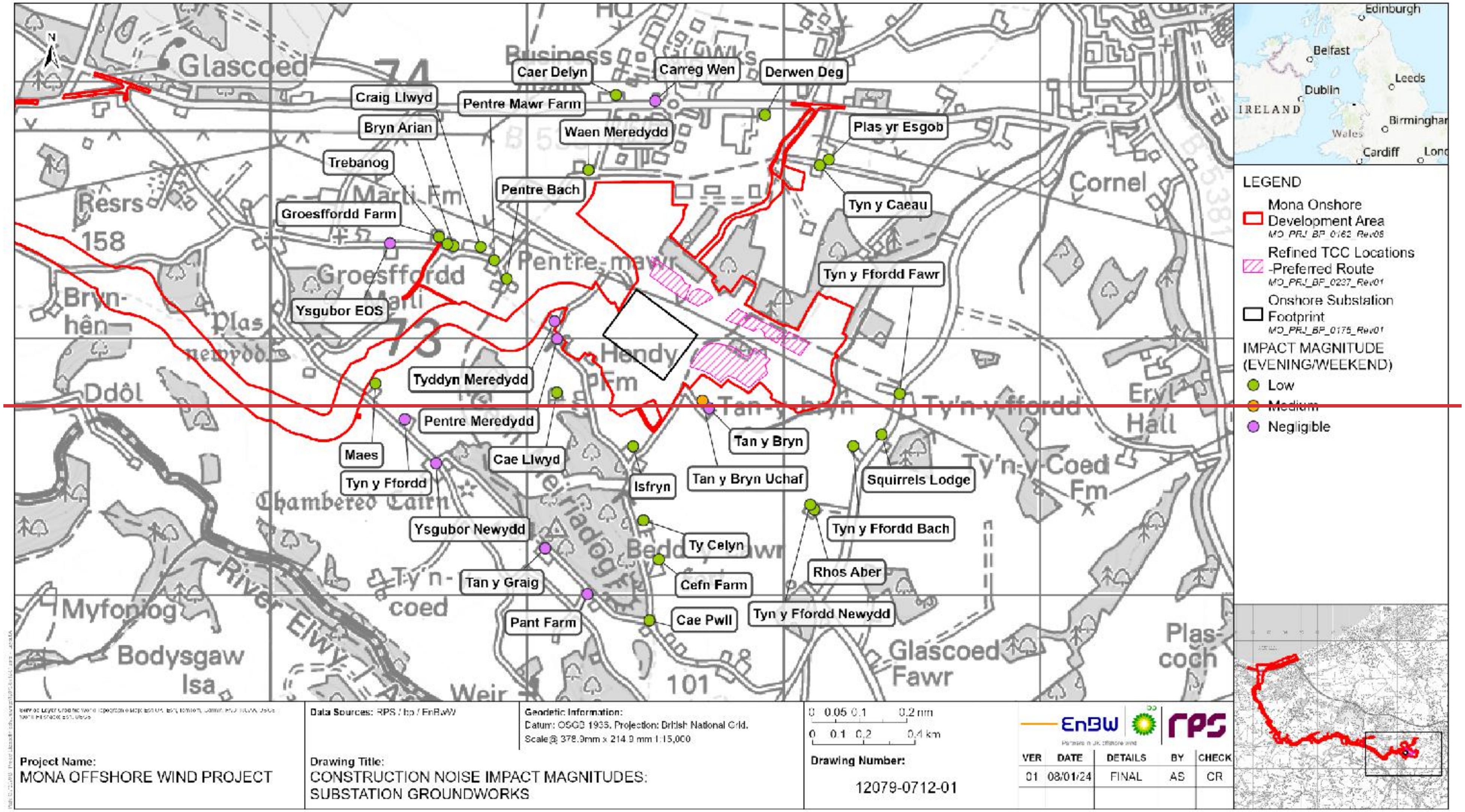


Figure 1-20: Daytime construction noise impact magnitudes: Substation groundworks


Caer Delyn
Carreg Wen
Derwen Deg
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Plas yr Esgob
Trebanog
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Isfryn
Tan y Bryn Uchaf
Squirrels Lodge
Tyn y Ffordd
Ysgubor Newydd
Ty Celyn
Tyn y Ffordd Bach
Rhos Aber
Tan y Graig
Cefn Farm
Tyn y Ffordd Newydd
Cae Pwll
Pant Farm
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev08
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (EVENING/WEEKEND)
Low
Medium
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale @ 378.9mm x 214.9 mm 1:15,000
0 0.05 0.1 0.2 mi
0 0.1 0.2 0.4 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
SUBSTATION GROUNDWORKS
Drawing Number:
12079-0712-01
VER DATE DETAILS BY CHECK
01 08/01/24 FINAL AS CR

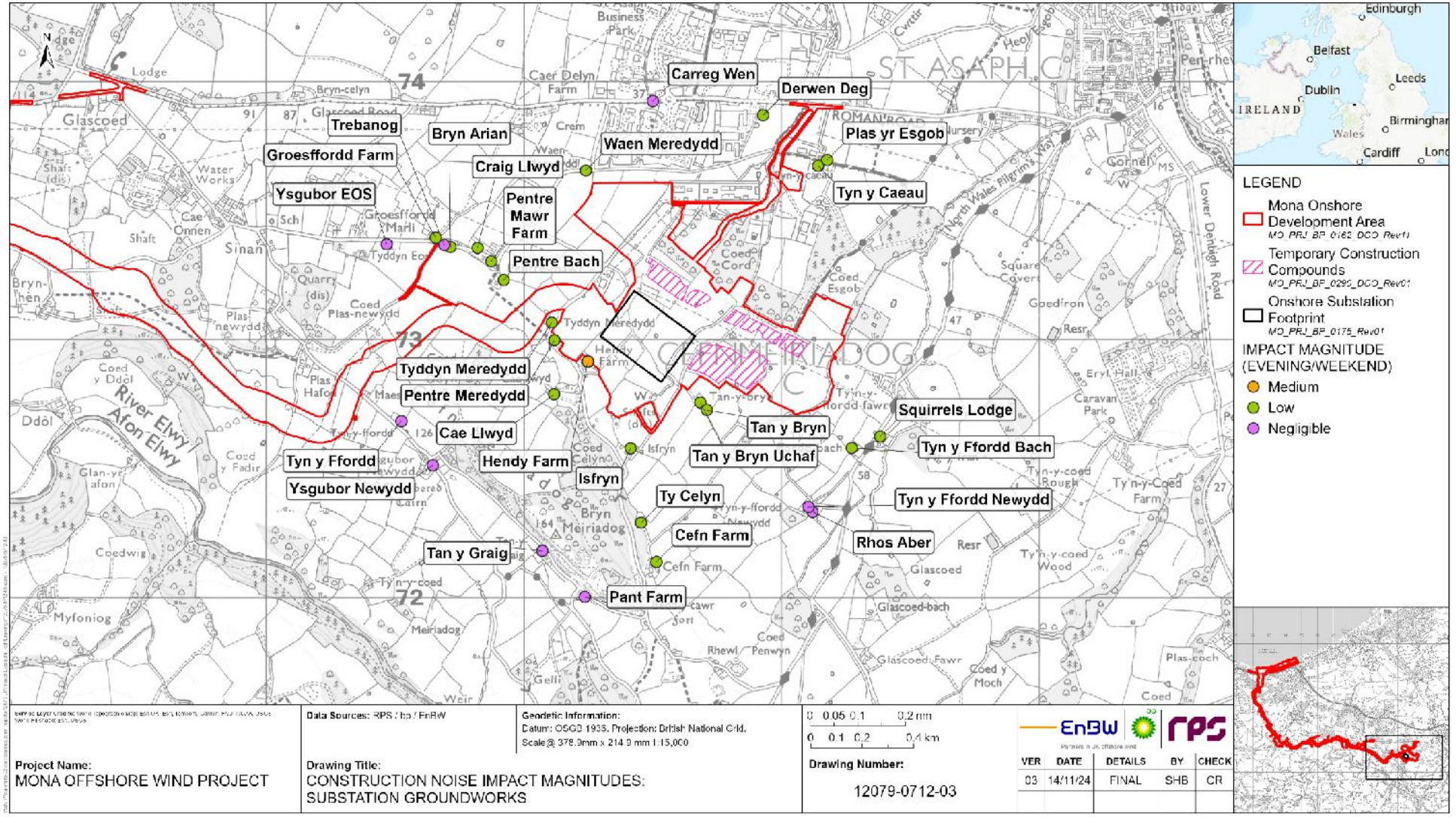
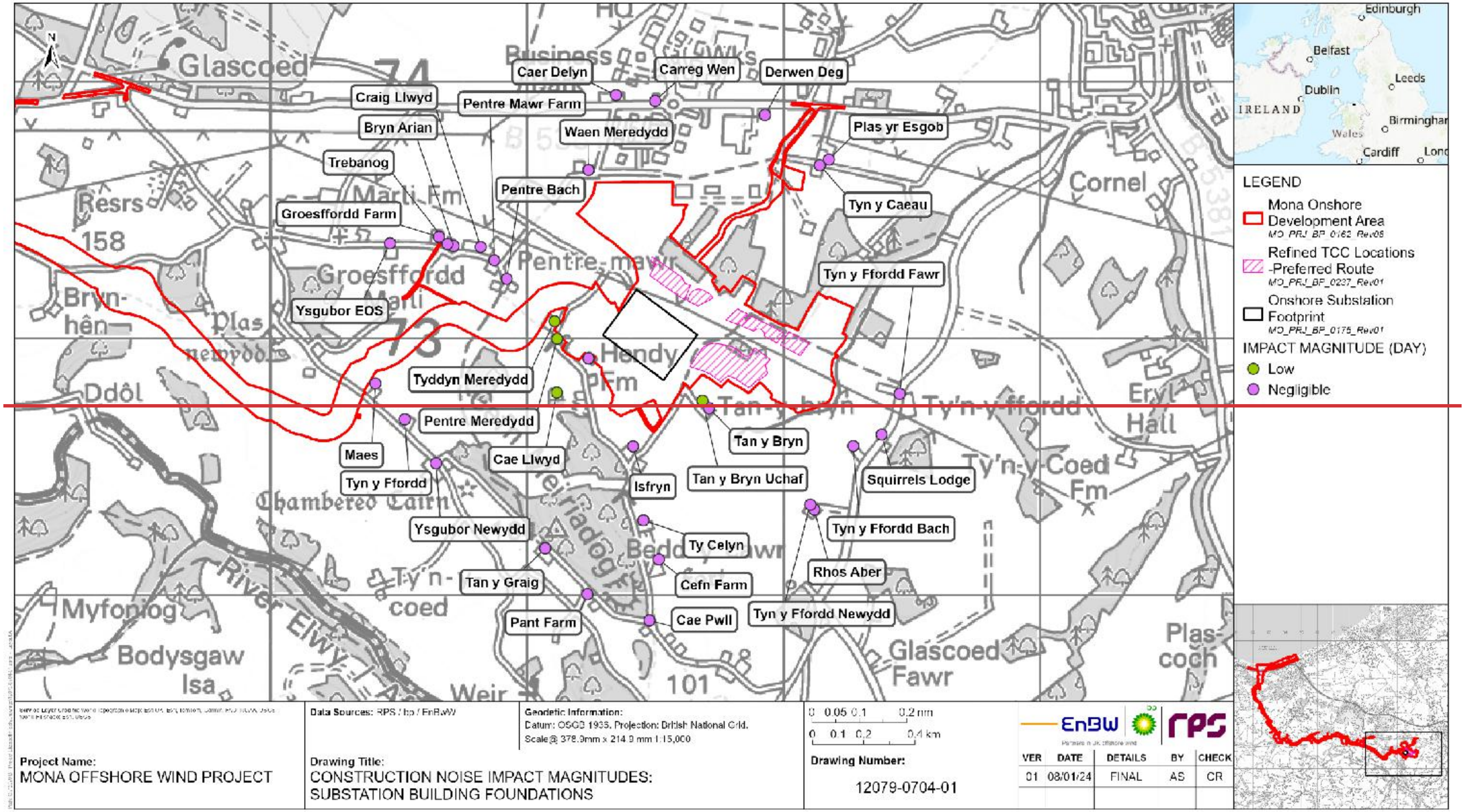


Figure 1-21: Evening/weekend construction noise impact magnitudes: Substation groundworks



Caer Delyn
Carreg Wen
Derwen Deg
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Plas yr Esgob
Trebanog
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Tan y Bryn Uchaf
Squirrels Lodge
Tyn y Ffordd
Isfryn
Ysgubor Newydd
Ty Celyn
Tyn y Ffordd Bach
Rhos Aber
Tan y Graig
Cefn Farm
Tyn y Ffordd Newydd
Cae Pwll
Pant Farm
Glascoed
Groesffordd
Pentre-mawr
Cornel
Hendy Fm
Eryl Hall
Ty'n-y-Coed Fm
Chambered Cairn
Myfoniog
Bodysgaw Isa
River Elwy
Glascoed Fawr
Plas-coch
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev08
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (DAY)
Low
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale @ 378.9mm x 214.9 mm 1:15,000
0 0.05 0.1 0.2 mi
0 0.1 0.2 0.4 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
SUBSTATION BUILDING FOUNDATIONS
Drawing Number:
12079-0704-01
VER DATE DETAILS BY CHECK
01 08/01/24 FINAL AS CR

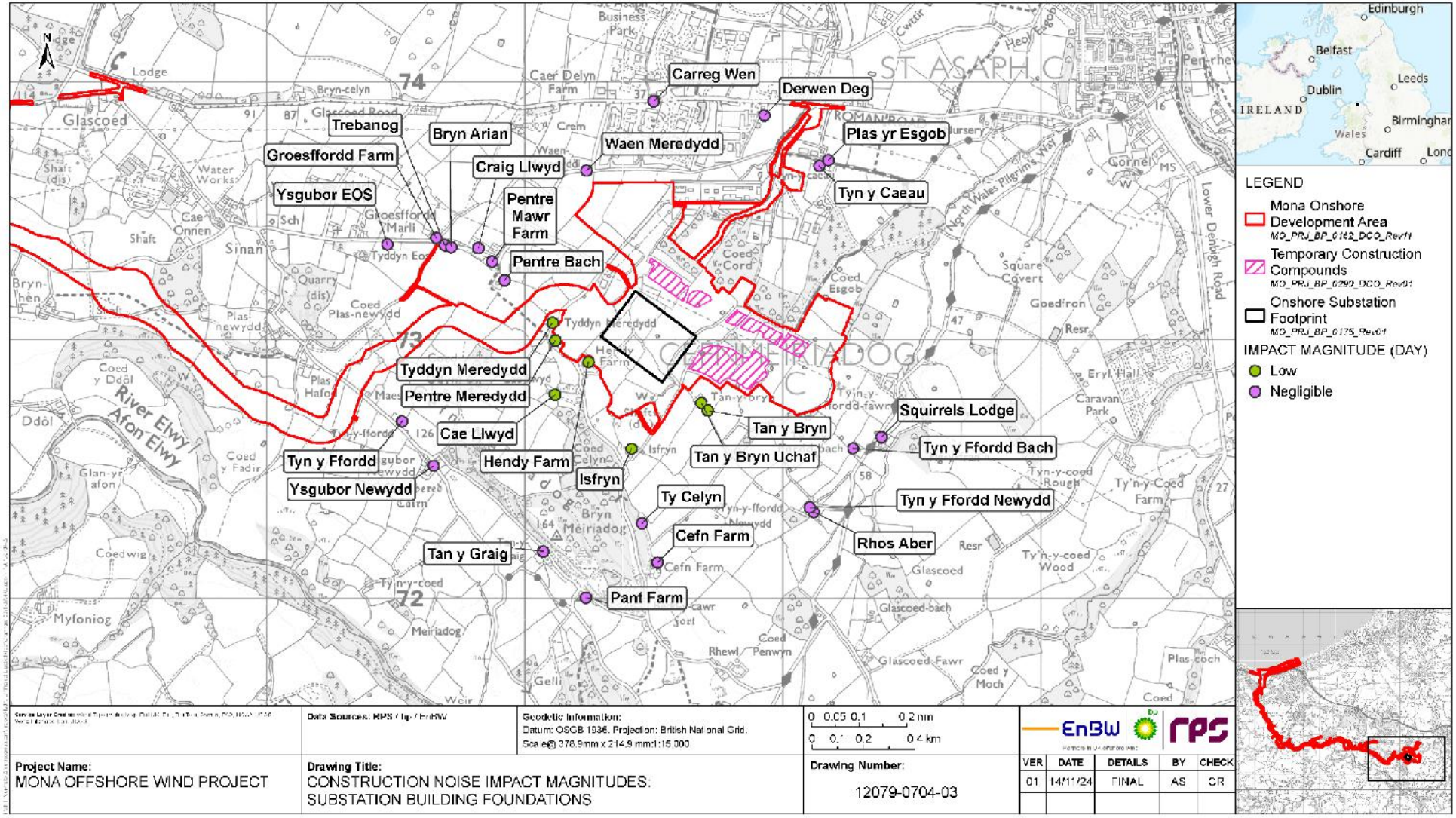
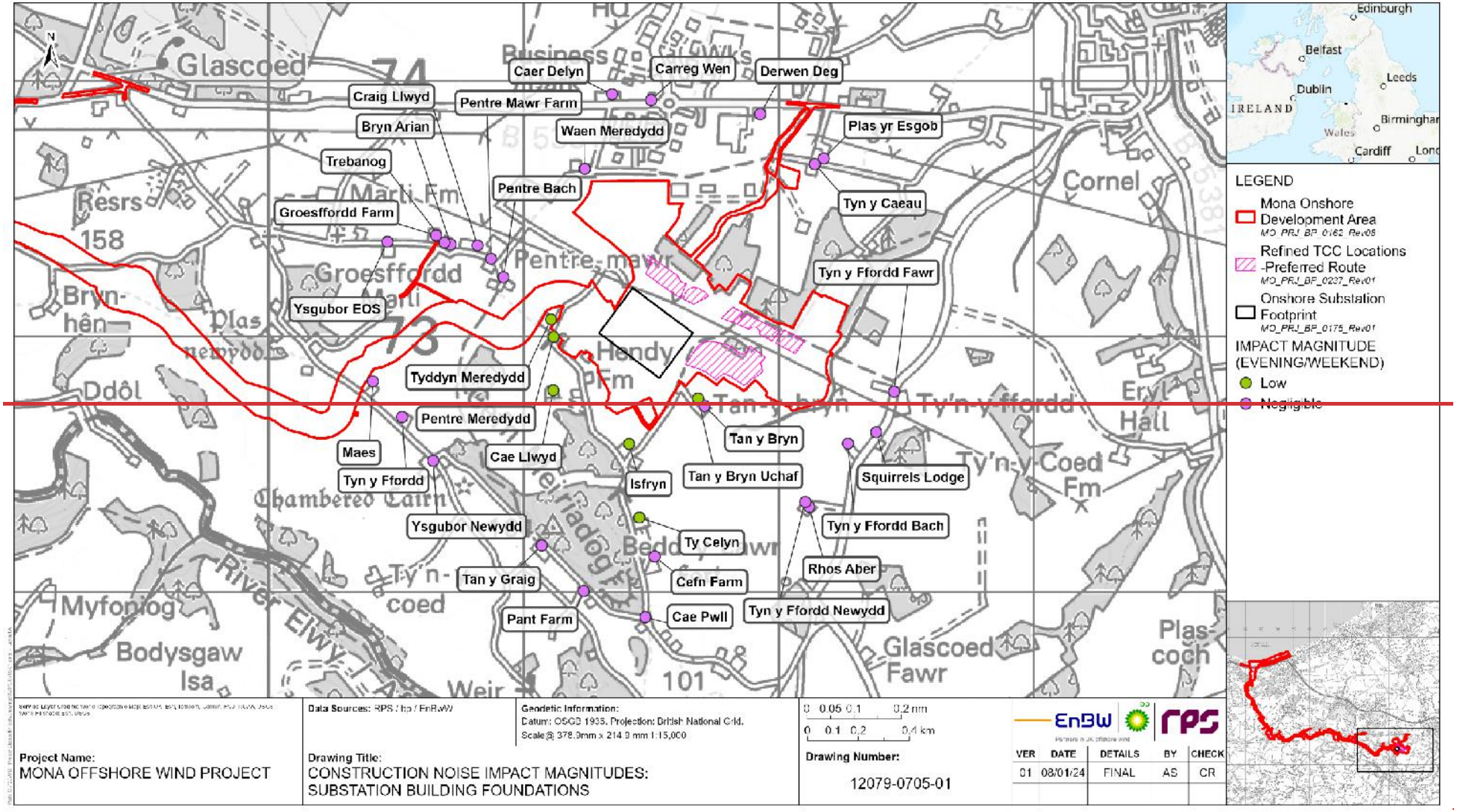


Figure 1-22: Daytime construction noise impact magnitudes: Substation building foundations


Caer Delyn
Carreg Wen
Derwen Deg
Craig Llwyd
Pentre Mawr Farm
Bryn Arian
Waen Meredydd
Plas yr Esgob
Trebanog
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Tan y Bryn Uchaf
Squirrels Lodge
Tyn y Ffordd
Isfryn
Ysgubor Newydd
Tyn y Ffordd Bach
Ty Celyn
Tan y Graig
Cefn Farm
Rhos Aber
Pant Farm
Cae Pwll
Tyn y Ffordd Newydd
Glascoed
Pentre-mawr
Groesffordd
Marli
Handy Fm
Tan-y-bryn
Ty'n-y-ffordd
Ty'n-y-Coed Fm
Chambered Cairn
Ty'n-coed
River Elwy
Myfoniog
Bodysgaw Isa
Glascoed Fawr
Plas-coch
Cornel
Eryl Hall
Weir
Edinburgh
Belfast
Dublin
Leeds
IRELAND
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (EVENING/WEEKEND)
Low
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale@ 378.3mm x 214.9 mm 1:15,000
0 0.05 0.1 0.2 mm
0 0.1 0.2 0.4 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES: SUBSTATION BUILDING FOUNDATIONS
Drawing Number:
12079-0705-01
VER DATE DETAILS BY CHECK
01 08/01/24 FINAL AS CR

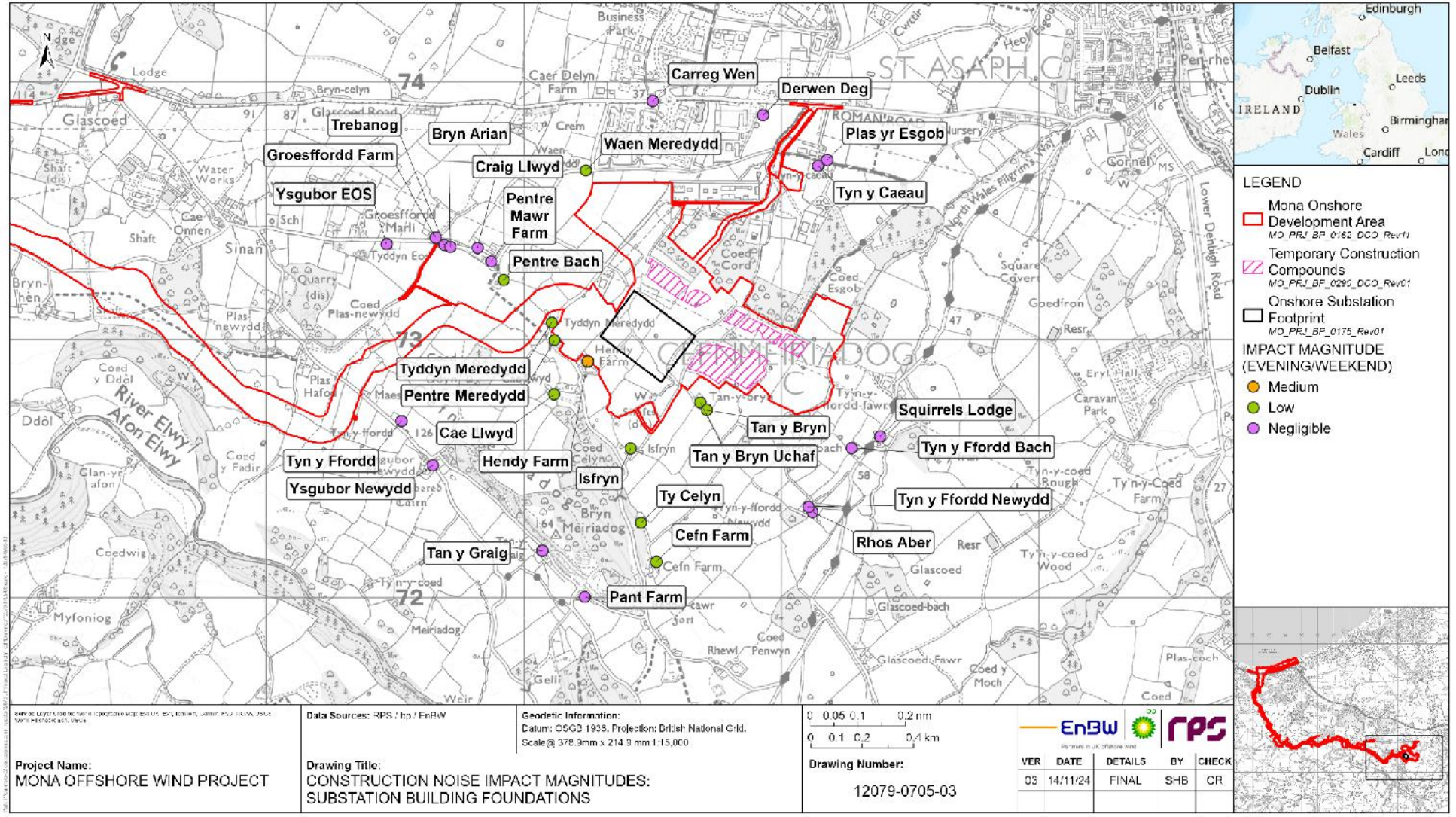
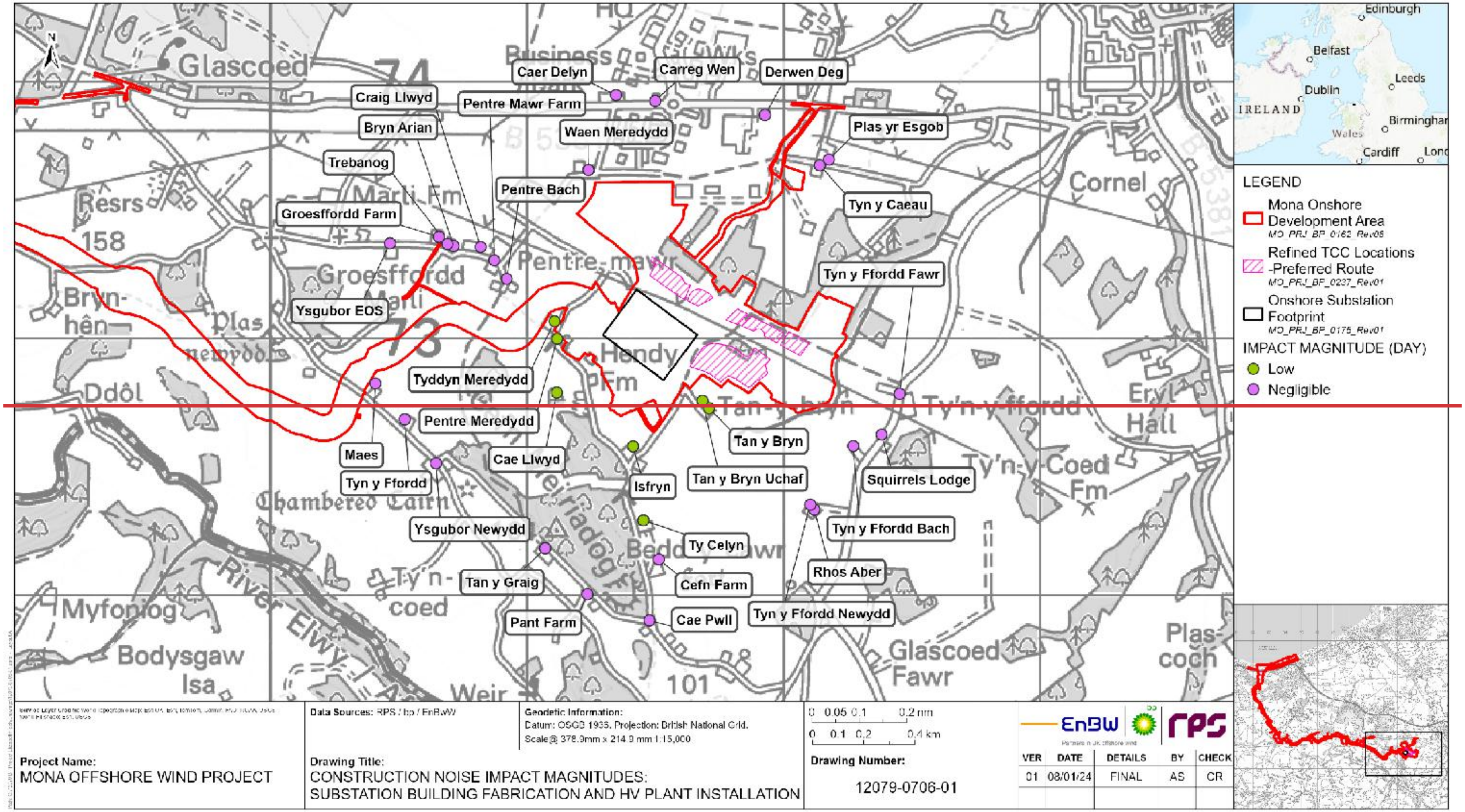


Figure 1-23: Evening/weekend construction noise impact magnitudes: Substation building foundations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Derwen Deg
Craig Llwyd
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Bryn Arian
Waen Meredydd
Plas yr Esgob
Trebanog
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Isfryn
Tan y Bryn Uchaf
Squirrels Lodge
Tyn y Ffordd
Ysgubor Newydd
Ty Celyn
Tyn y Ffordd Bach
Rhos Aber
Tan y Graig
Cefn Farm
Tyn y Ffordd Newydd
Pant Farm
Cae Pwll
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (DAY)
Low
Negligible
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale@ 378.9mm x 214.9 mm 1:15,000
0 0.05 0.1 0.2 mi
0 0.1 0.2 0.4 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
SUBSTATION BUILDING FABRICATION AND HV PLANT INSTALLATION
Drawing Number:
12079-0706-01
VER | DATE | DETAILS | BY | CHECK
01 | 08/01/24 | FINAL | AS | CR

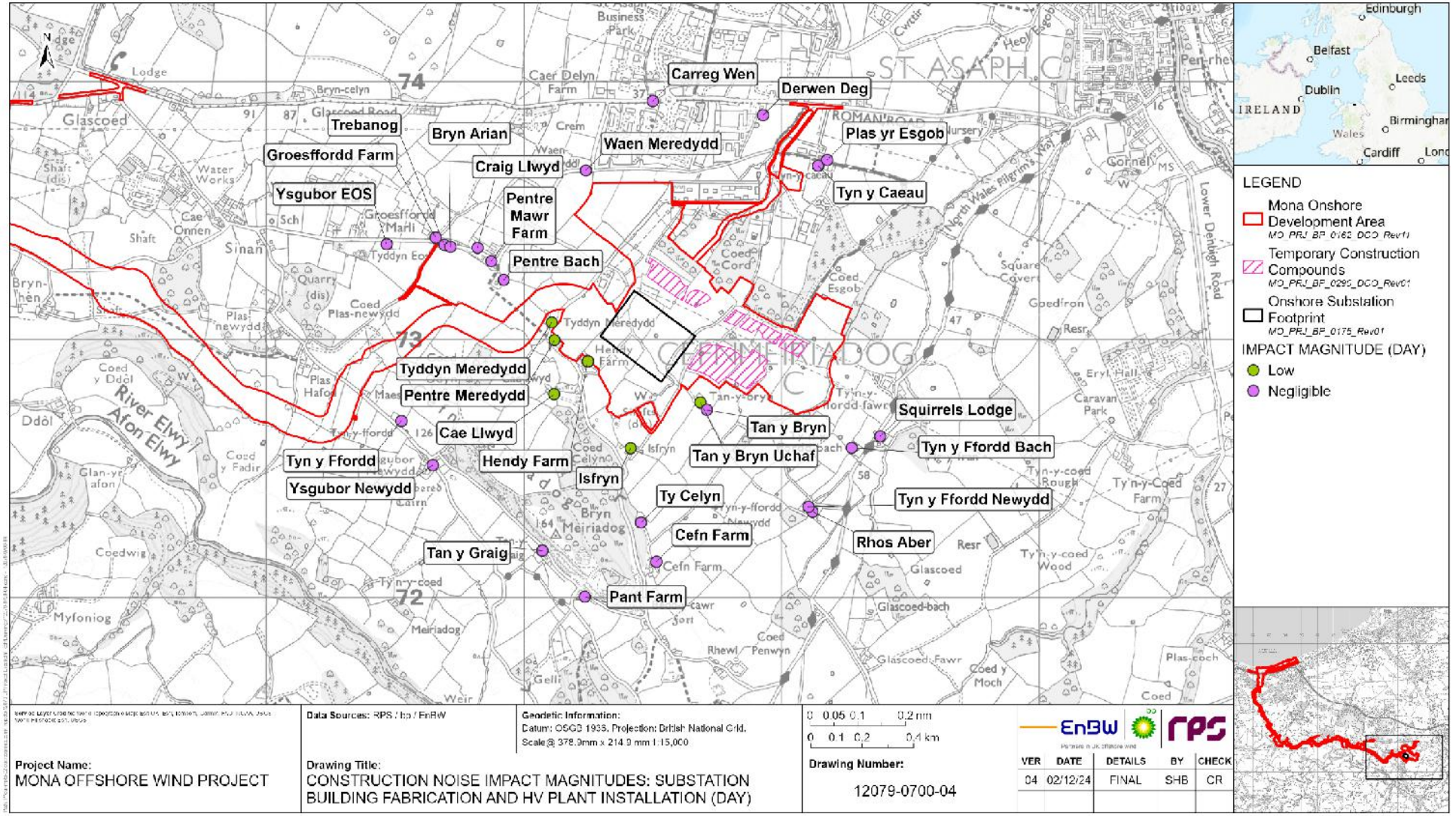
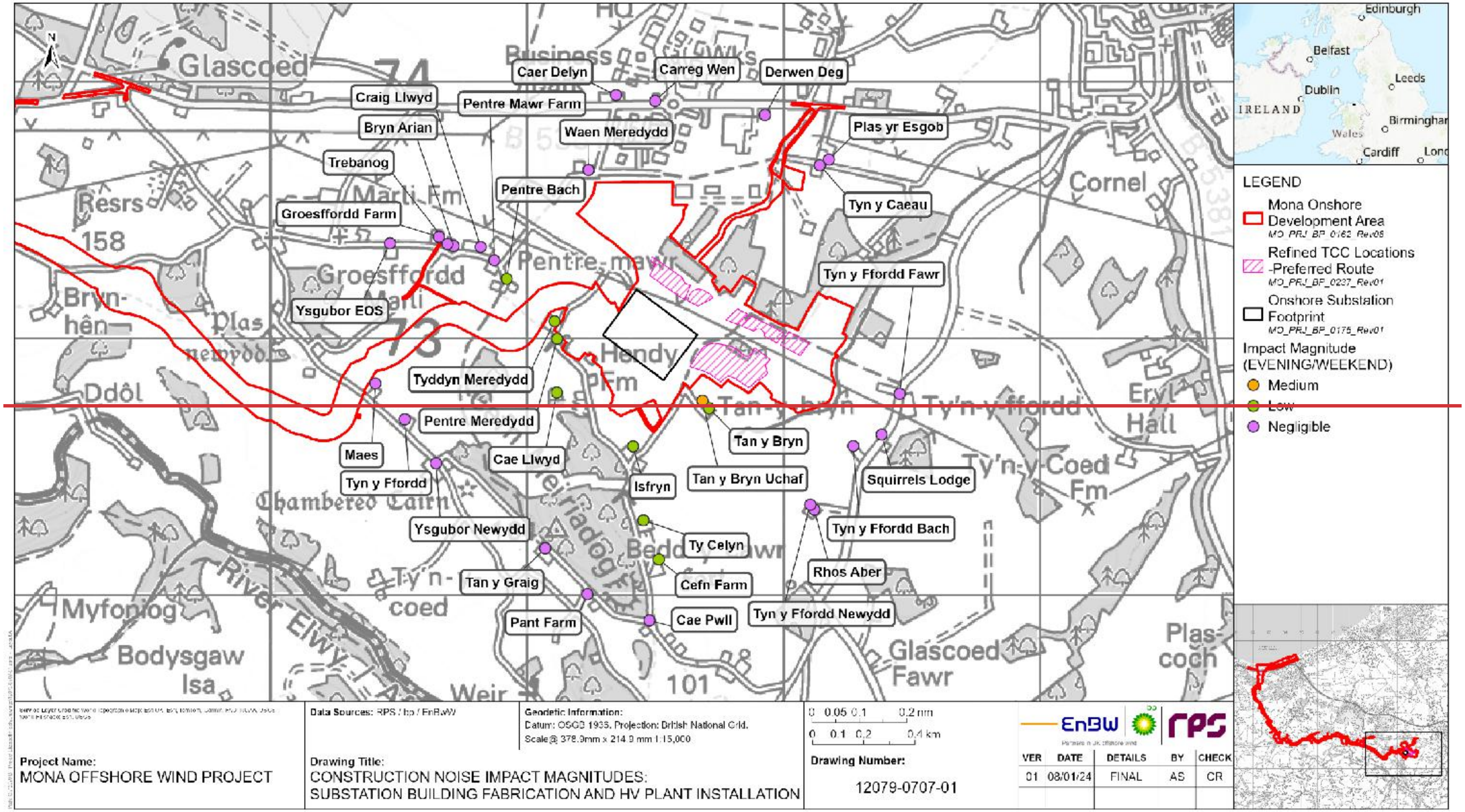


Figure 1-24: Daytime construction noise impact magnitudes: Substation building fabrication and plant installation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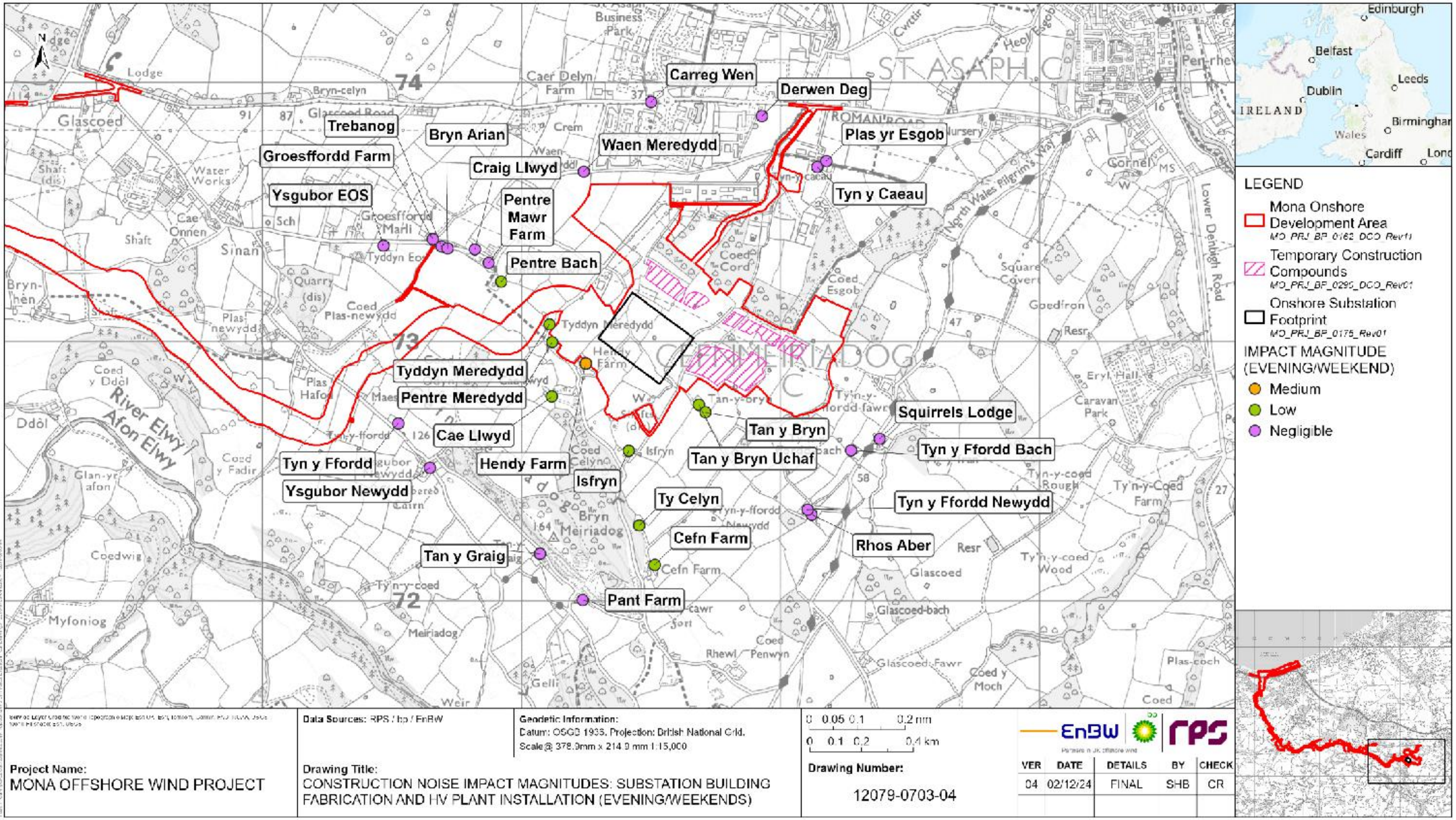
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Isfryn
Tan y Bryn Uchaf
Squirrels Lodge
Tyn y Ffordd
Ysgubor Newydd
Tyn y Ffordd Bach
Ty Celyn
Rhos Aber
Tan y Graig
Cefn Farm
Tyn y Ffordd Newydd
Cae Pwll
Pant Farm
LEGEND
Mona Onshore Development Area
Refined TCC Locations -Preferred Route
Onshore Substation Footprint
Impact Magnitude (EVENING/WEEKEND)
Medium
Low
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
SUBSTATION BUILDING FABRICATION AND HV PLANT INSTALLATION
Drawing Number:
12079-0707-01
VER DATE DETAILS BY CHECK
01 08/01/24 FINAL AS CR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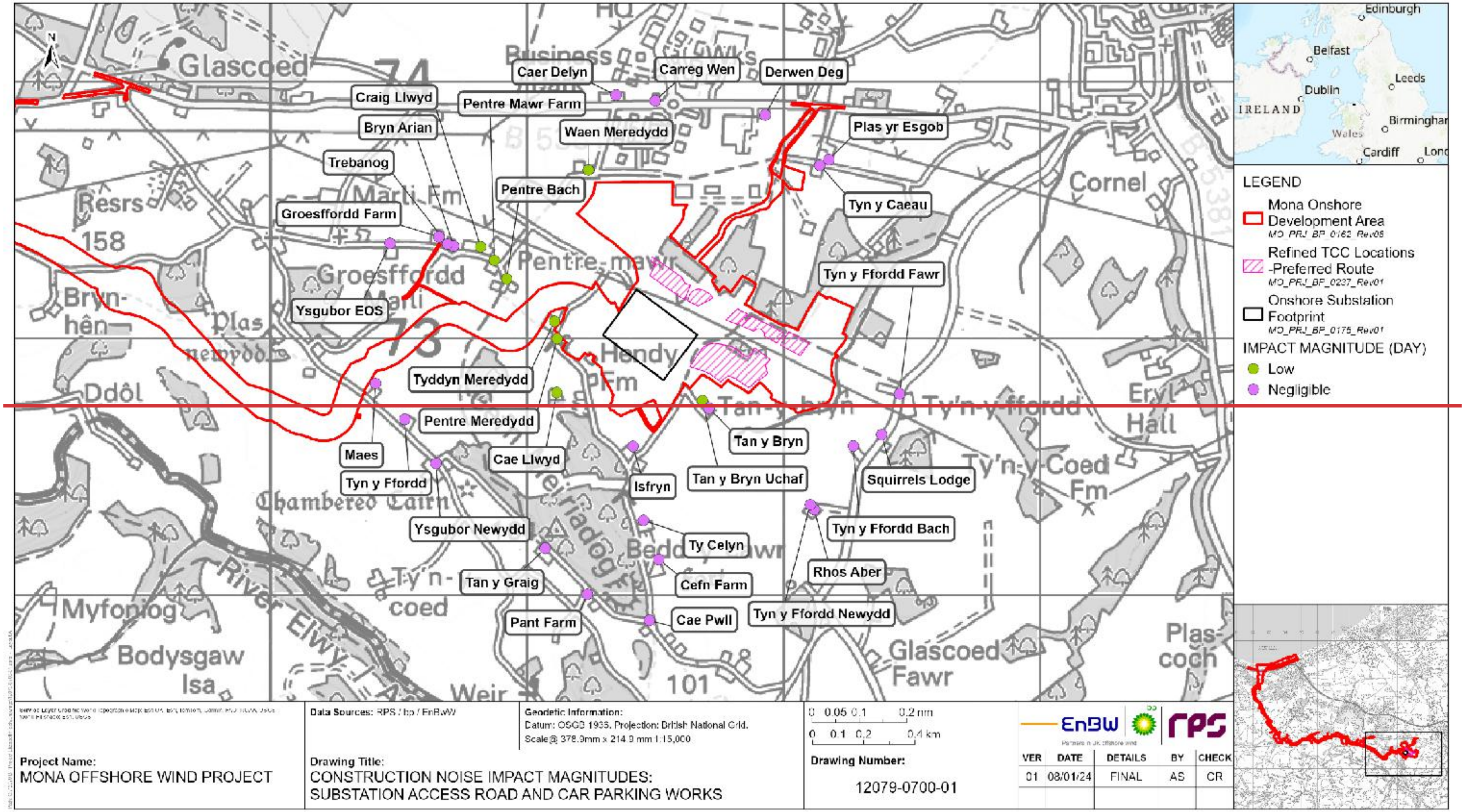
Plas yr Esgob
Trebanog
Bryn Arian
Groesffordd Farm
Waen Meredydd
Craig Llwyd
Ysgubor EOS
Pentre Mawr Farm
Tyn y Caeau
Pentre Bach
Tyddyn Meredydd
Pentre Meredydd
Squirrels Lodge
Tan y Bryn
Cae Llwyd
Tyn y Ffordd Bach
Tan y Bryn Uchaf
Tyn y Ffordd
Hendy Farm
Isfryn
Ysgubor Newydd
Ty Celyn
Tyn y Ffordd Newydd
Cefn Farm
Rhos Aber
Tan y Graig
Pant Farm
ST ASAPH
River Elwy
Afon Elwy
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_DCO_Rev01
Temporary Construction Compounds
MO_PRJ_BP_0295_DCO_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (EVENING/WEEKEND)
Medium
Low
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale @ 378.9mm x 214.9 mm 1:15,000
0 0.05 0.1 0.2 mi
0 0.1 0.2 0.4 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES: SUBSTATION BUILDING FABRICATION AND HV PLANT INSTALLATION (EVENING/WEEKENDS)
Drawing Number:
12079-0703-04
VER
DATE
DETAILS
BY
CHECK
04
02/12/24
FINAL
SHB
CR

Figure 1-25: Evening/weekend construction noise impact magnitudes: Substation building fabrication and plant installation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Bryn Arian
Waen Meredydd
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Trebanog
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Tan y Bryn
Maes
Cae Llwyd
Isfryn
Tan y Bryn Uchaf
Squirrels Lodge
Tyn y Ffordd
Ysgubor Newydd
Ty Celyn
Tyn y Ffordd Bach
Rhos Aber
Tan y Graig
Cefn Farm
Tyn y Ffordd Newydd
Cae Pwll
Pant Farm
Glascoed
Groesffordd
Pentre-mawr
Hendy Fm
Cornel
Ddôl
Chambered Cairn
Myfoniog
Bodysgaw Isa
River Elwy
Glascoed Fawr
Plas-coch
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Wales
Birmingham
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev08
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (DAY)
Low
Negligible
Data Sources: RPS / bp / EnBW
Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale @ 378.9mm x 214.9 mm 1:15,000
0 0.05 0.1 0.2 mi
0 0.1 0.2 0.4 km
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
SUBSTATION ACCESS ROAD AND CAR PARKING WORKS
Drawing Number:
12079-0700-01
VER DATE DETAILS BY CHECK
01 08/01/24 FINAL AS CR

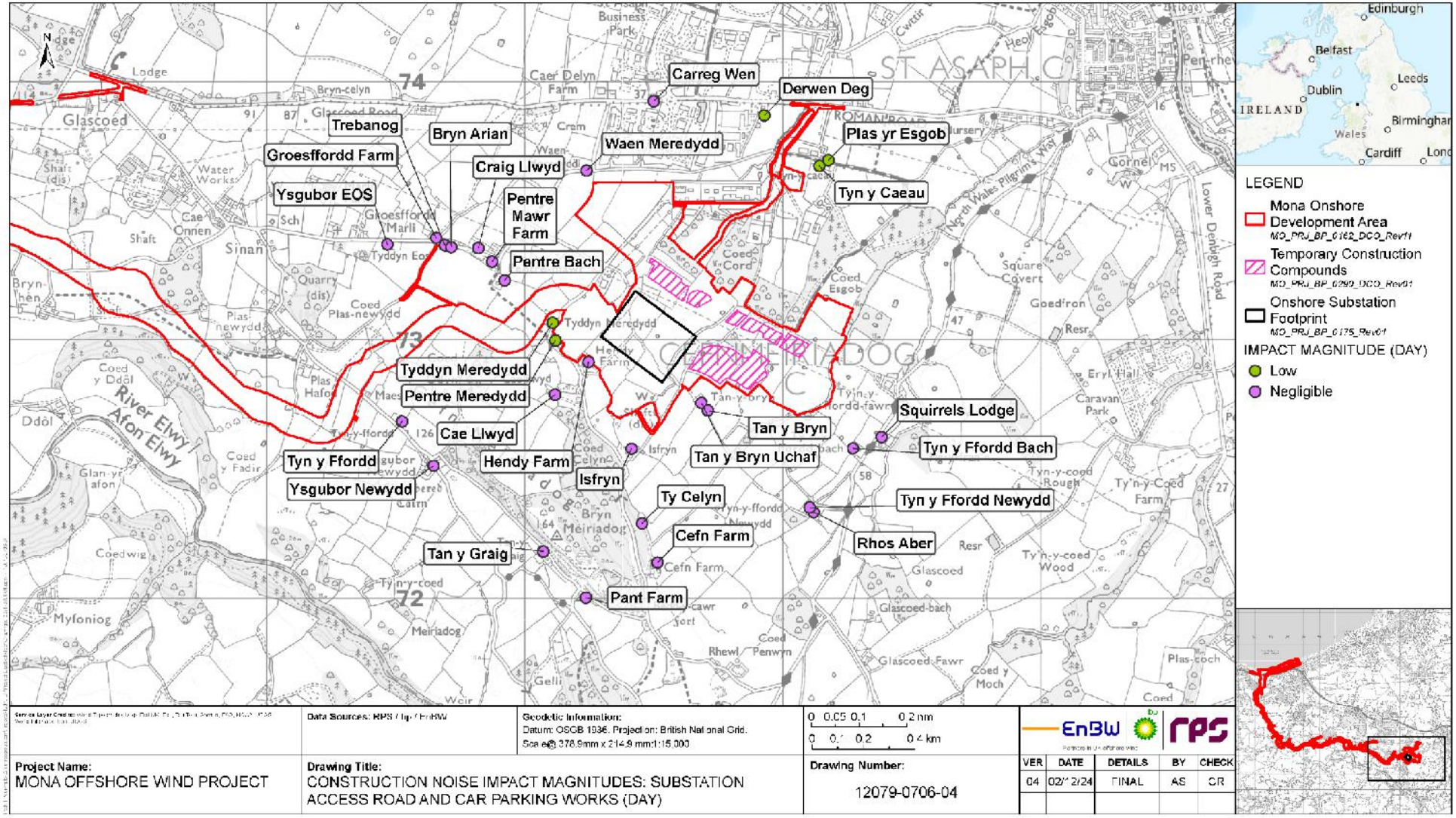
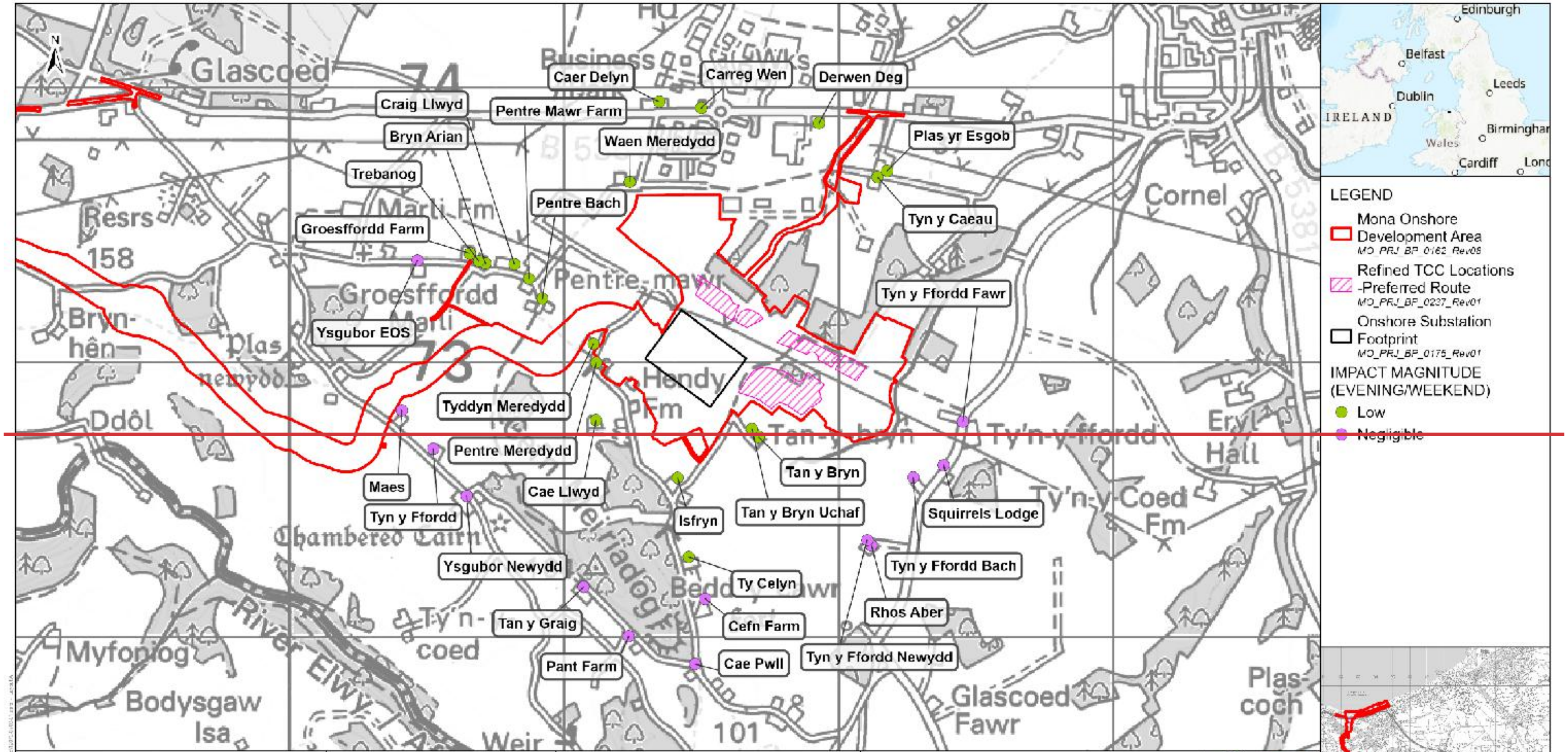


Figure 1-26: Daytime construction noise impact magnitudes: Substation access road and car parking works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Trebanog
Pentre Bach
Tyn y Caeau
Groesffordd Farm
Tyn y Ffordd Fawr
Ysgubor EOS
Tyddyn Meredydd
Pentre Meredydd
Maes
Cae Llwyd
Tan y Bryn
Tyn y Ffordd
Isfryn
Tan y Bryn Uchaf
Squirrels Lodge
Ysgubor Newydd
Ty Celyn
Tyn y Ffordd Bach
Rhos Aber
Tan y Graig
Cefn Farm
Tyn y Ffordd Newydd
Pant Farm
Cae Pwll
Glascoed
Resrs
Groesffordd Marli
Bryn-hên
Ddôl
Hendy Fm
Cornel
Eryl Hall
Ty'n-y-Coed Fm
Myfoniog
Bodysgaw Isa
River Elwy
Plas-coch
Glascoed Fawr
Edinburgh
Belfast
Leeds
Dublin
IRELAND
Birmingham
Wales
Cardiff
LEGEND
Mona Onshore Development Area
MO_PRJ_BP_0162_Rev05
Refined TCC Locations -Preferred Route
MO_PRJ_BP_0237_Rev01
Onshore Substation Footprint
MO_PRJ_BP_0175_Rev01
IMPACT MAGNITUDE (EVENING/WEEKEND)
Low
Negligible

Data Sources: RPS / bp / EnBW	Geodetic Information: Datum: OSGB 1936, Projection: British National Grid. Scale @ 378.9mm x 214.9 mm 1:15,000	0 0.05 0.1 0.2 mi / 0 0.1 0.2 0.4 km	
Project Name: MONA OFFSHORE WIND PROJECT	Drawing Title: CONSTRUCTION NOISE IMPACT MAGNITUDES: SUBSTATION ACCESS ROAD AND CAR PARKING WORKS	Drawing Number: 12079-0703-01	

VER	DATE	DETAILS	BY	CHECK
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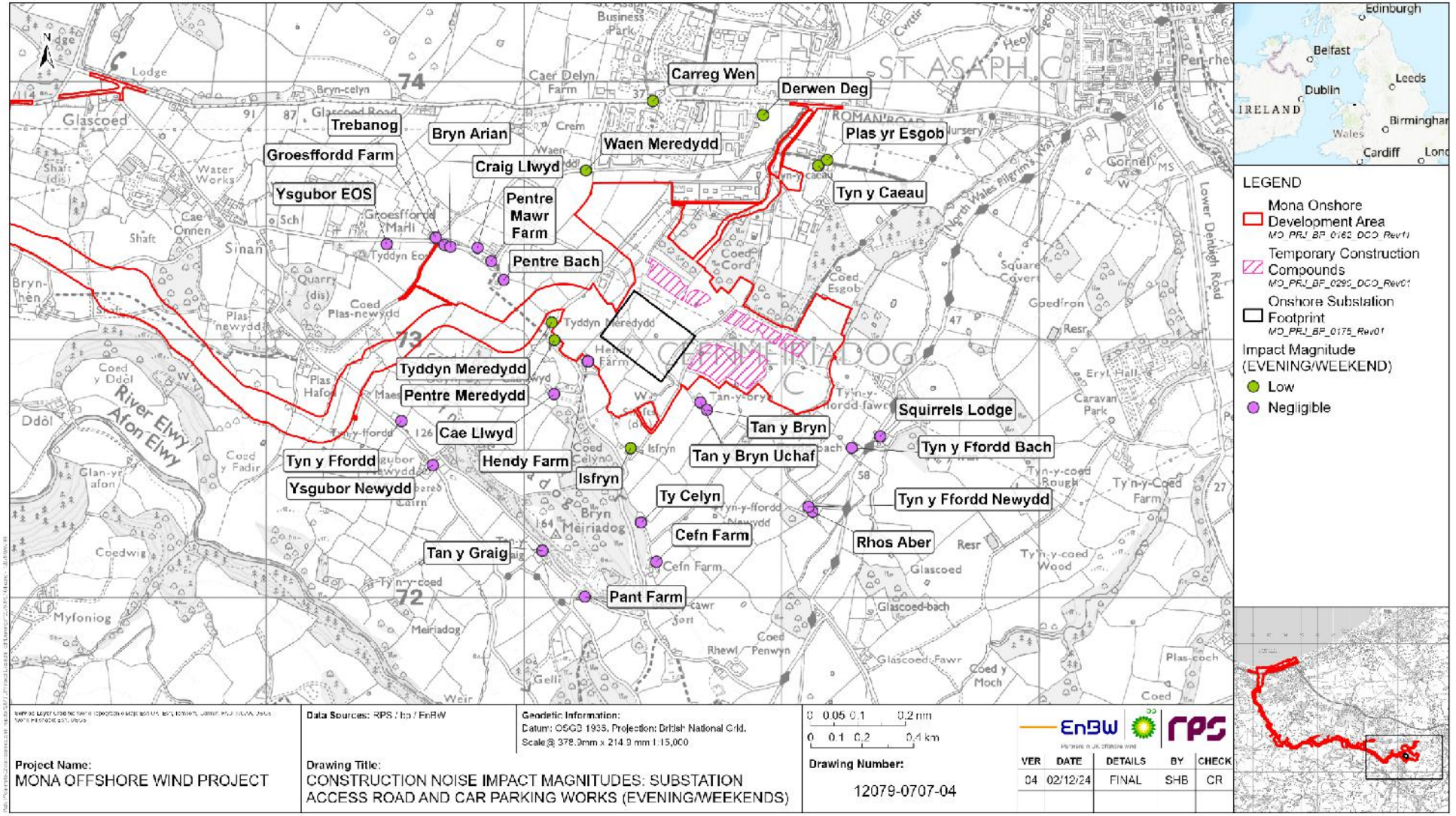


Figure 1-27: Evening/weekend construction noise impact magnitudes: Substation access road and car parking works

~~1.5.2.4~~1.5.2.3 The results of the construction noise assessment for works spread along the Onshore Cable Corridor are presented in Table 1.14 below. The impacts have been predicted based upon the LOAEL at receptors where baseline sound levels were lowest to inform a robust assessment.

Table 1.14: Number of receptors per construction noise impact magnitude band (daytime).

Location	Impact Magnitude Band Distance (m)			Number of receptors per impact magnitude band		
	High	Medium	Low	High	Medium	Low
Haul Road Construction						
TCC1	6	9	12	0	0	4
TCC2	6	9	12	0	0	4
TCC4	4	6	18	0	0	4
TCC5	4	6	18	0	0	4
Site ~~Preparation~~Clearance (including Fencing ~~and~~, Topsoil Strip and bunding)						
Landfall	43	75	335	6	1	82
Onshore cable corridor				16	10	143
Onshore substation				4	5	30
Trench Excavation and Duct Installation						
Landfall	33	59	266	6	1	82
Onshore cable corridor				16	10	143
Onshore substation				4	5	30
Trench Backfill						
Landfall	33	59	266	6	1	82
Onshore cable corridor				16	10	143
Onshore substation				4	5	30
Topsoil Reinstatement						
Landfall	42	74	334	16	10	63
Onshore cable corridor				4	2	163
Onshore substation				4	5	30
Haul Road Removal						
Landfall	47	84	375	16	15	85
Onshore cable corridor				6	2	163
Onshore substation				5	6	35

Table 1.15: Number of receptors per construction noise impact magnitude band (evening and weekends).

Location	Impact Magnitude Band Distance (m)			Number of receptors per impact magnitude band		
	High	Medium	Low	High	Medium	Low
Haul Road Construction						
TCC1	6	9	12	0	0	4
TCC2	6	9	12	0	0	4
TCC4	4	6	18	0	0	4
TCC5	4	6	18	0	0	4
Site ~~Preparation~~Clearance (including Fencing ~~and~~, Topsoil Strip and bunding)						
Landfall	134	238	669	47	28	173
Onshore cable corridor				8	79	390
Onshore substation				20	14	49
Trench Excavation and Duct Installation						
Landfall	105	188	530	47	28	173
Onshore cable corridor				8	79	390
Onshore substation				20	14	49
Trench Backfill						
Landfall	105	188	530	47	28	173
Onshore cable corridor				8	79	390
Onshore substation				20	14	49
Topsoil Reinstatement						
Landfall	133	237	668	47	27	172
Onshore cable corridor				8	79	387
Onshore substation				20	14	49
Haul Road Removal						
Landfall	149	266	749	51	28	210
Onshore cable corridor				14	108	544
Onshore substation				20	16	61

~~1.5.2.5~~1.5.2.4 The results are shown graphically in Figure 1-28 to Figure 1-35 below.

Construction vibration

~~1.5.2.6~~1.5.2.5 Impact magnitude bands have been generated to count how many receptors will be impacted during the dynamic compaction of the haul road, construction of the temporary construction compounds, and the construction of the Mona Onshore Substation Platform. Consideration has also been given to the potential vibration impacts arising due to piling activities for the installation of the trenchless

technique entry/exit pits and construction of the Mona Onshore Substation Platform. The results are presented in Table 1.16 below.

Table 1.16: Number of receptors per construction vibration impact magnitude band.

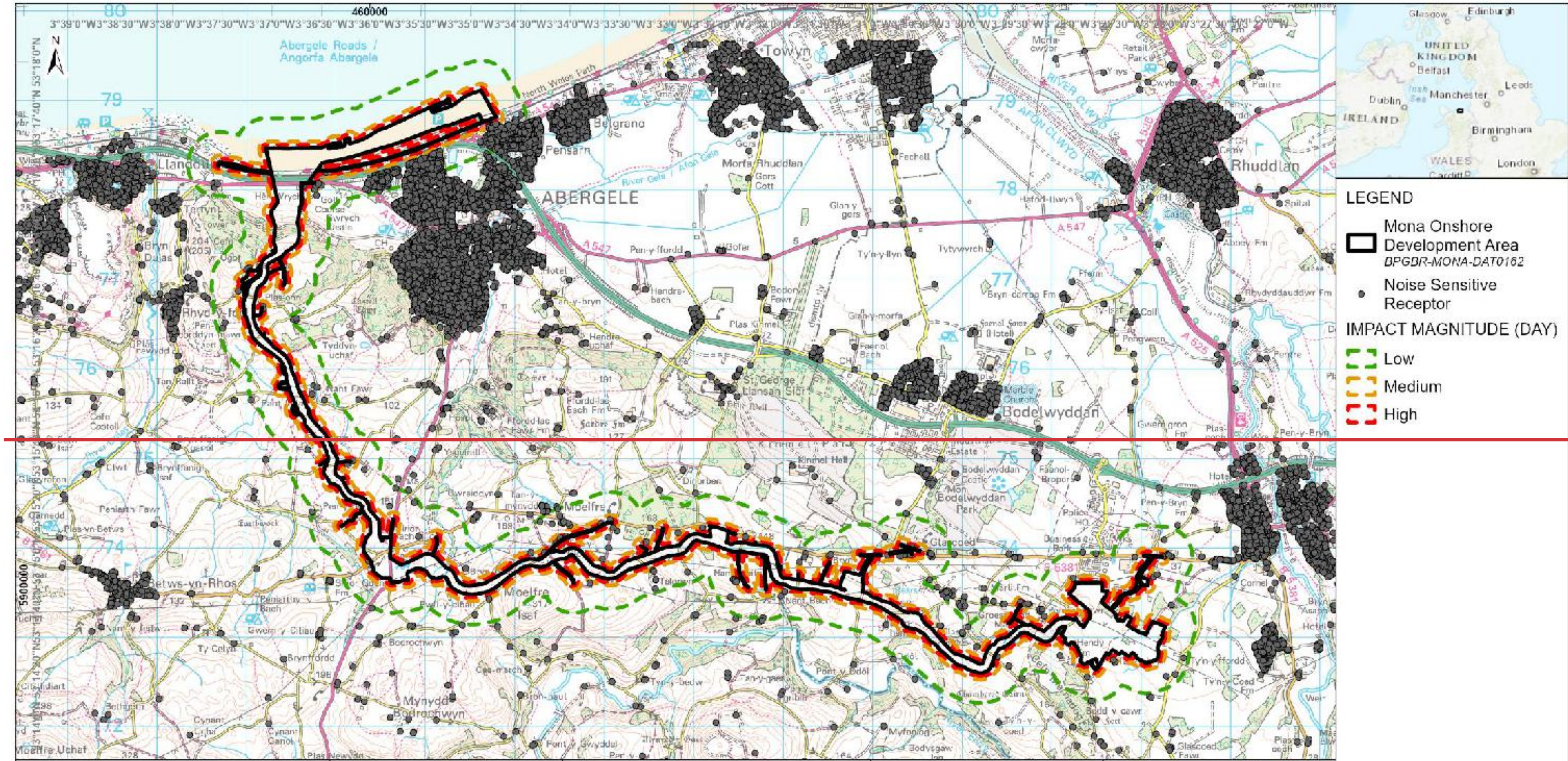
Location	Impact Magnitude Band Distance (m)			Number of receptors per impact magnitude band		
	High	Medium	Low	High	Medium	Low
Dynamic Compaction						
Haul Road	~~10~~13	~~26~~71	~~60~~160	~~1~~4	~~16~~40	~~20~~48
Temporary construction compounds (onshore cable corridor).				~~0~~2	1	2
Temporary construction compounds (onshore substation).				0	0	~~0~~2
Onshore substation platform.				0	0	~~0~~2
Vibratory Piling						
Trenchless technique entry/exit pits	~~10~~12	~~23~~73	~~58~~186	0	~~1~~4	~~2~~26
Onshore substation platform.				0	0	0

~~1.5.2.7~~1.5.2.6 It should be noted that the assessment has not accounted for any vibration control measures to be included as part of the Construction Noise and Vibration Management Plan (see the Outline Construction Noise and Vibration Plan (Document reference J 26.3)) and that the results of the assessment present the highest possible vibration levels within the parameters of the empirical formulae used for predictions.

Construction traffic

~~1.5.2.8~~1.5.2.7 The full results of the construction traffic noise assessment are tabulated in Appendix C.

~~1.5.2.9~~1.5.2.8 In summary, due to high existing baseline traffic flows on the main highway links, the change in the BNL is of ‘low’ to ‘negligible’ impact overall.



Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS

Data Sources: RPS / bP / EnBW

Geodetic Information: Datum: OSGB 1936, Projection: British National Grid. Scale@ 271.5mm x 154mm: 1:36,000

0 500 1,000 m

Project Name: MONA OFFSHORE WIND PROJECT

Drawing Title: CONSTRUCTION NOISE IMPACT MAGNITUDES: SITE PREPARATION

Drawing Number: JAJ02546-MN-NV-04

VER	DATE	DETAILS	BY	CHECK
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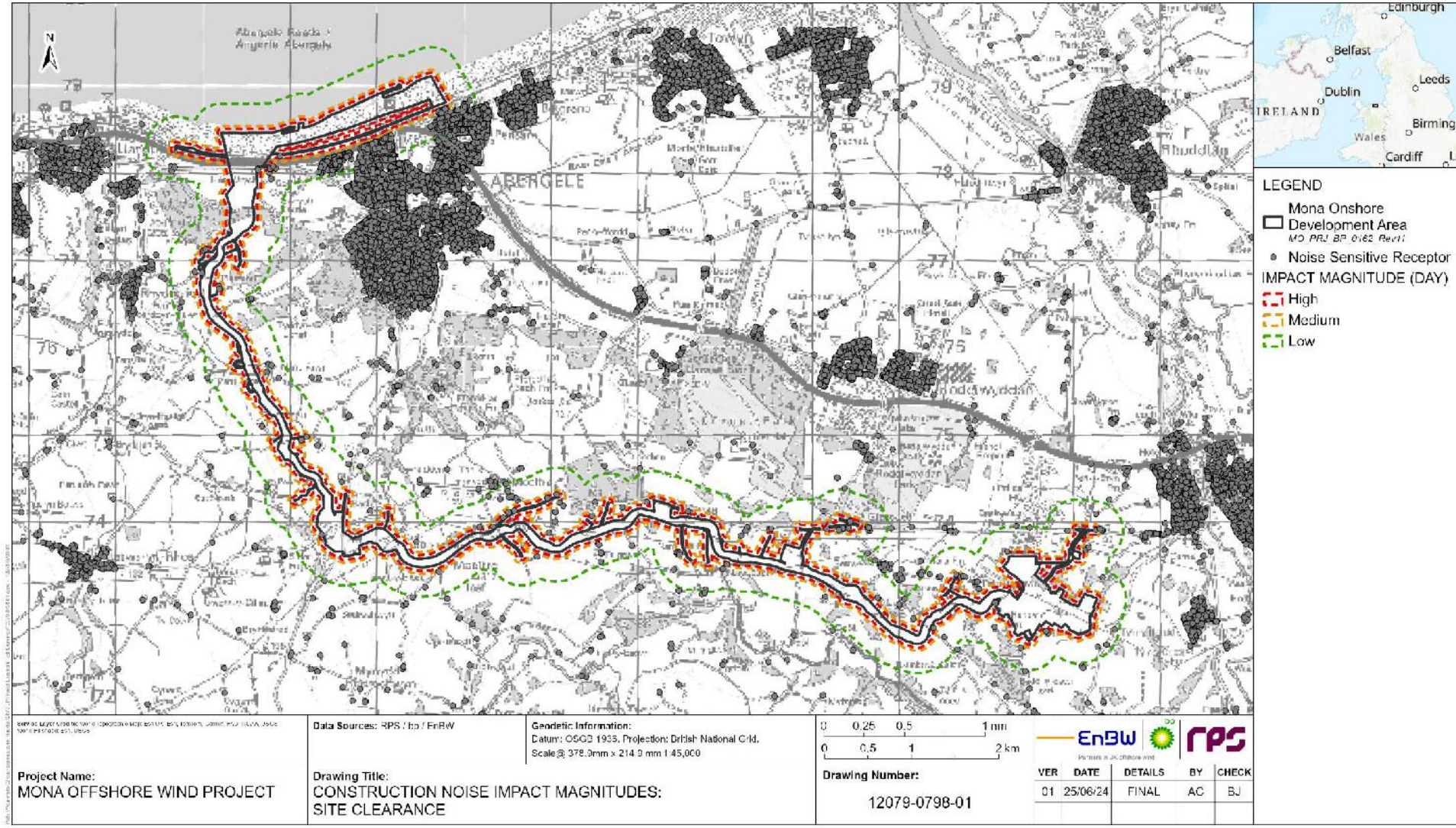
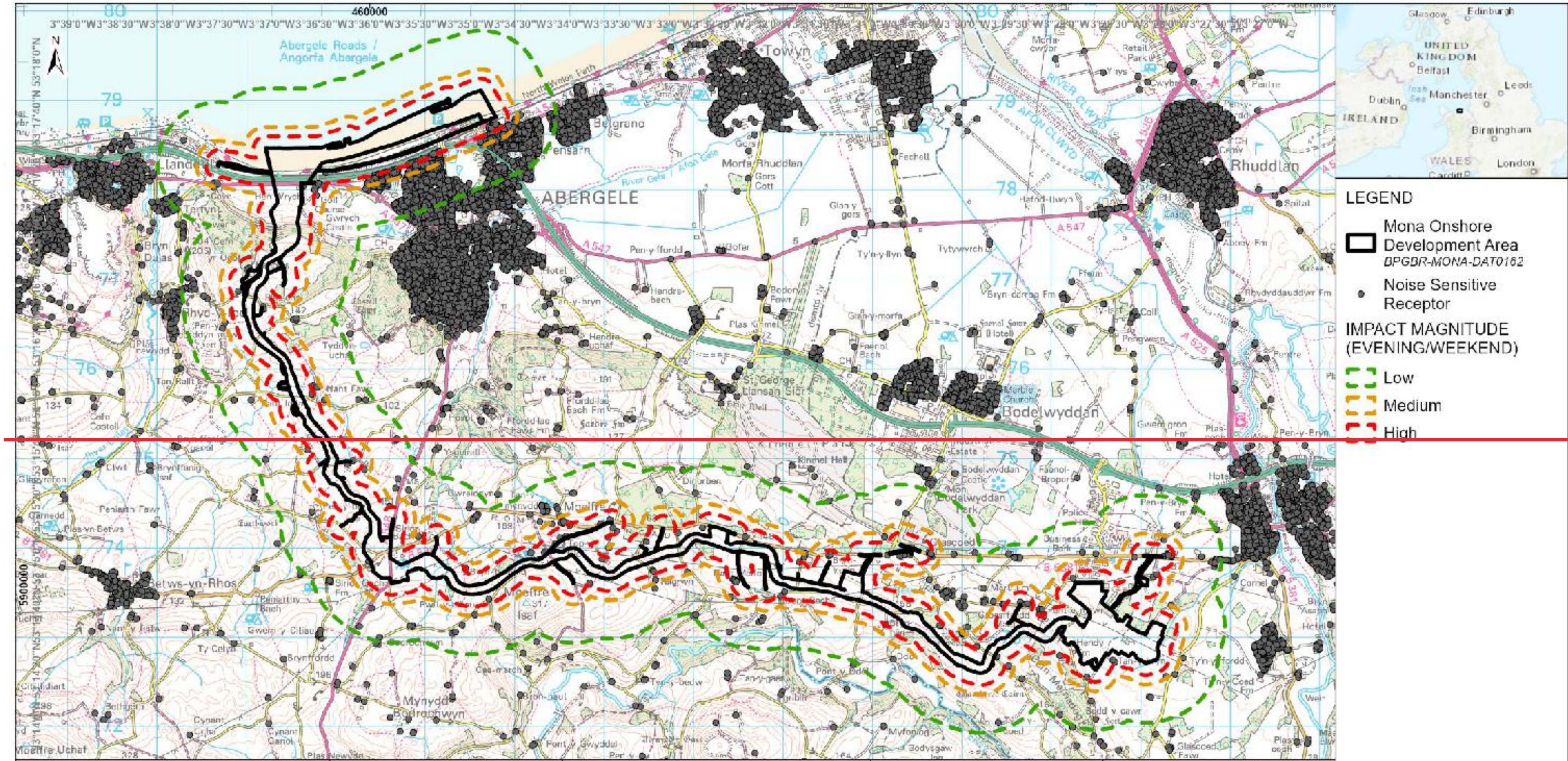


Figure 1.-28: Daytime construction noise impact magnitudes: Site ~~preparation~~clearance


LEGEND
Mona Onshore Development Area
BPGDR-MONA-DAT0162
Noise Sensitive Receptor
IMPACT MAGNITUDE (EVENING/WEEKEND)
Low
Medium
High
UNITED KINGDOM
IRELAND
WALES
Glasgow
Edinburgh
Belfast
Dublin
Manchester
Leeds
Birmingham
London
Abergele Roads / Angorfa Abergele
Towyn
ABERGELE
Belgrano
Morfa Rhuddlan
Rhuddlan
Bodelwyddan
St George
Kinmel Hall
Moelfre
Mynydd Bodrochwyn
Betws-yn-Rhos
460000
5900000

Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA	Data Sources: RPS / bP / EnBW	Geodetic Information: Datum: OSGB 1936, Projection: British National Grid. Scale @ 271.5mm x 154mm: 1:36,000	0 500 1,000 m					
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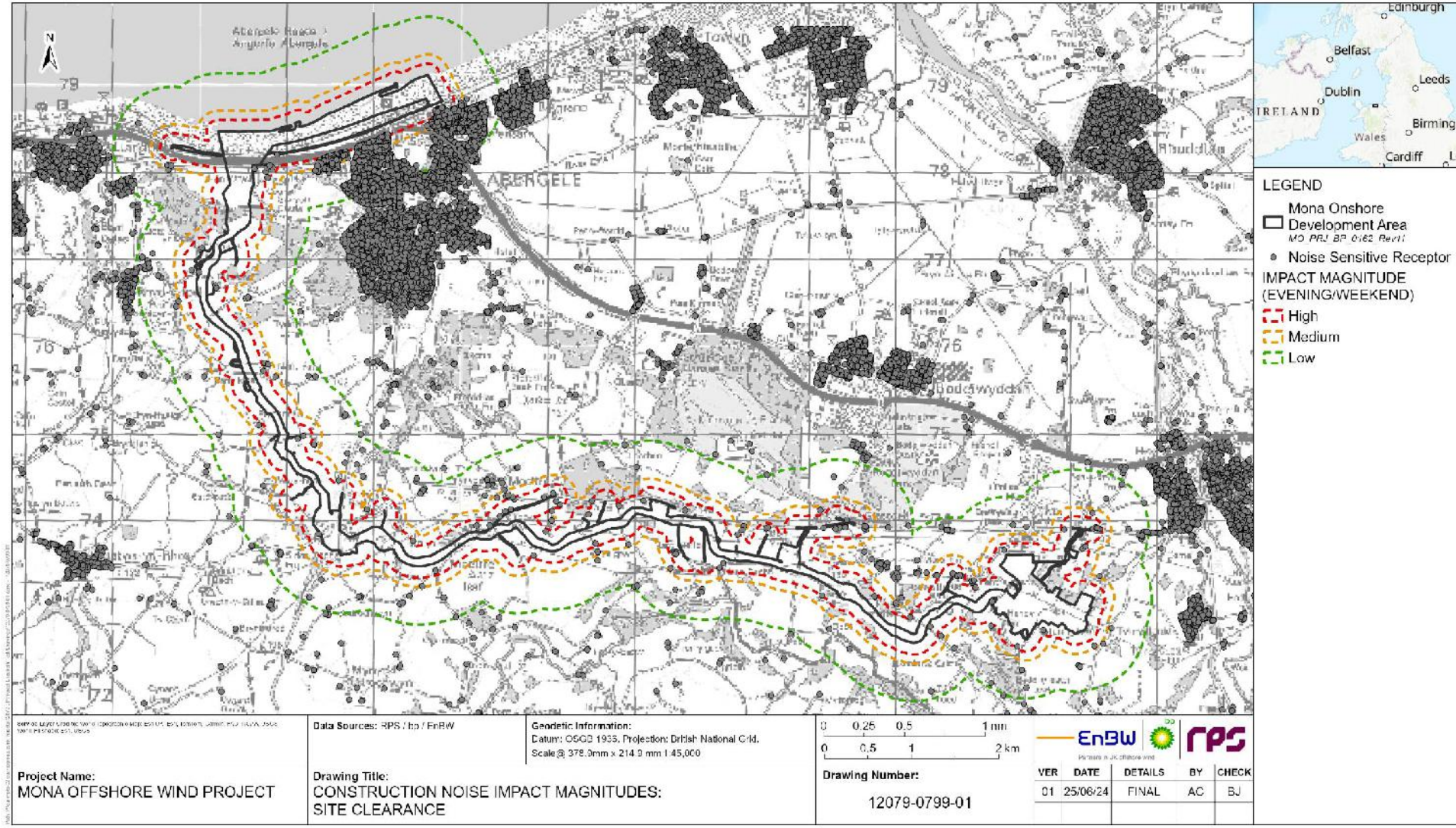
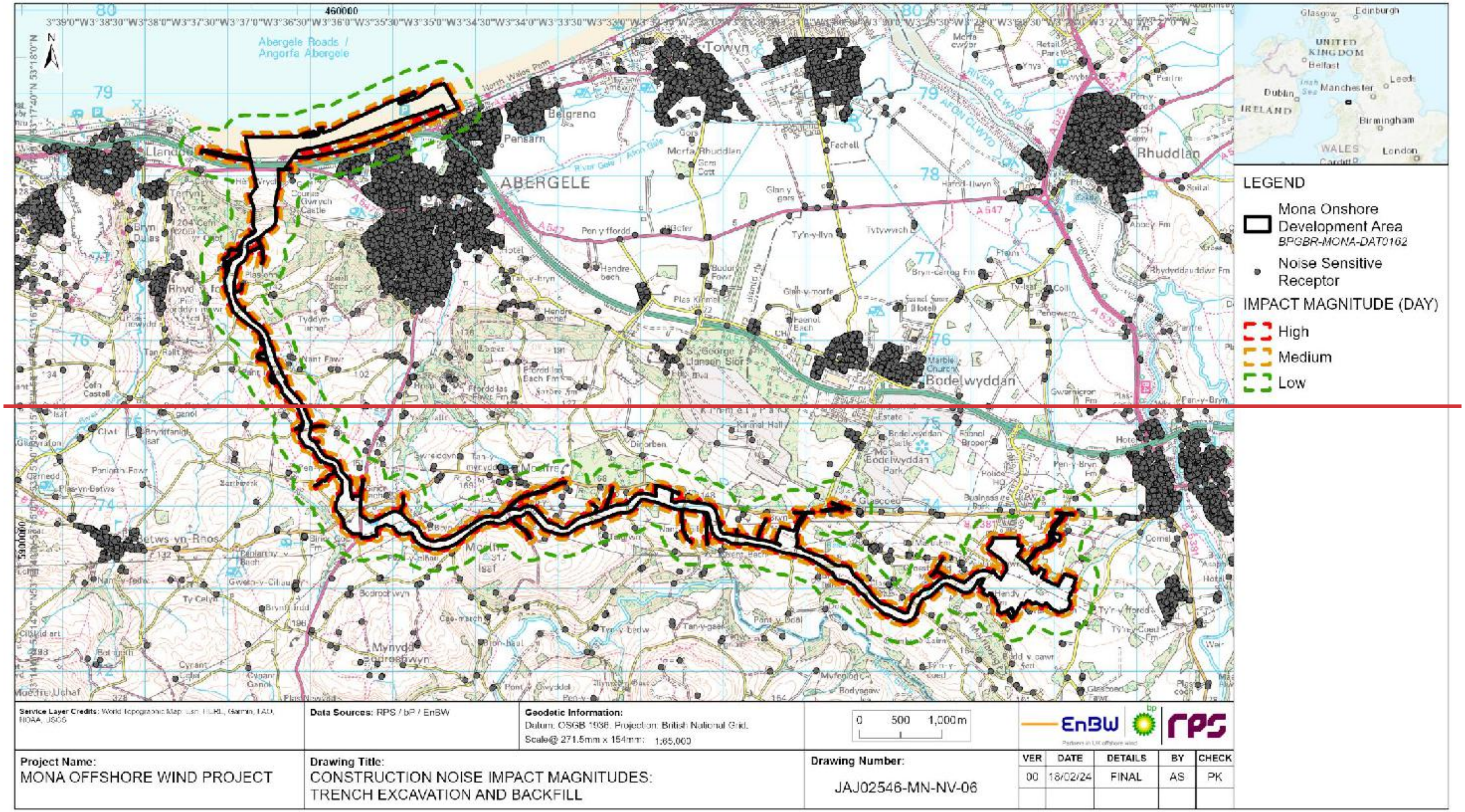


Figure 1.-29: Evening/weekend construction noise impact magnitudes: Site ~~preparation~~clearance


LEGEND
Mona Onshore Development Area
BPGBR-MONA-DAT0162
Noise Sensitive Receptor
IMPACT MAGNITUDE (DAY)
High
Medium
Low
Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS
Data Sources: RPS / bP / EnBW
Geodetic Information:
Datum: OSGB 1936. Projection: British National Grid.
Scale@ 271.5mm x 154mm: 1:65,000
0 500 1,000m
Project Name:
MONA OFFSHORE WIND PROJECT
Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
TRENCH EXCAVATION AND BACKFILL
Drawing Number:
JAJ02546-MN-NV-06
VER DATE DETAILS BY CHECK
00 16/02/24 FINAL AS PK

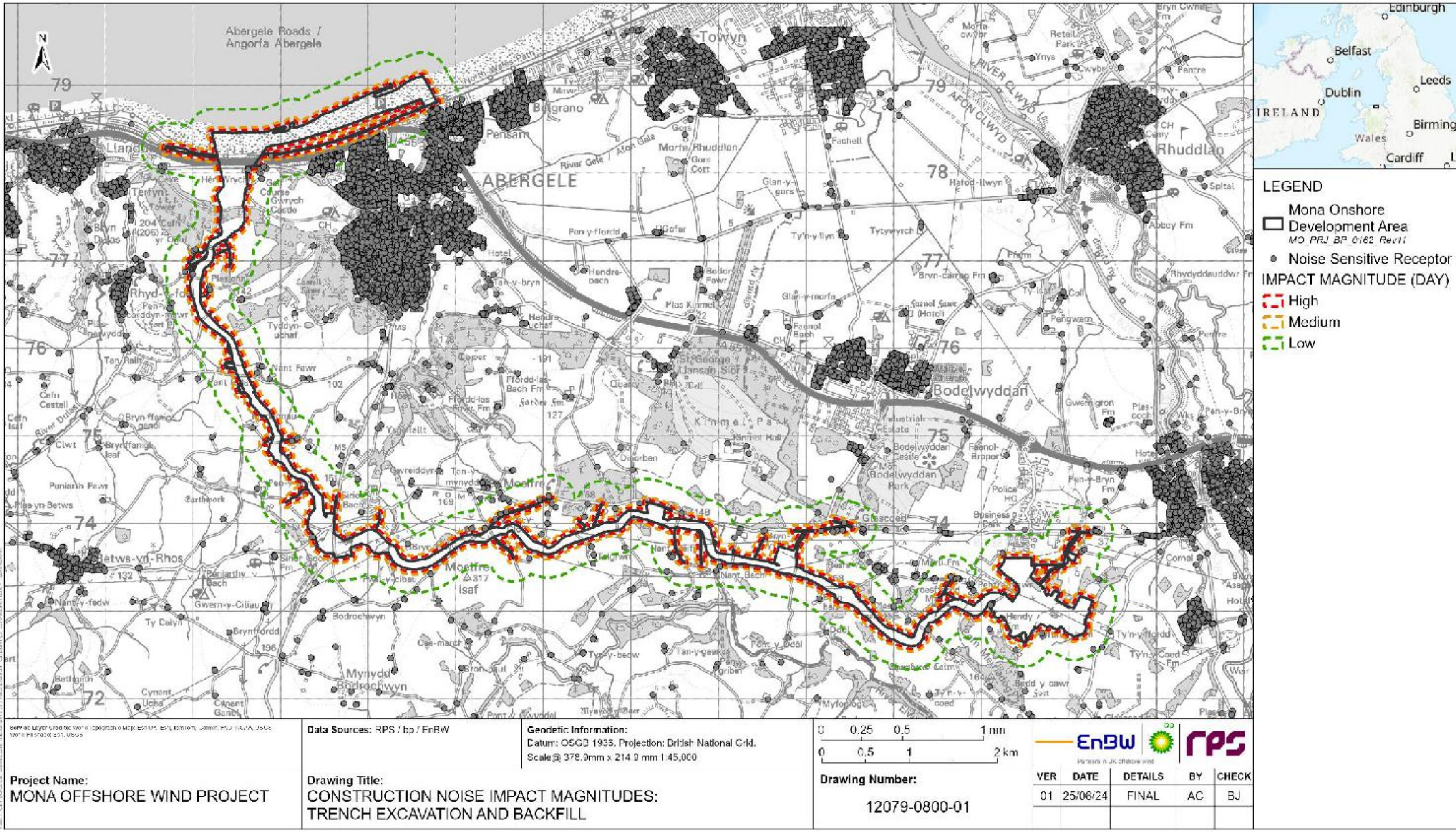
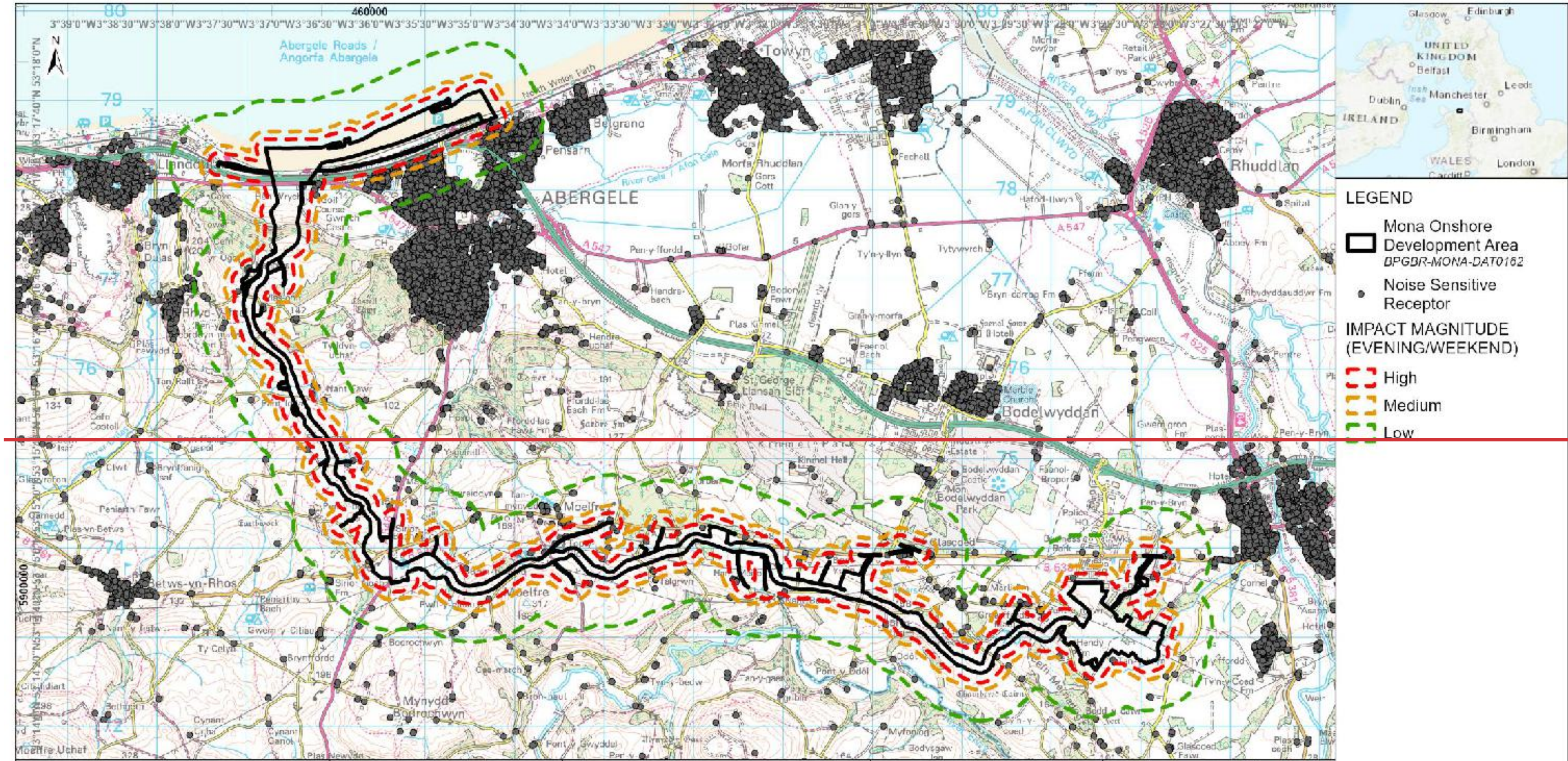


Figure 1-30: **Daytime construction noise impact magnitudes: Trench excavation and backfill.**


LEGEND
Mona Onshore Development Area
BPGDR-MONA-DAT0162
Noise Sensitive Receptor
IMPACT MAGNITUDE (EVENING/WEEKEND)
High
Medium
Low
Abergele Roads / Angorfa Abergele
ABERGELE
Towyn
Belgrano
Pensarn
Morfa Rhuddlan
Rhuddlan
Bodelwyddan
St George / Llansan Siôr
Kinmel Hall
Moelfre
Betws-yn-Rhos
Mynydd Bodrochwyn
UNITED KINGDOM
IRELAND
WALES
Glasgow
Edinburgh
Belfast
Dublin
Manchester
Leeds
Birmingham
London
460000
5900000

Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA

Data Sources: RPS / bP / EnBW

Geodetic Information:
Datum: OSGB 1936, Projection: British National Grid.
Scale@ 271.5mm x 154mm: 1:36,000

0 500 1,000 m

Project Name:
MONA OFFSHORE WIND PROJECT

Drawing Title:
CONSTRUCTION NOISE IMPACT MAGNITUDES:
TRENCH EXCAVATION AND BACKFILL

Drawing Number:
JAJ02546-MN-NV-07

VER	DATE	DETAILS	BY	CHECK
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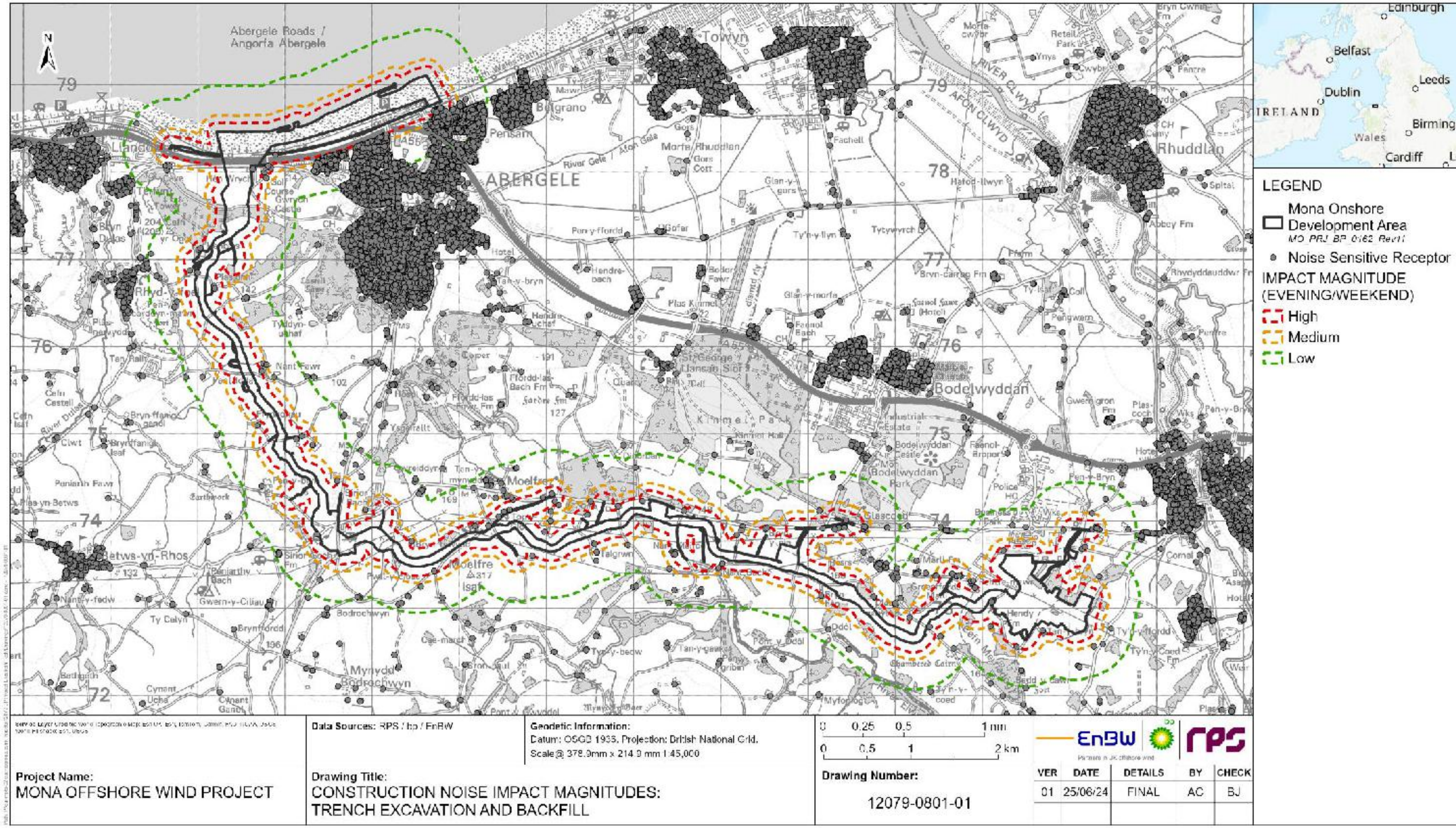
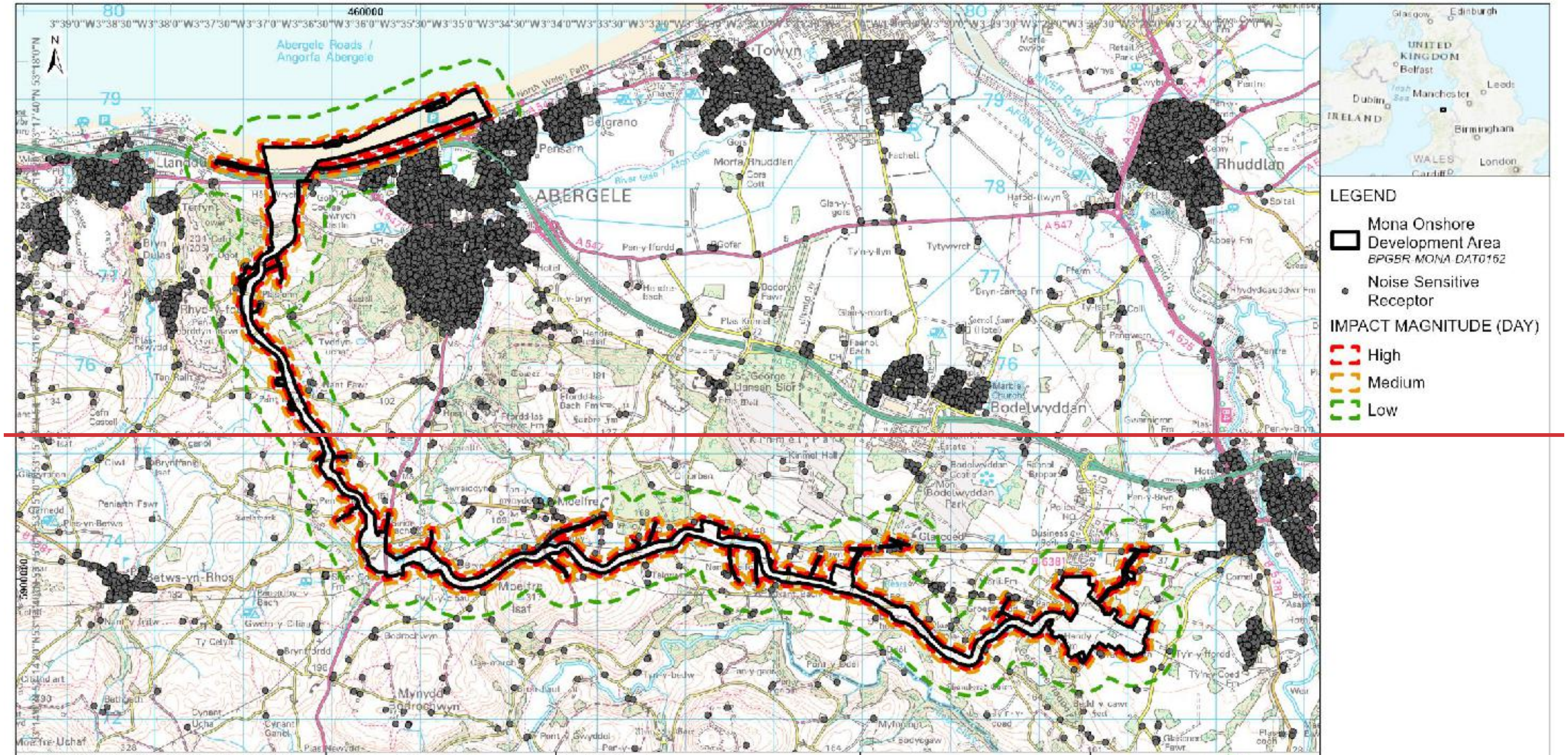


Figure 1-31: **Evening/weekend construction noise impact magnitudes: Trench excavation and backfill.**



Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA

Data Sources: RPS / bP / EnBW

Geodetic Information: Datum: OSGB 1936. Projection: British National Grid. Scale@ 271.5mm x 154mm: 1:65,000

0 500 1,000m

Project Name:	Drawing Title:	Drawing Number:	VER	DATE	DETAILS	BY	CHECK
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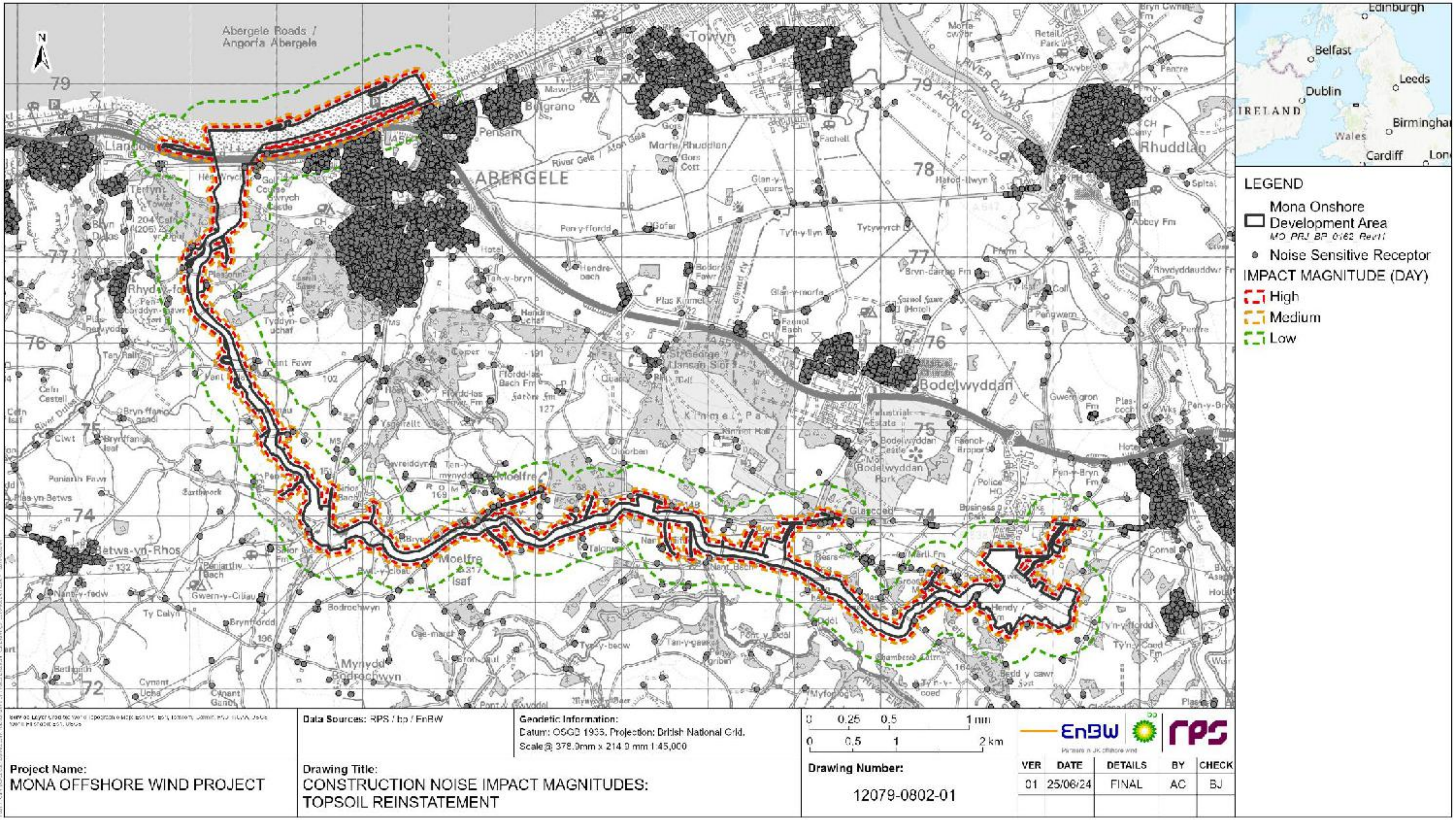
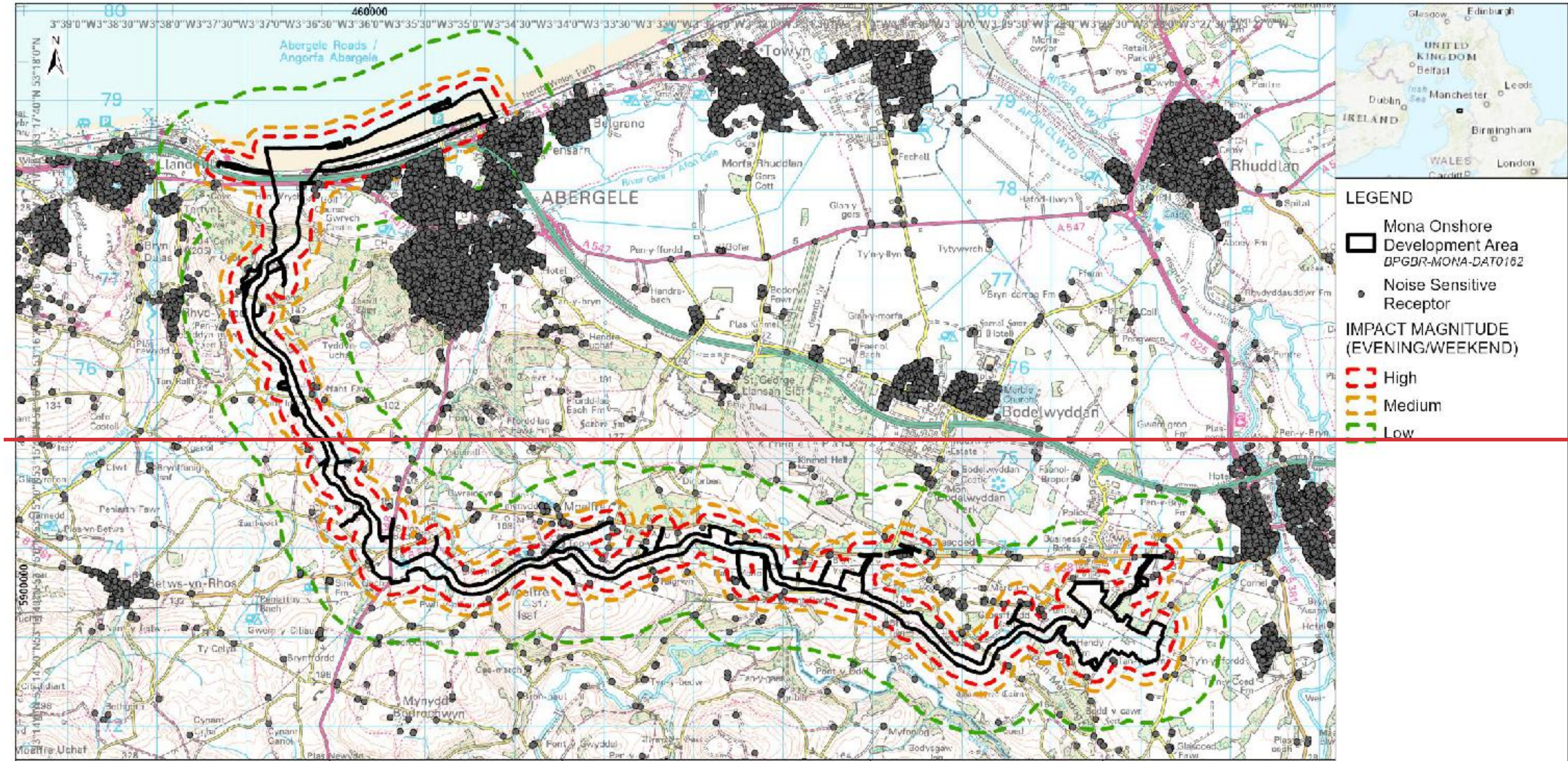


Figure 1.-32: Daytime construction noise impact magnitudes: Topsoil reinstatement



Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS	Data Sources: RPS / bP / EnBW	Geodetic Information: Datum: OSGB 1936, Projection: British National Grid. Scale@ 271.5mm x 154mm: 1:36,000	0 500 1,000 m	
Project Name: MONA OFFSHORE WIND PROJECT	Drawing Title: CONSTRUCTION NOISE IMPACT MAGNITUDES: TOPSOIL REINSTATEMENT		Drawing Number: JAJ02546-MN-NV-09	

VER	DATE	DETAILS	BY	CHECK
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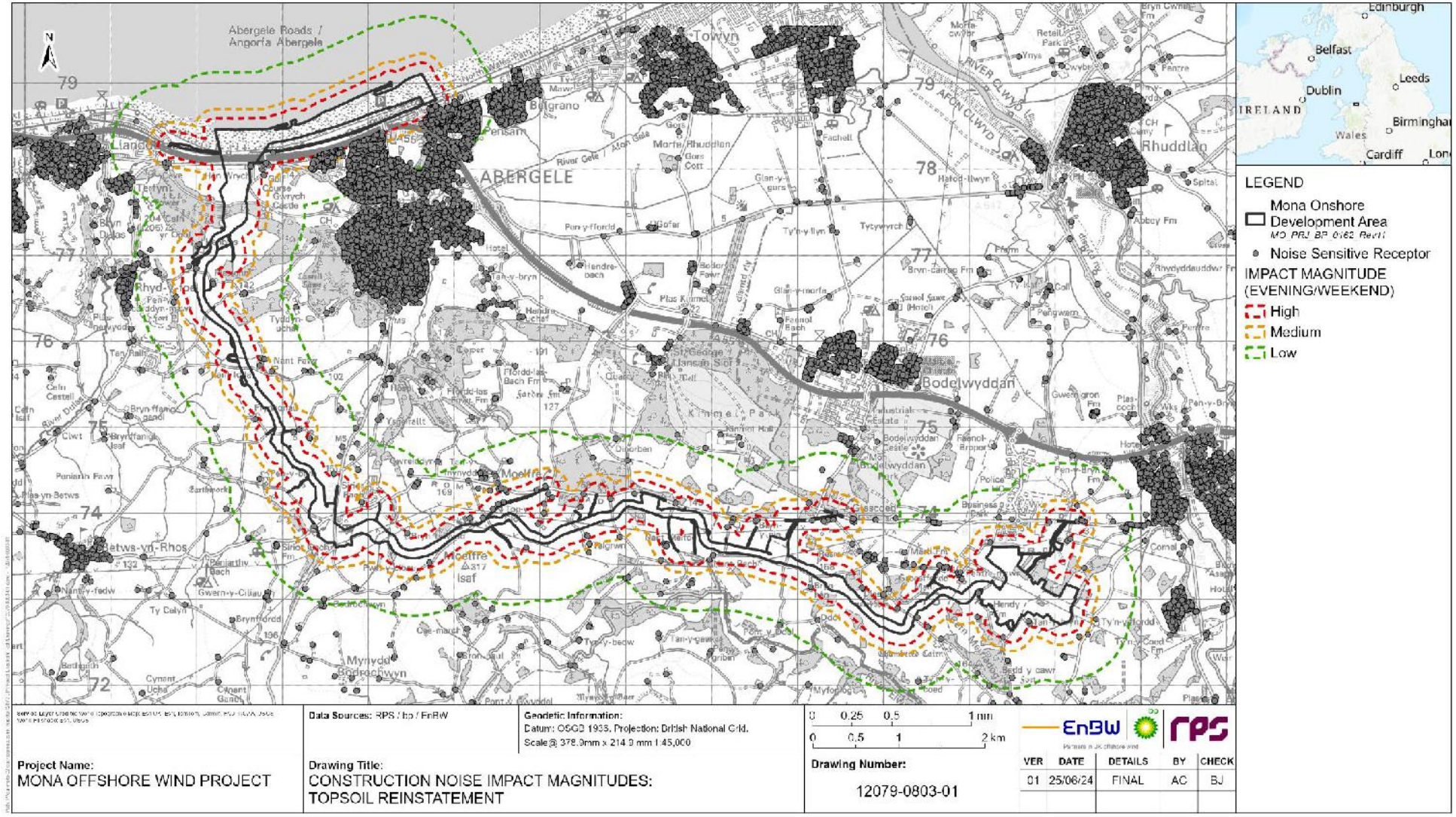
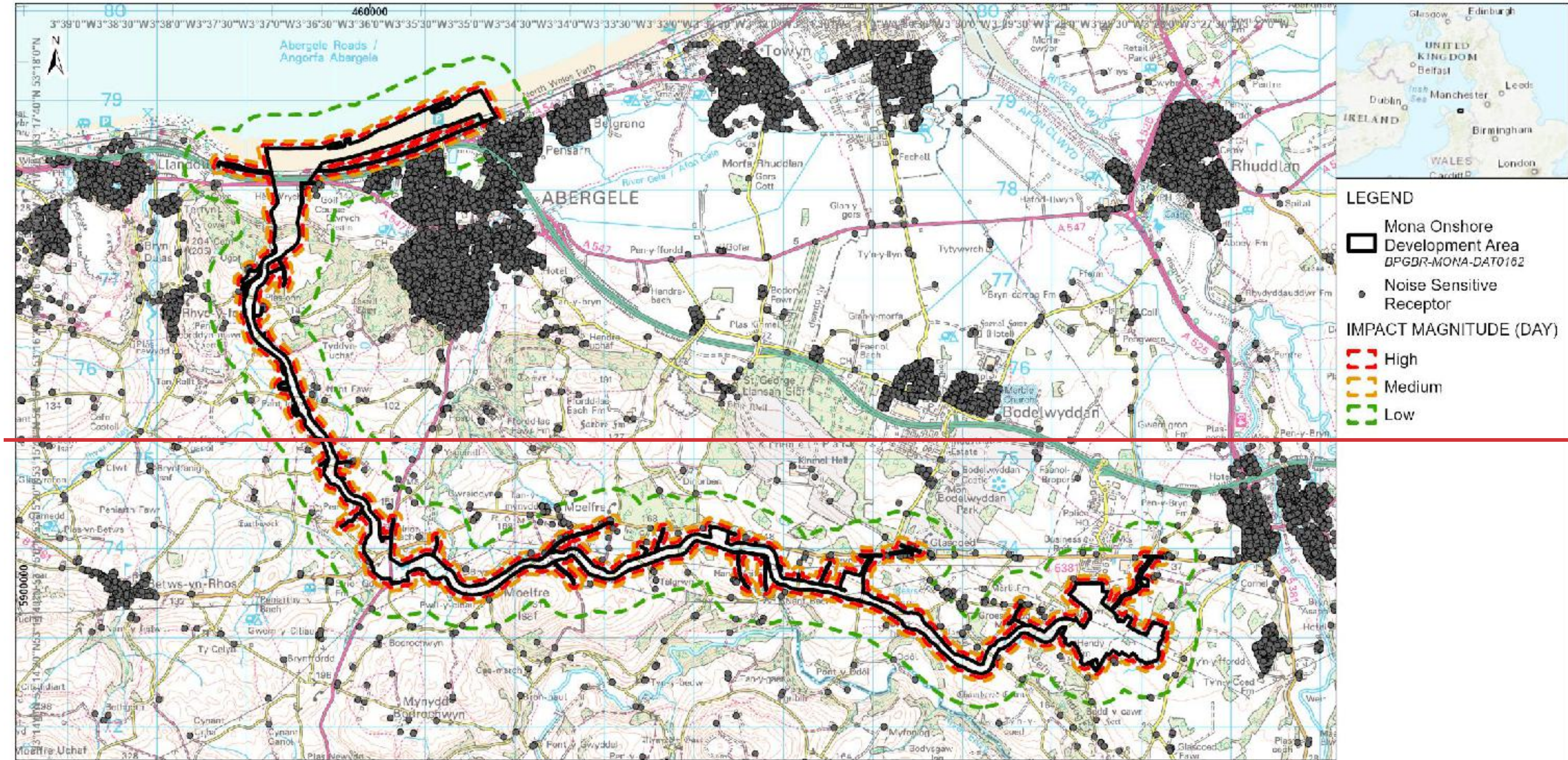


Figure 1-33: Evening/weekend construction noise impact magnitudes: Topsoil reinstatement


LEGEND
Mona Onshore Development Area
BPGDR-MONA-DAT0162
Noise Sensitive Receptor
IMPACT MAGNITUDE (DAY)
High
Medium
Low
UNITED KINGDOM
IRELAND
WALES
Glasgow
Edinburgh
Belfast
Dublin
Manchester
Leeds
Birmingham
London
Abergele Roads / Angorfa Abergele
Towyn
Belgrano
Pensarn
ABERGELE
Morfa Rhuddlan
Rhuddlan
Bodelwyddan
Moelfre
Mynydd Bodrochwyn
St George Llansan Siôr
Kinmel Hall
Betws-yn-Rhos
Moelfre Uchaf
460000
5900000

Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS	Data Sources: RPS / bP / EnBW	Geodetic Information: Datum: OSGB 1936, Projection: British National Grid. Scale @ 271.5mm x 154mm: 1:36,000	0 500 1,000 m	
Project Name: MONA OFFSHORE WIND PROJECT	Drawing Title: CONSTRUCTION NOISE IMPACT MAGNITUDES: HAUL ROAD REMOVAL		Drawing Number: JAJ02546-MN-NV-10	

VER	DATE	DETAILS	BY	CHECK
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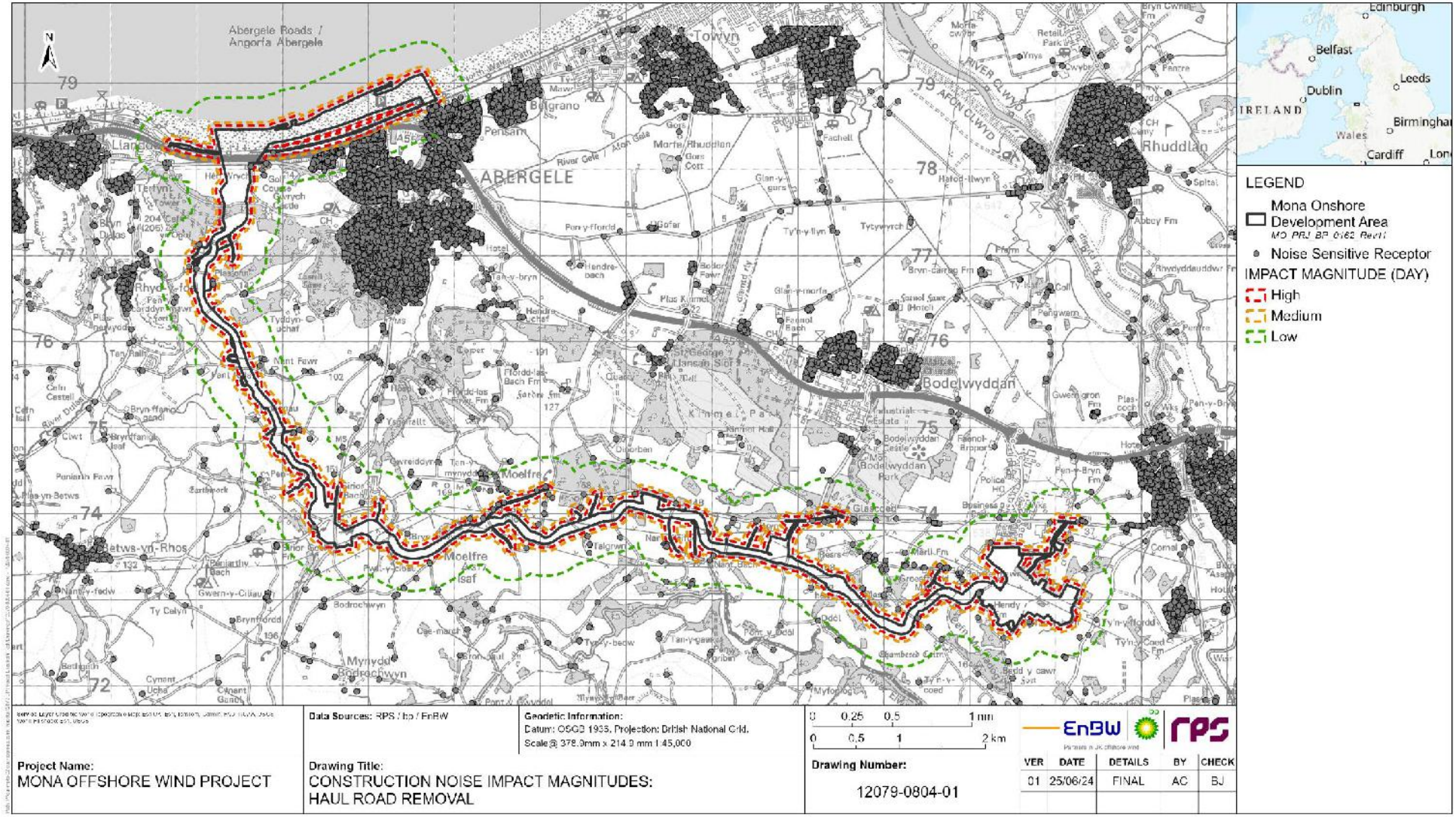
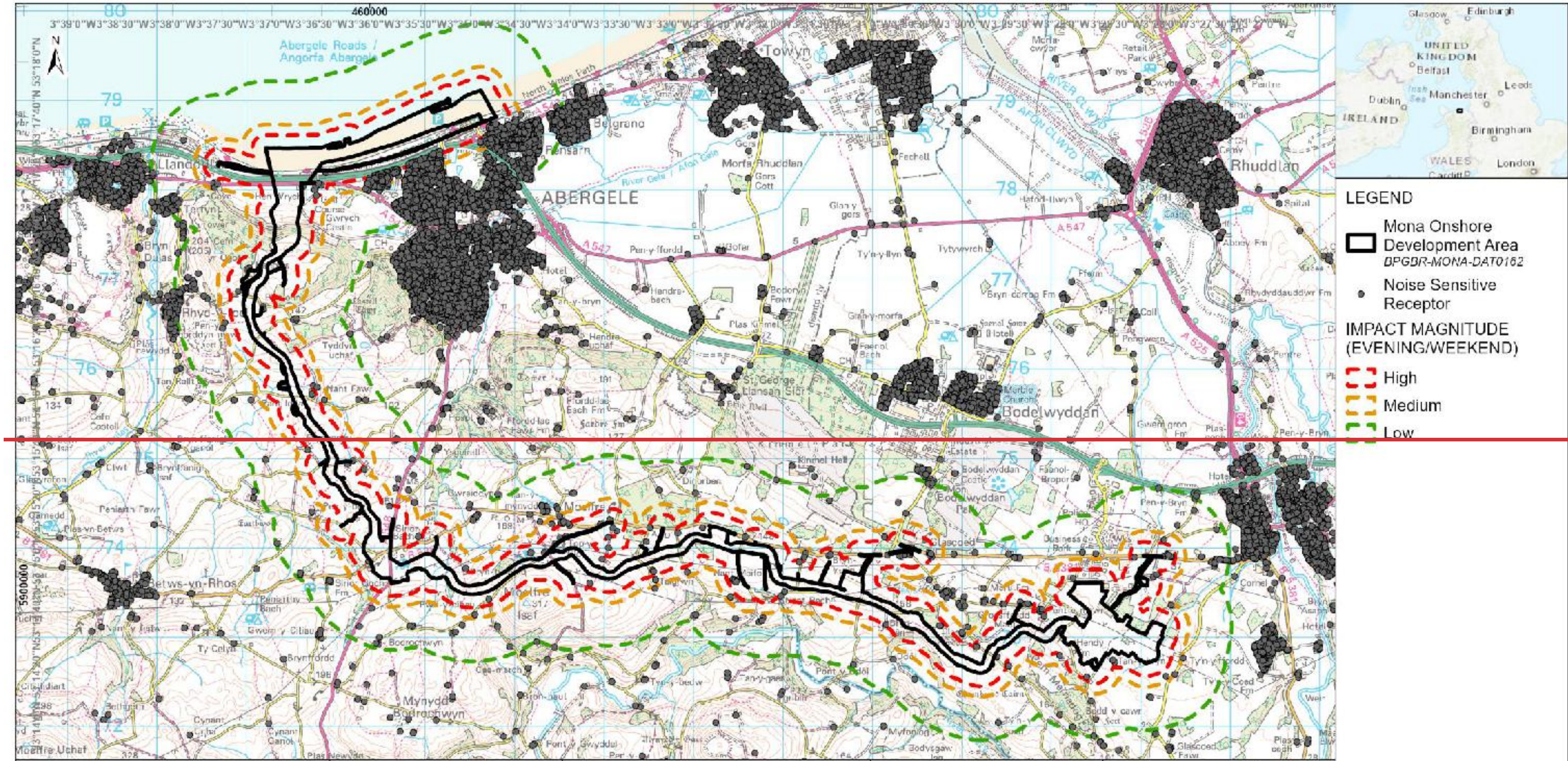


Figure 1-34: Daytime construction noise impact magnitudes: Haul road removal



Service Layer Credits: World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS	**Data Sources:** RPS / bP / EnBW	**Geodetic Information:** Datum: OSGB 1936, Projection: British National Grid. Scale @ 271.5mm x 154mm: 1:35,000	0 500 1,000 m	EnBW bp RPS
Project Name: MONA OFFSHORE WIND PROJECT	**Drawing Title:** CONSTRUCTION NOISE IMPACT MAGNITUDES: HAUL ROAD REMOVAL		**Drawing Number:** JAJ02546-MN-NV-11	

VER	DATE	DETAILS	BY	CHECK
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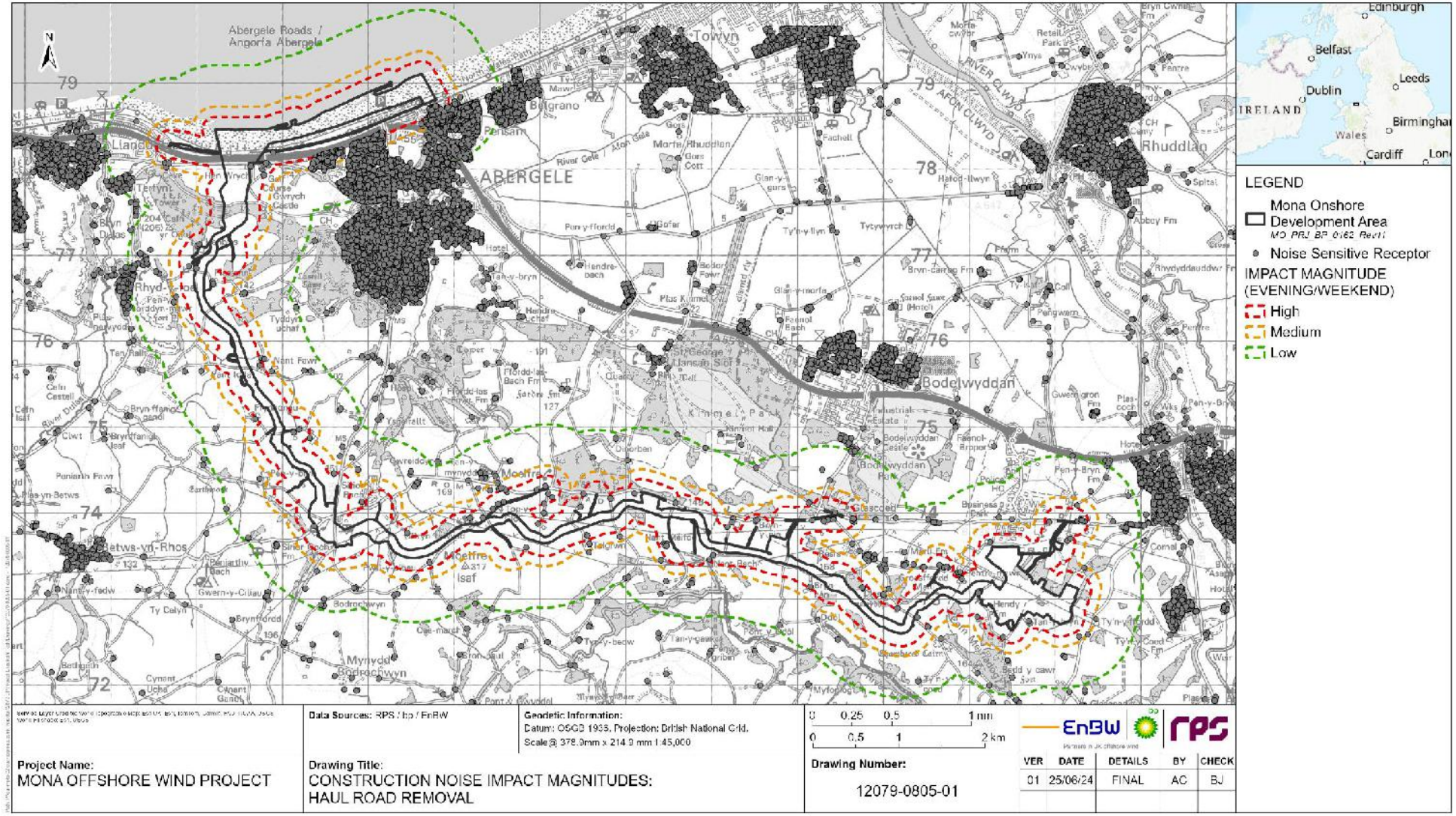

Figure 1-35: Evening/weekend construction noise impact magnitudes: Haul road removal

1.6 References

British Standards Institution (2014a) '*British Standard 5228-1:2009+A1:2014 (2014) Code of practice for noise and vibration control on construction and open sites - Part 1: Noise'*

British Standards Institution (2014b) '*British Standard 5228-2:2009+A1:2014 (2014) Code of practice for noise and vibration control on construction and open sites - Part 2: Vibration'*

Control of Pollution Act 1974, Chapter 40, Part III

Conwy Local Development Plan 2007-2022 (2013), '*Emerging Local Plan: Conwy County Borough Council Replacement Local Development Plan (Preferred Strategy/Pre-Deposit stage)*

Denbighshire Local Development Plan 2006-2021 (2013), '*Emerging Local Plan: Replacement Local Development Plan 2018-2033 (Preferred Strategy/Pre-Deposit stage)'*

Department for Business, Energy and Industrial Strategy (BEIS) (~~2024a~~2023a), Overarching National Policy Statement for Energy (NPS EN-1). Available at: https://assets.publishing.service.gov.uk/media/655dc190d03a8d001207fe33/overarching-nps-for-energy-en1.pdf ~~. Accessed: February 2024~~

Department for Business, Energy and Industrial Strategy (BEIS) (~~2024b~~2023b), National Policy Statement for Renewable Energy Infrastructure (NPS EN-3). Available at: https://assets.publishing.service.gov.uk/media/64252f5f2fa848000cec0f52/NPS_EN-3.pdf . Accessed: ~~February 2024~~December 2023

Department of Energy and Climate Change (DECC) (~~2024c~~2023c), National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available: https://assets.publishing.service.gov.uk/media/655dc25e046ed400148b9dca/nps-electricity-networks-infrastructure-en5.pdf. Accessed~~: February 2024~~ December 2023

Department for Levelling Up, Housing and Communities (2019), '*Planning practice guidance: Noise'*

Department of Trade and Industry (1996). ETSU-R-97, '*The Assessment and Rating of Noise from Wind Farms'*

Department of Transport Welsh Office (1988), *Calculation of Road Traffic Noise*

Highways England, Transport Scotland, Llwyodraeth Cymry, Department for Infrastructure (2020), *'Design Manual for Roads and Bridges – LA111: Noise and vibration'*

Institute of Acoustics (2013). '*A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'*

Institute of Acoustics (2014). '*A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise: Supplementary Guidance Note 6: Noise Propagation Over Water for On-Shore Wind Turbines''*

International Organisation for Standards (1996),'*ISO 9613-2:1996 – Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation'*

Mona Offshore Wind Ltd (2022) Mona Offshore Wind Farm Environmental Impact Assessment Scoping Report.

Llwyodraeth Cymru/Welsh Government (2021), *Planning Policy Wales Edition 11* | *February 2021*

Appendix A: Construction noise source spectra

Establish access and TCC (including trenchless technique compounds)											
Plant item	Quantity	% On-time	Sound power level (dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
D6 Dozer	1	100	113	102	104	101	100	106	90	84	**109**
30T excavator	2	100	103	102	105	104	100	97	94	89	**106**
20T dumper	3	100	113	106	106	106	106	111	96	87	**114**
Smooth drum vibro road roller	1	100	118	110	101	100	98	93	87	82	**103**
21T excavator	1	100	108	111	104	101	100	98	97	94	**106**
5T Forward Tipping Dumper	1	100	119	115	101	100	100	100	95	88	**106**
Loading shovel	1	100	113	111	104	103	103	100	100	89	**108**
Tractor and fencing kit	1	100	107	99	106	103	106	98	89	83	**108**
Tractor and trailer	1	70	119	112	102	102	99	98	90	85	**105**
Tractor and Fuel bowser (or self-propelled)	1	10	98	99	102	99	102	103	94	84	**107**
Tractor and Water bowser (for dust suppression)	1	25	99	107	105	99	99	98	91	90	**105**
Grader	1	100	116	115	111	107	112	106	102	93	**115**
Telehandler	1	70	106	100	93	92	105	93	81	74	**106**
Mobile crane	1	25	112	103	100	96	99	98	91	83	**104**
Mobile generator	2	25	100	97	101	95	94	90	81	72	**99**
Tipper Lorry	3	100	117	111	103	103	103	102	99	96	**108**
Vibratory Piling Rig	2	10	104	103	100	103	105	103	98	88	**109**

Establish access and TCC (including trenchless technique compounds)											
Plant item	Quantity	% On-time	Sound power level (dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Temporary lighting	6	25	107	100	95	91	88	84	85	78	**95**
Road surface paver and roller (Not required for trenchless technique compounds)	1	25	109	106	103	102	101	98	96	87	**106**

Site ~~preparation~~clearance (inc. fencing, haul road construction ~~and,~~ topsoil strip and bunding)											
Plant item	Quantity	% On-time	Sound power level (dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
D6 Dozer	1	100	113	102	104	101	100	106	90	84	**109**
30T excavator	2	100	103	102	105	104	100	97	94	89	**106**
20T dumper	3	100	113	106	106	106	106	111	96	87	**114**
Smooth drum vibro road roller	1	100	118	110	101	100	98	93	87	82	**103**
21T excavator	1	100	108	111	104	101	100	98	97	94	**106**
5T Forward Tipping Dumper	1	100	119	115	101	100	100	100	95	88	**106**
Loading shovel	1	100	113	111	104	103	103	100	100	89	**108**
Tractor and fencing kit	1	100	107	99	106	103	106	98	89	83	**108**
Tractor and trailer	1	70	119	112	102	102	99	98	90	85	**105**
Tractor and Fuel bowser (or self-propelled)	1	10	98	99	102	99	102	103	94	84	**107**
Tractor and Water bowser (for dust suppression)	1	25	99	107	105	99	99	98	91	90	**105**
Grader	1	100	116	115	111	107	112	106	102	93	**115**
Telehandler	1	70	106	100	93	92	105	93	81	74	**106**

Site ~~preparation~~clearance (inc. fencing, haul road construction ~~and~~, topsoil strip and bunding)											
Plant item	Quantity	% On-time	Sound power level (dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Mobile self-contained welfare unit	1	25	86	92	93	90	83	79	74	67	**91**
Mobile generator	2	25	100	97	101	95	94	90	81	72	**99**
Tipper lorry	3	100	117	111	103	103	103	102	99	96	**108**
Temporary lighting	12	25	110	100	95	91	88	84	85	78	**95**

Transition joint bay and joint bay excavation											
Plant item	Quantity	% On-time	Sound power level (dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
30T excavator	1	100	100	99	102	101	97	94	91	86	**103**
20T dumper	2	100	111	104	104	104	104	109	94	85	**112**
Smooth drum vibro road roller	1	10	123	115	106	105	103	98	92	87	**108**
21T excavator	1	50	108	111	104	101	100	98	97	94	**106**
5T Forward Tipping Dumper	1	50	119	115	101	100	100	100	95	88	**106**
9T forward tipping dumper	1	100	119	115	101	100	100	100	95	88	**106**
13T forward tipping dumper	1	100	119	115	101	100	100	100	95	88	**106**
Tractor and Fuel bowser (or self-propelled)	1	10	108	109	112	109	112	113	104	94	**117**
Tractor and Water bowser (for dust suppression)	1	25	106	114	112	106	106	105	98	97	**112**
Mobile self-contained welfare unit	1	25	93	96	97	94	87	83	78	71	**95**
Mobile generator	2	25	102	99	103	97	96	92	83	74	**101**
Temporary lighting	4	25	96	89	84	80	77	73	74	67	**84**

Transition joint bay and joint bay excavation											
Plant item	Quantity	% On-time	Sound power level (dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Pump	2	100	105	98	92	95	96	94	87	80	**100**

Transition joint bay and joint bay wall and base construction											
Plant item	Quantity	% On-time	Sound power level (dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
21T excavator	1	100	108	111	104	101	100	98	97	94	**106**
Concrete poker unit	1	50	106	104	104	97	93	96	94	89	**102**
Air compressor	1	100	125	114	105	100	98	96	99	88	**107**
Tractor and trailer	1	50	118	111	101	101	98	97	89	84	**104**
Tractor and Fuel bowser (or self-propelled)	1	10	98	99	102	99	102	103	94	84	**107**
Tractor and Water bowser (for dust suppression)	1	25	99	107	105	99	99	98	91	90	**105**
Mobile concrete pump/concrete mixer truck	1	50	108	99	91	94	95	103	85	80	**105**
5T Forward Tipping Dumper	1	50	119	115	101	100	100	100	95	88	**106**
Telehandler	1	50	104	98	91	90	103	91	79	72	**104**
Mobile self-contained welfare unit	1	25	86	89	90	87	80	76	71	64	**88**
Mobile generator	2	50	103	100	104	98	97	93	84	75	**102**
Temporary lighting	4	25	106	99	94	90	87	83	84	77	**94**
Pump	2	100	114	107	101	104	105	103	96	89	**109**

Jointing of cables in transition joint bay and joint bays											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Tractor and trailer	1	50	118	111	101	101	98	97	89	84	**104**
Tractor and Fuel bowser (or self-propelled)	1	10	98	99	102	99	102	103	94	84	**107**
Tractor and Water bowser (for dust suppression)	1	25	99	107	105	99	99	98	91	90	**105**
Mobile crane	1	25	112	103	100	96	99	98	91	83	**104**
Telehandler	1	50	104	98	91	90	103	91	79	72	**104**
Mobile self-contained welfare unit	1	20	86	89	90	87	80	76	71	64	**88**
Mobile generator	2	100	106	103	107	101	100	96	87	78	**105**
Temporary lighting	4	50	109	102	97	93	90	86	87	80	**97**
Pump	2	100	114	107	101	104	105	103	96	89	**109**

Transition joint bay and joint bay and backfill											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
30T excavator	1	100	100	99	102	101	97	94	91	86	**103**
20T dumper	2	100	111	104	104	104	104	109	94	85	**112**
21T excavator	1	100	108	111	104	101	100	98	97	94	**106**
5T Forward Tipping Dumper	1	100	119	115	101	100	100	100	95	88	**106**
Loading shovel	1	100	113	111	104	103	103	100	100	89	**108**
Trench Roller	1	75	109	105	94	98	94	91	87	84	**100**
Tractor and trailer	1	25	115	108	98	98	95	94	86	81	**101**

Transition joint bay and joint bay and backfill											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Tractor and Fuel bowser (or self-propelled)	1	10	98	99	102	99	102	103	94	84	**107**
Tractor and Water bowser (for dust suppression)	1	25	99	107	105	99	99	98	91	90	**105**
Cement mixer	1	25	82	86	79	79	78	74	72	70	**83**
Pre-cast concrete truck	1	5	112	100	96	98	91	86	84	79	**98**
Telehandler	1	25	101	95	88	87	100	88	76	69	**101**
Mobile self-contained welfare unit	1	25	86	89	90	87	80	76	71	64	**88**
Mobile generator	2	25	100	97	101	95	94	90	81	72	**99**
Temporary lighting	4	25	106	99	94	90	87	83	84	77	**94**
Pump	2	100	114	107	101	104	105	103	96	89	**109**

Trench excavation and duct installation											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
30T excavator	2	100	103	102	105	104	100	97	94	89	**106**
20T dumper	2	100	111	104	104	104	104	109	94	85	**112**
21T excavator	2	100	111	114	107	104	103	101	100	97	**109**
5T Forward Tipping Dumper	2	100	122	118	104	103	103	103	98	91	**109**
Cement wagon	2	100	98	103	103	103	99	98	93	91	**105**
Loading shovel	2	50	113	111	104	103	103	100	100	89	**108**
Trench Roller	2	50	110	106	95	99	95	92	88	85	**101**

Trench excavation and duct installation											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Tractor and trailer	1	50	118	111	101	101	98	97	89	84	**104**
Tractor and Fuel bowser (or self-propelled)	1	10	98	99	102	99	102	103	94	84	**107**
Tractor and Water bowser (for dust suppression)	1	25	99	107	105	99	99	98	91	90	**105**
Telehandler	1	50	104	98	91	90	103	91	79	72	**104**
Mobile self-contained welfare unit	1	25	86	89	90	87	80	76	71	64	**88**
Mobile generator	2	25	100	97	101	95	94	90	81	72	**99**
Temporary lighting	8	25	109	102	97	93	90	86	87	80	**97**
Pump	2	100	114	107	101	104	105	103	96	89	**109**

Trench backfill											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
30T excavator	2	100	103	102	105	104	100	97	94	89	**106**
20T dumper	2	100	111	104	104	104	104	109	94	85	**112**
21T excavator	2	100	111	114	107	104	103	101	100	97	**109**
5T Forward Tipping Dumper	2	100	122	118	104	103	103	103	98	91	**109**
Loading shovel	2	100	116	114	107	106	106	103	103	92	**111**
Trench Roller	2	75	112	108	97	101	97	94	90	87	**103**
Tractor and trailer	1	25	115	108	98	98	95	94	86	81	**101**

Trench backfill											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Tractor and Fuel bowser (or self-propelled)	1	10	98	99	102	99	102	103	94	84	**107**
Tractor and Water bowser (for dust suppression)	1	25	99	107	105	99	99	98	91	90	**105**
Telehandler	1	25	101	95	88	87	100	88	76	69	**101**
Mobile self-contained welfare unit	1	25	86	89	90	87	80	76	71	64	**88**
Mobile generator	2	25	100	97	101	95	94	90	81	72	**99**
Temporary lighting	8	25	109	102	97	93	90	86	87	80	**97**
Pump	2	100	114	107	101	104	105	103	96	89	**109**

Trench route reinstatement											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
D6 Dozer	2	100	116	105	107	104	103	109	93	87	**112**
30T excavator	2	100	103	102	105	104	100	97	94	89	**106**
20T dumper	2	100	111	104	104	104	104	109	94	85	**112**
Smooth drum vibro road roller	1	50	115	107	98	97	95	90	84	79	**100**
Tractor and soil tiller, roller, seeder	1	25	101	93	100	97	100	92	83	77	**102**
Trenching machine	1	100	109	98	100	97	96	102	86	80	**105**
21T excavator	1	100	108	111	104	101	100	98	97	94	**106**
5T Forward Tipping Dumper	1	100	119	115	101	100	100	100	95	88	**106**
Loading shovel	2	100	116	114	107	106	106	103	103	92	**111**

Trench route reinstatement											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Tractor and Fuel bowser (or self-propelled)	1	10	98	99	102	99	102	103	94	84	**107**
Tractor and Water bowser (for dust suppression)	1	25	99	107	105	99	99	98	91	90	**105**
Mobile self-contained welfare unit	1	25	86	89	90	87	80	76	71	64	**88**
Mobile generator	2	25	100	97	101	95	94	90	81	72	**99**
Temporary lighting	8	25	109	102	97	93	90	86	87	80	**97**

Haul road and fencing removal											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
D6 Dozer	2	100	116	105	107	104	103	109	93	87	**112**
30T excavator	2	100	103	102	105	104	100	97	94	89	**106**
20T dumper	2	100	111	104	104	104	104	109	94	85	**112**
Smooth drum vibro road roller	1	50	115	107	98	97	95	90	84	79	**100**
21T excavator	1	100	108	111	104	101	100	98	97	94	**106**
Trenching machine	1	100	109	98	100	97	96	102	86	80	**105**
5T Forward Tipping Dumper	1	100	119	115	101	100	100	100	95	88	**106**
Tipper lorry	3	100	117	111	103	103	103	102	99	96	**108**
Loading shovel	2	100	116	114	107	106	106	103	103	92	**111**
Tractor and fencing kit	1	50	104	96	103	100	103	95	86	80	**105**
Tractor and trailer	1	50	118	111	101	101	98	97	89	84	**104**

Haul road and fencing removal											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Tractor and Fuel bowser (or self-propelled)	1	10	98	99	102	99	102	103	94	84	**107**
Tractor and Water bowser (for dust suppression)	1	25	99	107	105	99	99	98	91	90	**105**
Tractor and soil tiller, roller, seeder	1	25	101	93	100	97	100	92	83	77	**102**
Mobile self-contained welfare unit	2	25	89	92	93	90	83	79	74	67	**91**
Mobile generator	2	25	100	97	101	95	94	90	81	72	**99**
Temporary lighting	12	25	110	103	98	94	91	87	88	81	**98**

Use of trenchless technique compound											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Generator	2	100	106	103	107	101	100	96	87	78	**105**
Telehandler	2	75	109	103	96	95	108	96	84	77	**109**
30T excavator	2	100	103	102	105	104	100	97	94	89	**106**
21T excavator	1	100	108	111	104	101	100	98	97	94	**106**
Temporary lighting	12	25	110	100	95	91	88	84	85	78	**95**
Mobile crane	1	25	112	103	100	96	99	98	91	83	**104**
Vibratory piling rig	2	10	104	103	100	103	105	103	98	88	**109**
Generator for trenchless equipment	2	100	97	110	104	102	102	102	98	91	**108**
Mounting supports for trenchless equipment	2	25	102	108	98	93	98	105	109	102	**112**

Use of trenchless technique compound											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Mud Pump	2	100	91	86	80	80	79	74	71	59	**83**
Water Pump	2	100	88	83	77	77	76	71	68	56	**80**
Mixing Tank	2	100	74	75	81	74	71	69	65	62	**78**
Cuttings/Recycling Tank	2	100	79	80	86	79	76	74	70	67	**83**

Substation groundworks											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
30T excavator	6	100	108	107	110	109	105	102	99	94	**111**
Excavator (hydraulic breaker)	4	100	115	111	109	110	113	113	111	106	**119**
D6 Dozer	4	75	118	107	109	106	105	111	95	89	**114**
Air compressor	4	100	125	114	105	100	98	96	99	88	**107**
20T dumper	8	70	116	109	109	109	109	114	99	90	**117**
Generator	2	100	106	103	107	101	100	96	87	78	**105**
Crusher	2	80	129	122	115	117	111	107	102	95	**117**
Smooth drum vibro road roller	2	70	119	111	102	101	99	94	88	83	**104**

Substation building foundation works											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Large rotary bored piing rig	1	100	84	92	81	80	78	76	68	61	**84**

Substation building foundation works											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Tracked rig with hydraulic drifter	1	100	75	79	76	73	74	79	74	69	**83**
Crane mounted auger	1	100	87	86	77	73	75	72	67	59	**79**
Mini piling rig	2	100	90	80	75	76	74	72	68	60	**79**
Compressor for mini piling rig	1	100	75	71	65	70	71	69	62	57	**75**
20T dumper	4	50	111	104	104	104	104	109	94	85	**112**
Truck mixer with pump	2	10	99	90	82	85	86	94	76	71	**96**
21T Excavator	3	80	112	115	108	105	104	102	101	98	**110**
Grinder	5	50	89	83	84	92	102	109	105	105	**113**
Air compressor	2	100	122	111	102	97	95	93	96	85	**104**
Generator	2	100	106	103	107	101	100	96	87	78	**105**

Substation Access Road and Car Parking Road Works											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
21T excavator	2	100	111	114	107	104	103	101	100	97	**109**
20T dumper	4	70	113	106	106	106	106	111	96	87	**114**
Asphalt spreader with support lorry	1	100	109	108	103	103	102	100	93	87	**107**
Smooth drum vibro road roller	2	70	119	111	102	101	99	94	88	83	**104**
Grader	1	100	116	115	111	107	112	106	102	93	**115**

Substation building fabrication and plant installation											
Plant item	Quantity	% On-time	Sound power level(dB) at Octave band centre frequency (Hz)								dB(A)
			63	125	250	500	1k	2k	4k	8k	
Mobile crane	1	50	115	106	103	99	102	101	94	86	**107**
Lorry	3	25	118	104	96	95	99	94	93	86	**103**
MEWP	2	75	82	81	75	76	75	75	66	57	**80**
20T dumper	4	10	104	97	97	97	97	102	87	78	**105**
Air compressor	1	100	119	108	99	94	92	90	93	82	**101**
Forklift	2	50	108	102	98	96	96	92	88	85	**100**
Grinder	5	50	89	83	84	92	102	109	105	105	**113**
Pneumatic chipper/drill	3	50	111	100	96	99	99	104	112	113	**116**
Scaffolding	1	25	106	99	94	90	87	83	84	77	**94**

Appendix B: Construction noise model output

Location	Receptor	Establish Access and Temporary Construction Compounds							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Landfall	Castle Cove Caravan Park	53	50	65	55	35	35	**Negligible**	**Negligible**
	Dwellings on Cae Eithin (South)	52	46	65	55	~~38~~37	~~38~~37	**Negligible**	**Negligible**
	Dwellings on Cae Eithin (West)	52	46	65	55	38	38	**Negligible**	**Negligible**
	Gwrych Castle	53	50	65	55	~~30~~34	~~30~~34	**Negligible**	**Negligible**
	Gwyrch Cottage	53	50	65	55	~~50~~47	~~50~~47	**Negligible**	Negligible~~L ow~~
	Gwyrch House	53	50	65	55	~~52~~45	~~52~~45	**Negligible**	Negligible~~L ow~~
	Hen Wrych Farm	53	50	65	55	43	43	**Negligible**	**Negligible**
	Hen Wrych Hall	53	50	65	55	~~42~~40	~~42~~40	**Negligible**	**Negligible**
	Hen Wrych Lodge	53	50	65	55	~~48~~44	~~48~~44	**Negligible**	**Negligible**
	Henblas	44	36	65	55	~~28~~31	~~28~~31	**Negligible**	**Negligible**
	Justholme	53	50	65	55	~~44~~43	~~44~~43	**Negligible**	**Negligible**
	North Wales Business Park	52	46	65	55	~~37~~35	~~37~~35	**Negligible**	**Negligible**
	Northern Towers	53	50	65	55	~~38~~36	~~38~~36	**Negligible**	**Negligible**
	Nursery Cottage	53	50	65	55	~~54~~49	~~54~~49	Negligible~~L ow~~	Negligible~~L ow~~
	Plas Tan yr Ogof	53	50	65	55	~~37~~36	~~37~~36	**Negligible**	**Negligible**
	Ty Crwn	53	50	65	55	~~32~~39	~~32~~39	**Negligible**	**Negligible**
Onshore Cable Corridor	Bryn Bela	39	37	65	55	~~44~~41	~~44~~41	**Low**	**Low**
	Caravans (South)	47	45	65	55	~~46~~44	~~46~~44	**Negligible**	Negligible~~L ow~~
	Caravans (West)	~~53~~47	~~50~~45	65	55	~~50~~49	~~50~~49	Low~~Negligible~~	**Low**
	Penrefail Cottage	47	45	65	55	~~47~~48	~~47~~48	**Low**	**Low**
	Sirior Bach	47	45	65	55	~~29~~38	~~29~~38	**Negligible**	**Negligible**
	Ffynnon Meifod	40	39	65	55	~~40~~36	~~40~~36	Negligible~~L ow~~	Negligible~~L ow~~
	Meiford Lodge	46	43	65	55	~~35~~40	~~35~~40	**Negligible**	**Negligible**
	Nant Meifod	40	39	65	55	~~33~~35	~~33~~35	**Negligible**	**Negligible**
	Sarn Rug	46	43	65	55	~~50~~46	~~50~~46	**Low**	**Low**

Location	Receptor	Establish Access and Temporary Construction Compounds													
		LOAEL, dB(A)								SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day				Evening and Weekends				Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	The Barn	40				39				65	55	40~~37~~	40~~37~~	Negligible~~Low~~	Negligible~~Low~~
	The Gardeners Cottage	40				39				65	55	41~~36~~	41~~36~~	Negligible~~Low~~	Negligible~~Low~~
	Bryn Hen	40				35				65	55	30~~33~~	30~~33~~	Negligible	Negligible
	Bryn y Pin	46				43				65	55	42~~40~~	42~~40~~	Negligible	Negligible
	Bryn y Pin Cottage	46				43				65	55	42~~39~~	42~~39~~	Negligible	Negligible
	Bryn y Pin Mawr	46				43				65	55	37~~36~~	37~~36~~	Negligible	Negligible
	Grouse Lodge	46				43				65	55	38~~36~~	38~~36~~	Negligible	Negligible
	Llys Awel	44	36	65	55	26	26	Negligible	Negligible						
	Ffynnonau Farm~~Bryn Arian~~	45~~48~~								41~~40~~	65	55	28	28	Negligible	Negligible
	Springhill~~Cae Llwyd~~	43~~48~~								42~~40~~	65	55	40~~23~~	40~~23~~	Negligible	Negligible
	Tan y Bryn	43	42	65	55	32	32	Negligible	Negligible						
	Bryntwydd	39	37	65	55	31	31	Negligible	Negligible						
	~~Cae~~ Pwll Y Cibau Bach	43~~39~~								39~~37~~	65	55	29~~30~~	29~~30~~	Negligible	Negligible
	Bryn Gwynt	48	47	65	55	24	24	Negligible	Negligible						
	Merlyn	48	47	65	55	24	24	Negligible	Negligible						
	Gwel Y Mor	48	47	65	55	26	26	Negligible	Negligible						
	Glandyfr~~Caer Delyn~~	46~~48~~								40~~47~~	65	55	28	28	Negligible	Negligible
	Ffynnon Dyfyr	48	47	65	55	26	26	Negligible	Negligible						
	Ffynnon Wen	40	39	65	55	34	34	Negligible	Negligible						
	Tyn Y Mynydd	40	39	65	55	26	26	Negligible	Negligible						
	Pistyll	40	39	65	55	35	35	Negligible	Negligible						
	~~Carreg Wen~~Nant Bach	46								40~~43~~	65	55	30	30	Negligible	Negligible
	Caer Clawdd~~Cefn Farm~~	43~~46~~								39~~43~~	65	55	32~~30~~	32~~30~~	Negligible	Negligible
	Plas Hafod	47	39	65	55	28	28	Negligible	Negligible						
	Plas Newydd	40	35	65	55	23	23	Negligible	Negligible						
	Carreg Dafydd~~Craig Llwyd~~	45~~40~~								41~~35~~	65	55	29	29	Negligible	Negligible
	Nant Ganol~~Derwen Deg~~	46~~41~~								40	65	55	31~~24~~	31~~24~~	Negligible	Negligible

Location	Receptor	Establish Access and Temporary Construction Compounds													
		LOAEL, dB(A)								SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day				Evening and Weekends				Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Onshore Substation	Bryn Arian~~Groesffordd Farm~~	45				41				65	55	~~27~~36	~~27~~36	**Negligible**	**Negligible**
	Cae Llwyd~~Isfryn~~	~~47~~43				~~39~~42				65	55	~~39~~41	~~39~~41	**Negligible**	Negligible~~Low~~
	Cae Pwll	43	39	65	55	30	30	Negligible	Negligible						
	Caer Delyn	46	40	65	55	37	37	Negligible	Negligible						
	Carreg Wen	46	40	65	55	35	35	Negligible	Negligible						
	Cefn Farm	43	39	65	55	33	33	Negligible	Negligible						
	Craig Llwyd	45	41	65	55	37	37	Negligible	Negligible						
	Derwen Deg	46	40	65	55	36	36	Negligible	Negligible						
	Groesffordd Farm	45	41	65	55	36	36	Negligible	Negligible						
	Isfryn	47	39	65	55	40	40	Negligible	**Low**						
	Maes	47				39				65	55	25	25	**Negligible**	**Negligible**
	Pant Farm	43				39				65	55	~~17~~21	~~17~~21	**Negligible**	**Negligible**
	Pentre Bach	45				41				65	55	~~33~~38	~~33~~38	**Negligible**	**Negligible**
	Pentre Mawr Farm	45				41				65	55	~~31~~38	~~31~~38	**Negligible**	**Negligible**
	Pentre Meredydd	43				42				65	55	~~38~~41	~~38~~41	**Negligible**	**Negligible**
	Plas yr Esgob	46				40				65	55	~~32~~35	~~32~~35	**Negligible**	**Negligible**
	Rhos Aber	43				39				65	55	~~34~~30	~~34~~30	**Negligible**	**Negligible**
	Squirrels Lodge	43				39				65	55	~~34~~30	~~34~~30	**Negligible**	**Negligible**
	Tan y Bryn	43				42				65	55	~~48~~32	~~48~~32	Negligible~~Low~~	Negligible~~Low~~
	Tan y Bryn Uchaf	43				42				65	55	~~44~~41	~~44~~41	Negligible~~Low~~	Negligible~~Low~~
	Tan y Graig	43				39				65	55	~~12~~19	~~12~~19	**Negligible**	**Negligible**
	Trebanog	45				41				65	55	~~25~~33	~~25~~33	**Negligible**	**Negligible**
	Ty Celyn	43				39				65	55	~~35~~37	~~35~~37	**Negligible**	**Negligible**
	Tyddyn Meredydd	43				42				65	55	~~38~~37	~~38~~37	**Negligible**	**Negligible**
	Tyn y Caeau	46				40				65	55	~~32~~34	~~32~~34	**Negligible**	**Negligible**
	Tyn y Ffordd	47				39				65	55	~~22~~24	~~22~~24	**Negligible**	**Negligible**

Location	Receptor	Establish Access and Temporary Construction Compounds							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	Tyn y Ffordd Bach	44	40	65	55	~~36~~31	~~36~~31	**Negligible**	**Negligible**
	Tyn y Ffordd Fawr	44	40	65	55	~~33~~29	~~33~~29	**Negligible**	**Negligible**
	Tyn y Ffordd Newydd	43	39	65	55	~~32~~29	~~32~~29	**Negligible**	**Negligible**
	Waen Meredydd	44	39	65	55	~~31~~40	~~31~~40	**Negligible**	Low~~Negligible~~
	Ysgubor EOS	45	41	65	55	~~24~~31	~~24~~31	**Negligible**	**Negligible**
	Ysgubor Newydd	47	39	65	55	~~15~~20	~~15~~20	**Negligible**	**Negligible**

Location	Receptor	Transition Joint Bay (TJB) and Joint Bay Excavation							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Landfall	Dwellings on Cae Eithin (South)	52	46	65	55	~~30~~33	~~30~~33	**Negligible**	**Negligible**
	Dwellings on Cae Eithin (West)	52	46	65	55	~~30~~35	~~30~~35	**Negligible**	**Negligible**
	Gwrych Castle	53	50	65	55	~~24~~30	~~24~~30	**Negligible**	**Negligible**
	Gwyrch Cottage	53	50	65	55	~~40~~43	~~40~~43	**Negligible**	**Negligible**
	Gwyrch House	53	50	65	55	42	42	**Negligible**	**Negligible**
	Hen Wrych Farm	53	50	65	55	~~35~~39	~~35~~39	**Negligible**	**Negligible**
	Hen Wrych Hall	53	50	65	55	~~31~~38	~~31~~38	**Negligible**	**Negligible**
	Hen Wrych Lodge	53	50	65	55	~~39~~41	~~39~~41	**Negligible**	**Negligible**
	Henblas	44	36	65	55	~~21~~42	~~21~~42	**Negligible**	Low~~Negligible~~
	Justholme	53	50	65	55	~~34~~40	~~34~~40	**Negligible**	**Negligible**
	North Wales Business Park	52	46	65	55	~~29~~32	~~29~~32	**Negligible**	**Negligible**
	Northern Towers	53	50	65	55	~~28~~34	~~28~~34	**Negligible**	**Negligible**
	Nursery Cottage	53	50	65	55	~~47~~44	~~47~~44	**Negligible**	**Negligible**
	Plas Tan yr Ogof	53	50	65	55	~~28~~34	~~28~~34	**Negligible**	**Negligible**
	Ty Crwn	53	50	65	55	~~26~~35	~~26~~35	**Negligible**	**Negligible**
Onshore Cable Corridor	Bryn Bela	39	37	65	55	~~37~~35	~~37~~35	**Negligible**	Negligible~~Low~~
	Caravans (South)	47	45	65	55	~~42~~40	~~42~~40	**Negligible**	**Negligible**
	Caravans (West)	~~53~~47	~~50~~45	65	55	~~47~~46	~~47~~46	**Negligible**	Low~~Negligible~~
	Penrefail Cottage	47	45	65	55	~~43~~42	~~43~~42	**Negligible**	**Negligible**
	Sirior Bach	47	45	65	55	~~28~~31	~~28~~31	**Negligible**	**Negligible**
	Ffynnon Meifod	40	39	65	55	~~34~~35	~~34~~35	**Negligible**	**Negligible**
	Meiford Lodge	46	43	65	55	~~31~~46	~~31~~46	**Negligible**	Low~~Negligible~~
	Nant Meifod	40	39	65	55	~~31~~33	~~31~~33	**Negligible**	**Negligible**
	Sarn Rug	46	43	65	55	~~46~~37	~~46~~37	Negligible ~~Low~~	Negligible~~Low~~
	The Barn	40	39	65	55	~~34~~35	~~34~~35	**Negligible**	**Negligible**
	The Gardeners Cottage	40	39	65	55	~~34~~35	~~34~~35	**Negligible**	**Negligible**
	Bryn Hen	40	35	65	55	42	42	**Low**	**Low**
	Bryn ~~Heny~~ Pin	~~40~~46		~~35~~43	65	55	~~27~~30	~~27~~30	**Negligible**	**Negligible**
	Bryn y Pin Cottage	46	43	65	55	~~36~~35	~~36~~35	**Negligible**	**Negligible**

Location	Receptor	Transition Joint Bay (TJB) and Joint Bay Excavation LOAEL, dB(A) Day	Transition Joint Bay (TJB) and Joint Bay Excavation LOAEL, dB(A) Evening and Weekends	SOAEL, dB(A) Day	SOAEL, dB(A) Evening and Weekends	Construction Noise Level, dB(A) Day	Construction Noise Level, dB(A) Evening and Weekends	Magnitude of Impact Day	Magnitude of Impact Evening and Weekends
	Bryn y Pin ~~Cottage~~Mawr	46	43	65	55	36	36	**Negligible**	**Negligible**
	~~Bryn y Pin Mawr~~Grouse Lodge	46	43	65	55	~~32~~37	~~32~~37	**Negligible**	**Negligible**
	~~Grouse Lodge~~Llys Awel	~~46~~44	~~43~~36	65	55	~~33~~36	~~33~~36	**Negligible**	**Negligible**
	Ffynnonau Farm~~Bryn Arian~~	~~45~~48	~~41~~40	65	55	~~25~~39	~~25~~39	**Negligible**	**Negligible**
	Springhill 48	40	40	65	55	40	40	**Negligible**	**Negligible**
	Tan y Bryn~~Cae Llwyd~~	43	42	65	55	35	35	**Negligible**	**Negligible**
	Bryntwydd~~Cae Pwll~~	~~43~~39	~~39~~37	65	55	~~25~~31	~~25~~31	**Negligible**	**Negligible**
	Pwll Y Cibau Bach 39	37	65	55	45	45	**Low**	**Low**	
	Bryn Gwynt~~Caer Delyn~~	~~46~~48	~~40~~47	65	55	~~25~~44	~~25~~44	**Negligible**	**Negligible**
	Merlyn 48	47	65	55	49	49	**Low**	**Low**	
	Gwel Y Mor~~Carreg Wen~~	~~46~~48	~~40~~47	65	55	~~26~~35	~~26~~35	**Negligible**	**Negligible**
	Glandyfr~~Cefn Farm~~	~~43~~48	~~39~~47	65	55	~~28~~42	~~28~~42	**Negligible**	**Negligible**
	Ffynnon Dyfyr~~Craig Llwyd~~	~~45~~48	~~41~~47	65	55	~~26~~41	~~26~~41	**Negligible**	**Negligible**
	Ffynnon Wen~~Derwen Deg~~	~~46~~40	~~40~~39	65	55	~~27~~26	~~27~~26	**Negligible**	**Negligible**
	Tyn Y Mynydd~~Groesffordd Farm~~	~~45~~40	~~41~~39	65	55	24	24	**Negligible**	**Negligible**
	Pistyll~~Isfryn~~	~~47~~40	39	65	55	~~35~~30	~~35~~30	**Negligible**	**Negligible**
	Nant Bach~~Maes~~	~~47~~46	~~39~~43	65	55	~~22~~40	~~22~~40	**Negligible**	**Negligible**
	Caer Clawdd 46	43	65	55	46	46	**Negligible**	**Low**	
	Plas Hafod 47	39	65	55	44	44	**Negligible**	**Low**	
	Plas Newydd 40	35	65	55	35	35	**Negligible**	**Low**	
	Carreg Dafydd 40	35	65	55	44	44	**Low**	**Low**	
	Nant Ganol 41	40	65	55	43	43	**Low**	**Low**	
Onshore Substation	Bryn Arian~~Pant Farm~~	~~43~~45	~~39~~41	65	55	~~15~~36	~~15~~36	**Negligible**	**Negligible**
	Cae Llwyd~~Pentre Bach~~	~~45~~43	~~41~~42	65	55	~~29~~40	~~29~~40	**Negligible**	**Negligible**
	Cae Pwll~~Pentre Mawr Farm~~	~~45~~43	~~41~~39	65	55	~~27~~26	~~27~~26	**Negligible**	**Negligible**
	Caer Delyn~~Pentre Meredydd~~	~~43~~46	~~42~~40	65	55	~~33~~32	~~33~~32	**Negligible**	**Negligible**
	Carreg Wen~~Plas yr Esgob~~	46	40	65	55	~~27~~32	~~27~~32	**Negligible**	**Negligible**

Location	Receptor	Transition Joint Bay (TJB) and Joint Bay Excavation											
		LOAEL, dB(A)				SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact			
		Day		Evening and Weekends		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends		
	Cefn Farm~~Rhos Aber~~	43		39		65	55	29	29	**Negligible**	**Negligible**		
	Craig Llwyd~~Squirrels Lodge~~	~~43~~45		~~39~~41		65	55	~~29~~38	~~29~~38	**Negligible**	**Negligible**		
	Derwen Deg	46	40	65	55	29	29	**Negligible**	**Negligible**				
	Groesffordd Farm	45	41	65	55	32	32	**Negligible**	**Negligible**				
	Isfryn	47	39	65	55	33	33	**Negligible**	**Negligible**				
	Maes	47	39	65	55	57	57	**Low**	**Medium**				
	Pant Farm	43	39	65	55	25	25	**Negligible**	**Negligible**				
	Pentre Bach	45	41	65	55	46	46	**Low**	**Low**				
	Pentre Mawr Farm	45	41	65	55	41	41	**Negligible**	**Low**				
	Pentre Meredydd	43	42	65	55	45	45	**Low**	**Low**				
	Plas yr Esgob	46	40	65	55	31	31	**Negligible**	**Negligible**				
	Rhos Aber	43	39	65	55	27	27	**Negligible**	**Negligible**				
	Squirrels Lodge	43	39	65	55	27	27	**Negligible**	**Negligible**				
	Tan y Bryn	43		42		65	55	~~43~~35	~~43~~35	**Negligible** ~~**Low**~~	**Negligible**~~**Low**~~		
	Tan y Bryn Uchaf	43		42		65	55	~~42~~33	~~42~~33	**Negligible**	**Negligible**~~**Low**~~		
	Tan y Graig	43		39		65	55	~~11~~30	~~11~~30	**Negligible**	**Negligible**		
	Trebanog	45		41		65	55	~~23~~36	~~23~~36	**Negligible**	**Negligible**		
	Ty Celyn	43		39		65	55	~~31~~30	~~31~~30	**Negligible**	**Negligible**		
	Tyddyn Meredydd	43		42		65	55	~~33~~51	~~33~~51	**Low** ~~**Negligible**~~	**Low**~~**Negligible**~~		
	Tyn y Caeau	46		40		65	55	~~28~~29	~~28~~29	**Negligible**	**Negligible**		
	Tyn y Ffordd	47		39		65	55	~~20~~40	~~20~~40	**Negligible**	**Low**~~**Negligible**~~		
	Tyn y Ffordd Bach	44		40		65	55	~~31~~27	~~31~~27	**Negligible**	**Negligible**		
	Tyn y Ffordd Fawr	44		40		65	55	~~29~~27	~~29~~27	**Negligible**	**Negligible**		
	Tyn y Ffordd Newydd	43		39		65	55	~~26~~27	~~26~~27	**Negligible**	**Negligible**		
	Waen Meredydd	44		39		65	55	~~27~~37	~~27~~37	**Negligible**	**Negligible**		
	Ysgubor EOS	45		41		65	55	~~21~~32	~~21~~32	**Negligible**	**Negligible**		

Location	Receptor	Transition Joint Bay (TJB) and Joint Bay Excavation							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	Ysgubor Newydd	47	39	65	55	~~14~~28	~~14~~28	**Negligible**	**Negligible**

Receptor	Transition Joint Bay (TJB) and Joint Bay Base Construction							
	LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Dwellings on Cae Eithin (South)	52	46	65	55	~~29~~34	~~29~~34	**Negligible**	**Negligible**
Dwellings on Cae Eithin (West)	52	46	65	55	~~29~~36	~~29~~36	**Negligible**	**Negligible**
Gwrych Castle	53	50	65	55	~~23~~30	~~23~~30	**Negligible**	**Negligible**
Gwyrch Cottage	53	50	65	55	~~40~~43	~~40~~43	**Negligible**	**Negligible**
Gwyrch House	53	50	65	55	42	42	**Negligible**	**Negligible**
Hen Wrych Farm	53	50	65	55	~~34~~39	~~34~~39	**Negligible**	**Negligible**
Hen Wrych Hall	53	50	65	55	~~33~~38	~~33~~38	**Negligible**	**Negligible**
Hen Wrych Lodge	53	50	65	55	~~39~~41	~~39~~41	**Negligible**	**Negligible**
Henblas	44	36	65	55	~~21~~45	~~21~~45	**Low**~~**Negligible**~~	**Low**~~**Negligible**~~
Justholme	53	50	65	55	~~35~~40	~~35~~40	**Negligible**	**Negligible**
North Wales Business Park	52	46	65	55	~~29~~32	~~29~~32	**Negligible**	**Negligible**
Northern Towers	53	50	65	55	~~28~~34	~~28~~34	**Negligible**	**Negligible**
Nursery Cottage	53	50	65	55	~~46~~44	~~46~~44	**Negligible**	**Negligible**
Plas Tan yr Ogof	53	50	65	55	~~28~~34	~~28~~34	**Negligible**	**Negligible**
Ty Crwn	53	50	65	55	~~26~~35	~~26~~35	**Negligible**	**Negligible**
Bryn Bela	39	37	65	55	~~38~~40	~~38~~40	**Low**~~**Negligible**~~	**Low**
Caravans (South)	47	45	65	55	~~42~~44	~~42~~44	**Negligible**	**Negligible**
Caravans (West)	~~53~~47	~~50~~45	65	55	~~47~~50	~~47~~50	**Low**~~**Negligible**~~	**Low**~~**Negligible**~~
Penrefail Cottage	47	45	65	55	~~42~~47	~~42~~47	**Negligible**	**Low**~~**Negligible**~~
Sirior Bach	47	45	65	55	~~27~~36	~~27~~36	**Negligible**	**Negligible**
Ffynnon Meifod	40	39	65	55	~~35~~40	~~35~~40	**Negligible**	**Low**~~**Negligible**~~
Meiford Lodge	46	43	65	55	~~32~~49	~~32~~49	**Low**~~**Negligible**~~	**Low**~~**Negligible**~~
Nant Meifod	40	39	65	55	~~30~~37	~~30~~37	**Negligible**	**Negligible**
Sarn Rug	46	43	65	55	~~44~~42	~~44~~42	**Negligible**	**Negligible**~~**Low**~~

Receptor	Transition Joint Bay (TJB) and Joint Bay Base Construction											
	LOAEL, dB(A)				SOAEL, dB(A)		Construction Noise Level, dB(A)				Magnitude of Impact	
	Day		Evening and Weekends		Day	Evening and Weekends	Day		Evening and Weekends		Day	Evening and Weekends
The Barn	40	39	65	55	40	40	Low	Low				
The Gardeners Cottage	40	39	65	55	40	40	Negligible	Low				
Bryn Hen	40	35	65	55	46	46	Low	Low				
~~The Barn~~Bryn y Pin			4046			3943		65	55	3534	3534	Negligible	Negligible
~~The Gardeners~~Bryn y Pin Cottage			4046			3943		65	55	3440	3440	Negligible	Negligible
Bryn ~~Hen~~y Pin Mawr			4046			3543		65	55	2741	2741	Negligible	Negligible
Grouse Lodge	46	43	65	55	42	42	Negligible	Negligible				
Llys Awel	44	36	65	55	40	40	Negligible	Low				
Ffynnonau Farm	48	40	65	55	44	44	Negligible	Low				
Springhill	48	40	65	55	45	45	Negligible	Low				
Tan y Bryn~~y Pin~~			4643			4342		65	55	3639	3639	Negligible	Negligible
~~Bryn y Pin Cottage~~Bryntwydd			4639			4337		65	55	36	36	Negligible	Negligible
Pwll Y Cibau Bach	39	37	65	55	49	49	Low	Low				
Bryn Gwynt	48	47	65	55	48	48	Low	Low				
Merlyn	48	47	65	55	52	52	Low	Low				
Gwel Y Mor	48	47	65	55	40	40	Negligible	Negligible				
~~Bryn y Pin Mawr~~Glandyfr			4648			4347		65	55	3246	3246	Negligible	Negligible
~~Grouse Lodge~~Ffynnon Dyfyr			4648			4347		65	55	3246	3246	Negligible	Negligible
Ffynnon Wen	40	39	65	55	31	31	Negligible	Negligible				
Tyn Y Mynydd	40	39	65	55	30	30	Negligible	Negligible				
Pistyll	40	39	65	55	35	35	Negligible	Negligible				
Nant Bach	46	43	65	55	44	44	Negligible	Low				
Caer Clawdd	46	43	65	55	50	50	Low	Low				
Plas Hafod	47	39	65	55	44	44	Negligible	Low				
Plas Newydd	40	35	65	55	41	41	Low	Low				
Carreg Dafydd	40	35	65	55	48	48	Low	Low				
Nant Ganol	41	40	65	55	47	47	Low	Low				

Receptor	Transition Joint Bay (TJB) and Joint Bay Base Construction							
	LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Bryn Arian	45	41	65	55	~~30~~36	~~30~~36	Negligible	Negligible
Cae Llwyd	43	42	65	55	~~37~~40	~~37~~40	Negligible	Negligible
Cae Pwll	43	39	65	55	~~27~~26	~~27~~26	Negligible	Negligible
Caer Delyn	46	40	65	55	32	32	Negligible	Negligible
Carreg Wen	46	40	65	55	~~30~~32	~~30~~32	Negligible	Negligible
Cefn Farm	43	39	65	55	~~30~~29	~~30~~29	Negligible	Negligible
Craig Llwyd	45	41	65	55	~~31~~38	~~31~~38	Negligible	Negligible
Derwen Deg	46	40	65	55	~~31~~30	~~31~~30	Negligible	Negligible
Groesffordd Farm	45	41	65	55	~~29~~32	~~29~~32	Negligible	Negligible
Isfryn	47	39	65	55	~~36~~33	~~36~~33	Negligible	Negligible
Maes	47	39	65	55	~~24~~57	~~24~~57	Low~~Negligible~~	Medium~~Negligible~~
Pant Farm	43	39	65	55	~~16~~26	~~16~~26	Negligible	Negligible
Pentre Bach	45	41	65	55	~~35~~46	~~35~~46	Low~~Negligible~~	Low~~Negligible~~
Pentre Mawr Farm	45	41	65	55	~~35~~41	~~35~~41	Negligible	Low~~Negligible~~
Pentre Meredydd	43	42	65	55	~~39~~47	~~39~~47	Low~~Negligible~~	Low~~Negligible~~
Plas yr Esgob	46	40	65	55	31	31	Negligible	Negligible
Rhos Aber	43	39	65	55	~~31~~27	~~31~~27	Negligible	Negligible
Squirrels Lodge	43	39	65	55	~~31~~27	~~31~~27	Negligible	Negligible
Tan y Bryn	43	42	65	55	~~44~~39	~~44~~39	Negligible~~Low~~	Negligible~~Low~~
Tan y Bryn Uchaf	43	42	65	55	~~43~~35	~~43~~35	Negligible~~Low~~	Negligible~~Low~~
Tan y Graig	43	39	65	55	~~13~~30	~~13~~30	Negligible	Negligible
Trebanog	45	41	65	55	~~25~~36	~~25~~36	Negligible	Negligible
Ty Celyn	43	39	65	55	~~32~~30	~~32~~30	Negligible	Negligible
Tyddyn Meredydd	43	42	65	55	~~39~~54	~~39~~54	Low~~Negligible~~	Low~~Negligible~~

Receptor	Transition Joint Bay (TJB) and Joint Bay Base Construction							
	LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Tyn y Caeau	46	40	65	55	~~31~~29	~~31~~29	Negligible	Negligible
Tyn y Ffordd	47	39	65	55	~~20~~40	~~20~~40	Negligible	Low~~Negligible~~
Tyn y Ffordd Bach	44	40	65	55	~~32~~29	~~32~~29	Negligible	Negligible
Tyn y Ffordd Fawr	44	40	65	55	~~29~~27	~~29~~27	Negligible	Negligible
Tyn y Ffordd Newydd	43	39	65	55	~~29~~27	~~29~~27	Negligible	Negligible
Waen Meredydd	44	39	65	55	~~34~~37	~~34~~37	Negligible	Negligible
Ysgubor EOS	45	41	65	55	~~22~~33	~~22~~33	Negligible	Negligible
Ysgubor Newydd	47	39	65	55	~~14~~28	~~14~~28	Negligible	Negligible

Location	Receptor	Jointing of Cables in Transition Joint Bays and Joint Bays							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Landfall	Dwellings on Cae Eithin (South)	52	46	65	55	33	33	Negligible	Negligible
	Dwellings on Cae Eithin (West)	52	46	65	55	~~33~~35	~~33~~35	Negligible	Negligible
	Gwrych Castle	53	50	65	55	~~25~~30	~~25~~30	Negligible	Negligible
	Gwyrch Cottage	53	50	65	55	~~46~~43	~~46~~43	Negligible	Negligible
	Gwyrch House	53	50	65	55	~~48~~42	~~48~~42	Negligible	Negligible
	Hen Wrych Farm	53	50	65	55	39	39	Negligible	Negligible
	Hen Wrych Hall	53	50	65	55	~~39~~38	~~39~~38	Negligible	Negligible
	Hen Wrych Lodge	53	50	65	55	41	41	Negligible	Negligible
	Henblas	44	36	65	55	~~22~~44	~~22~~44	Low~~Negligible~~	Low~~Negligible~~
	Justholme	53	50	65	55	~~39~~40	~~39~~40	Negligible	Negligible
	North Wales Business Park	52	46	65	55	32	32	Negligible	Negligible
	Northern Towers	53	50	65	55	~~33~~34	~~33~~34	Negligible	Negligible
	Nursery Cottage	53	50	65	55	~~53~~44	~~53~~44	Negligible~~Low~~	Negligible~~Low~~
	Plas Tan yr Ogof	53	50	65	55	~~30~~34	~~30~~34	Negligible	Negligible
	Ty Crwn	53	50	65	55	~~31~~35	~~31~~35	Negligible	Negligible
Onshore Cable Corridor	Bryn Bela	39	37	65	55	~~43~~38	~~43~~38	Negligible~~Low~~	Low
	Caravans (South)	47	45	65	55	~~46~~42	~~46~~42	Negligible	Negligible~~Low~~
	Caravans (West)	~~53~~47	~~50~~45	65	55	~~51~~48	~~51~~48	Low~~Negligible~~	Low
	Penrefail Cottage	47	45	65	55	~~46~~45	~~46~~45	Negligible	Negligible~~Low~~
	Sirior Bach	47	45	65	55	~~28~~34	~~28~~34	Negligible	Negligible
	Ffynnon Meifod	40	39	65	55	~~39~~38	~~39~~38	Negligible	Negligible~~Low~~
	Meiford Lodge	46	43	65	55	~~34~~48	~~34~~48	Low~~Negligible~~	Low~~Negligible~~
	Nant Meifod	40	39	65	55	~~34~~36	~~34~~36	Negligible	Negligible
	Sarn Rug	46	43	65	55	~~50~~40	~~50~~40	Negligible~~Low~~	Negligible~~Low~~
	The Barn	40	39	65	55	~~39~~38	~~39~~38	Negligible	Negligible~~Low~~
	The Gardeners Cottage	40	39	65	55	~~39~~38	~~39~~38	Negligible	Negligible~~Low~~

Location	Receptor	Jointing of Cables in Transition Joint Bays and Joint Bays											
		LOAEL, dB(A)						SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day			Evening and Weekends			Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	Bryn Hen	40			35			65	55	3044	3044	Low~~Negligible~~	Low~~Negligible~~
	Bryn y Pin	46			43			65	55	4035	4035	Negligible	Negligible
	Bryn y Pin Cottage	46			43			65	55	4138	4138	Negligible	Negligible
	Bryn y Pin Mawr	46			43			65	55	3639	3639	Negligible	Negligible
	Grouse Lodge	46			43			65	55	3640	3640	Negligible	Negligible
	Llys Awel~~Bryn Arian~~	4544			4136			65	55	3439	3439	Negligible	Low~~Negligible~~
	Ffynnonau Farm~~Cae Llwyd~~	4348			4240			65	55	42	42	Negligible	Low
	Springhill~~Cae Pwll~~	4348			3940			65	55	3043	3043	Negligible	Low~~Negligible~~
	Tan y Bryn~~Caer Delyn~~	4643			4042			65	55	3638	3638	Negligible	Negligible
	~~Carreg Wen~~Bryntwydd	4639			4037			65	55	3335	3335	Negligible	Negligible
	Pwll Y Cibau Bach	39	37	65	55	47	47		Low	Low			
	Bryn Gwynt~~Cefn Farm~~	4348			3947			65	55	3446	3446	Negligible	Negligible
	Merlyn	48	47	65	55	51	51		Low	Low			
	Gwel Y Mor~~Craig Llwyd~~	4548			4147			65	55	3438	3438	Negligible	Negligible
	Glandyfr~~Derwen Deg~~	4648			4047			65	55	3644	3644	Negligible	Negligible
	Ffynnon Dyfyr~~Croesffordd Farm~~	4548			4147			65	55	3344	3344	Negligible	Negligible
	~~Isfryn~~	~~47~~	~~39~~	~~65~~	~~55~~	~~41~~	~~41~~		~~Negligible~~	~~Low~~			
	Ffynnon Wen~~Maes~~	4740			39			65	55	2629	2629	Negligible	Negligible
	Tyn Y Mynydd~~Pant Farm~~	4340			39			65	55	1728	1728	Negligible	Negligible
	Pistyll~~Pentre Bach~~	4540			4139			65	55	4034	4034	Negligible	Negligible
	Nant Bach~~Pentre Mawr Farm~~	4546			4143			65	55	3943	3943	Negligible	Negligible
	Caer Clawdd~~Pentre Meredydd~~	4346			4243			65	55	4448	4448	Low	Low
	Plas Hafod	47	39	65	55	42	42		Negligible	Low			
	Plas ~~yr Esgob~~Newydd	4640			4035			65	55	3639	3639	Negligible	Low~~Negligible~~
	Carreg Dafydd	40	35	65	55	46	46		Low	Low			
	Nant Ganol	41	40	65	55	45	45		Low	Low			
Onshore Substation	Bryn Arian~~Rhos Aber~~	4345			3941			65	55	3235	3235	Negligible	Negligible
	Cae Llwyd~~Squirrels Lodge~~	43			3942			65	55	3437	3437	Negligible	Negligible
	~~Tan y Bryn~~	~~43~~	~~42~~	~~65~~	~~55~~	~~49~~	~~49~~		~~Low~~	~~Low~~			

Location	Receptor					Jointing of Cables in Transition Joint Bays and Joint Bays						Construction Noise Level, dB(A)		Magnitude of Impact	
						LOAEL, dB(A)				SOAEL, dB(A)					
						Day		Evening and Weekends		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	~~Tan y Bryn Uchaf~~	~~43~~	~~42~~	~~65~~	~~55~~	~~48~~	~~48~~		~~Low~~	~~Low~~					
	Cae Pwll~~Tan y Graig~~					43		39		65	55	~~14~~24	~~14~~24	Negligible	Negligible
	Caer Delyn~~Trebanog~~					~~45~~46		~~41~~40		65	55	~~27~~31	~~27~~31	Negligible	Negligible
	Carreg Wen~~Ty Colyn~~					~~43~~46		~~39~~40		65	55	~~36~~30	~~36~~30	Negligible	Negligible
	~~Tyddyn Meredydd~~	~~43~~	~~42~~	~~65~~	~~55~~	~~44~~	~~44~~		~~Low~~	~~Low~~					
	Cefn Farm~~Tyn y Caeau~~					~~46~~43		~~40~~39		65	55	~~36~~27	~~36~~27	Negligible	Negligible
	Craig Llwyd~~Tyn y Ffordd~~					~~47~~45		~~39~~41		65	55	~~22~~37	~~22~~37	Negligible	Negligible
	Derwen Deg~~Tyn y Ffordd Bach~~					~~44~~46		40		65	55	~~36~~28	~~36~~28	Negligible	Negligible
	Groesffordd Farm~~Tyn y Ffordd Fawr~~					~~44~~45		~~40~~41		65	55	~~33~~31	~~33~~31	Negligible	Negligible
	Isfryn~~Tyn y Ffordd Newydd~~					~~43~~47		39		65	55	31	31	Negligible	Negligible
	Maes	47	39	65		55	55	55	Low	Low					
	Pant Farm~~Waen Meredydd~~					~~44~~43		39		65	55	~~38~~24	~~38~~24	Negligible	Negligible
	Pentre Bach	45	41	65		55	44	44	Negligible	Low					
	Pentre Mawr Farm	45	41	65		55	40	40	Negligible	Negligible					
	Pentre Meredydd	43	42	65		55	45	45	Low	Low					
	Plas yr Esgob	46	40	65		55	29	29	Negligible	Negligible					
	Rhos Aber	43	39	65		55	26	26	Negligible	Negligible					
	Squirrels Lodge	43	39	65		55	26	26	Negligible	Negligible					
	Tan y Bryn	43	42	65		55	38	38	Negligible	Negligible					
	Tan y Bryn Uchaf	43	42	65		55	32	32	Negligible	Negligible					
	Tan y Graig	43	39	65		55	28	28	Negligible	Negligible					
	Trebanog	45	41	65		55	34	34	Negligible	Negligible					
	Ty Celyn	43	39	65		55	29	29	Negligible	Negligible					
	Tyddyn Meredydd	43	42	65		55	52	52	Low	Low					
	Tyn y Caeau	46	40	65		55	28	28	Negligible	Negligible					
	Tyn y Ffordd	47	39	65		55	39	39	Negligible	Low					
	Tyn y Ffordd Bach	44	40	65		55	27	27	Negligible	Negligible					
	Tyn y Ffordd Fawr	44	40	65		55	26	26	Negligible	Negligible					
	Tyn y Ffordd Newydd	43	39	65		55	26	26	Negligible	Negligible					

Location	Receptor				Jointing of Cables in Transition Joint Bays and Joint Bays									
					LOAEL, dB(A)				SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
					Day		Evening and Weekends		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	Waen Meredydd	44	39	65	55	35	35	Negligible	Negligible					
	Ysgubor EOS				45		41		65	55	~~25~~30	~~25~~30	**Negligible**	**Negligible**
	Ysgubor Newydd				47		39		65	55	~~15~~27	~~15~~27	**Negligible**	**Negligible**

Location	Receptor	Backfill Over Transition Joint Bays and Joint Bays						Magnitude of Impact	
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)			
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Landfall	Dwellings on Cae Eithin (South)	52	46	65	55	~~31~~33	~~31~~33	Negligible	Negligible
	Dwellings on Cae Eithin (West)	52	46	65	55	~~31~~35	~~31~~35	Negligible	Negligible
	Gwrych Castle	53	50	65	55	~~25~~30	~~25~~30	Negligible	Negligible
	Gwyrch Cottage	53	50	65	55	43	43	Negligible	Negligible
	Gwyrch House	53	50	65	55	~~45~~42	~~45~~42	Negligible	Negligible
	Hen Wrych Farm	53	50	65	55	~~37~~39	~~37~~39	Negligible	Negligible
	Hen Wrych Hall	53	50	65	55	~~37~~38	~~37~~38	Negligible	Negligible
	Hen Wrych Lodge	53	50	65	55	~~38~~41	~~38~~41	Negligible	Negligible
	Henblas	44	36	65	55	~~22~~43	~~22~~43	Negligible	Low~~Negligible~~
	Justholme	53	50	65	55	~~38~~40	~~38~~40	Negligible	Negligible
	North Wales Business Park	52	46	65	55	~~31~~32	~~31~~32	Negligible	Negligible
	Northern Towers	53	50	65	55	~~30~~34	~~30~~34	Negligible	Negligible
	Nursery Cottage	53	50	65	55	~~50~~44	~~50~~44	Negligible	Negligible~~Low~~
	Plas Tan yr Ogof	53	50	65	55	~~29~~34	~~29~~34	Negligible	Negligible
	Ty Crwn	53	50	65	55	~~28~~35	~~28~~35	Negligible	Negligible
Onshore Cable Corridor	Bryn Bela	39	37	65	55	~~40~~36	~~40~~36	Negligible~~Low~~	Negligible~~Low~~
	Caravans (South)	47	45	65	55	~~44~~40	~~44~~40	Negligible	Negligible
	Caravans (West)	~~53~~47	~~50~~45	65	55	~~49~~47	~~49~~47	Negligible	Low~~Negligible~~
	Penrefail Cottage	47	45	65	55	~~44~~43	~~44~~43	Negligible	Negligible
	Sirior Bach	47	45	65	55	~~28~~32	~~28~~32	Negligible	Negligible
	Ffynnon Meifod	40	39	65	55	~~37~~36	~~37~~36	Negligible	Negligible
	Meiford Lodge	46	43	65	55	~~33~~46	~~33~~46	Low~~Negligible~~	Low~~Negligible~~
	Nant Meifod	40	39	65	55	34	34	Negligible	Negligible
	Sarn Rug	46	43	65	55	~~48~~38	~~48~~38	Negligible~~Low~~	Negligible~~Low~~
	The Barn	40	39	65	55	~~37~~36	~~37~~36	Negligible	Negligible
	The Gardeners Cottage	40	39	65	55	36	36	Negligible	Negligible
Bryn Hen	40	35	65	55	42	42	**Low**	**Low**	

Location	Receptor	Backfill Over Transition Joint Bays and Joint Bays								Construction Noise Level, dB(A)		Magnitude of Impact	
		LOAEL, dB(A)				SOAEL, dB(A)							
		Day		Evening and Weekends				Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	Bryn ~~Heny~~ Pin	~~40~~46		~~35~~43				65	55	~~29~~31	~~29~~31	Negligible	Negligible
	Bryn y Pin Cottage	46		43				65	55	~~39~~36	~~39~~36	Negligible	Negligible
	Bryn y Pin ~~Cottage~~Mawr	46		43				65	55	~~39~~37	~~39~~37	Negligible	Negligible
Grouse Lodge	46	43	65	55	38	38	Negligible	Negligible					
Llys Awel	44	36	65	55	36	36	Negligible	Low					
Ffynnonau Farm	48	40	65	55	40	40	Negligible	Negligible					
Springhill	48	40	65	55	41	41	Negligible	Low					
	Tan y Bryn ~~y Pin Mawr~~	~~46~~43		~~43~~42				65	55	~~35~~36	~~35~~36	Negligible	Negligible
Bryntwydd	39	37	65	55	33	33	Negligible	Negligible					
Pwll Y Cibau Bach	39	37	65	55	46	46	Low	Low					
Bryn Gwynt	48	47	65	55	45	45	Negligible	Negligible					
Merlyn	48	47	65	55	50	50	Low	Low					
Gwel Y Mor	48	47	65	55	36	36	Negligible	Negligible					
	~~Grouse Lodge~~Glandyfr	~~46~~48		~~43~~47				65	55	~~35~~43	~~35~~43	Negligible	Negligible
Ffynnon Dyfyr	48	47	65	55	42	42	Negligible	Negligible					
Ffynnon Wen	40	39	65	55	27	27	Negligible	Negligible					
Tyn Y Mynydd	40	39	65	55	26	26	Negligible	Negligible					
Pistyll	40	39	65	55	31	31	Negligible	Negligible					
Nant Bach	46	43	65	55	40	40	Negligible	Negligible					
Caer Clawdd	46	43	65	55	46	46	Low	Low					
Plas Hafod	47	39	65	55	41	41	Negligible	Low					
Plas Newydd	40	35	65	55	37	37	Negligible	Low					
Carreg Dafydd	40	35	65	55	45	45	Low	Low					
Nant Ganol	41	40	65	55	44	44	Low	Low					
Onshore Substation	Bryn Arian	45		41				65	55	32	32	Negligible	Negligible
	Cae Llwyd	43		42				65	55	~~40~~36	~~40~~36	Negligible	Negligible
	Cae Pwll	43		39				65	55	~~29~~22	~~29~~22	Negligible	Negligible
	Caer Delyn	46		40				65	55	~~34~~28	~~34~~28	Negligible	Negligible
	Carreg Wen	46		40				65	55	~~32~~28	~~32~~28	Negligible	Negligible

Location	Receptor	Backfill Over Transition Joint Bays and Joint Bays							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	Cefn Farm	43	39	65	55	3225	3225	Negligible	Negligible
	Craig Llwyd	45	41	65	55	3335	3335	Negligible	Negligible
	Derwen Deg	46	40	65	55	3425	3425	Negligible	Negligible
	Groesffordd Farm	45	41	65	55	3228	3228	Negligible	Negligible
	Isfryn	47	39	65	55	3829	3829	Negligible	Negligible
	Maes	47	39	65	55	2651	2651	LowNegligible	LowNegligible
	Pant Farm	43	39	65	55	1722	1722	Negligible	Negligible
	Pentre Bach	45	41	65	55	3842	3842	Negligible	LowNegligible
	Pentre Mawr Farm	45	41	65	55	3738	3738	Negligible	Negligible
	Pentre Meredydd	43	42	65	55	4143	4143	Negligible	LowNegligible
	Plas yr Esgob	46	40	65	55	3327	3327	Negligible	Negligible
	Rhos Aber	43	39	65	55	3224	3224	Negligible	Negligible
	Squirrels Lodge	43	39	65	55	3323	3323	Negligible	Negligible
	Tan y Bryn	43	42	65	55	4636	4636	NegligibleLow	NegligibleLow
	Tan y Bryn Uchaf	43	42	65	55	4431	4431	NegligibleLow	NegligibleLow
	Tan y Graig	43	39	65	55	1426	1426	Negligible	Negligible
	Trebanog	45	41	65	55	2732	2732	Negligible	Negligible
	Ty Celyn	43	39	65	55	3427	3427	Negligible	Negligible
	Tyddyn Meredydd	43	42	65	55	4251	4251	LowNegligible	Low
	Tyn y Caeau	46	40	65	55	3426	3426	Negligible	Negligible
	Tyn y Ffordd	47	39	65	55	2236	2236	Negligible	Negligible
	Tyn y Ffordd Bach	44	40	65	55	3424	3424	Negligible	Negligible
	Tyn y Ffordd Fawr	44	40	65	55	3223	3223	Negligible	Negligible
	Tyn y Ffordd Newydd	43	39	65	55	3123	3123	Negligible	Negligible
	Waen Meredydd	44	39	65	55	3732	3732	Negligible	Negligible
	Ysgubor EOS	45	41	65	55	2429	2429	Negligible	Negligible
	Ysgubor Newydd	47	39	65	55	1624	1624	Negligible	Negligible

Location	Receptor		LOAEL, dB(A)			SOAEL, dB(A)			Construction Noise Level, dB(A)			Magnitude of Impact		
			Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night
~~Use of trenchless techniques compounds~~Transition Joint Bay and Joint Bay - use of pumps to dewater excavations[1]														
53	46	65	50	-	33	-	-				Negligible			
	Dwellings on Cae Eithin (South)		52	46	42	65	55	45	~~26~~-	~~26~~-	~~27~~33	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Dwellings on Cae Eithin (West)		52	46	42	65	55	45	~~26~~-	~~26~~-	~~27~~35	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Gwrych Castle		53	50	46	65	55	~~45~~50	~~21~~-	~~21~~-	~~29~~30	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Gwyrch Cottage		53	50	46	65	55	~~45~~50	~~35~~-	~~35~~-	~~38~~43	~~-~~ Negligible	~~-~~ Negligible	**Negligible**

[1]Only Nighttime construction noise levels and impacts reported in this table

Location	Receptor	LOAEL, dB(A)			SOAEL, dB(A)			Construction Noise Level, dB(A)			Magnitude of Impact		
		Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night
	Gwyrch House	53	50	46	65	55	4550	39-	39-	4041	-Negligible	-Negligible	**Negligible**
	Hen Wrych Farm	53	50	46	65	55	4550	30-	30-	3639	-Negligible	-Negligible	**Negligible**
	Hen Wrych Hall	53	50	46	65	55	4550	26-	26-	3238	-Negligible	-Negligible	**Negligible**
	Hen Wrych Lodge	53	50	46	65	55	4550	33-	33-	3541	-Negligible	-Negligible	**Negligible**
	Henblas	44	36	35	65	55	45	18-	18-	2338	-Negligible	-Negligible	LowNegligible
	Justholme	53	50	46	65	55	4550	31-	31-	3440	-Negligible	-Negligible	**Negligible**
	North Wales Business Park	52	46	42	65	55	45	26-	26-	2732	-Negligible	-Negligible	**Negligible**
	Northern Towers	53	50	46	65	55	4550	25-	25-	2634	-Negligible	-Negligible	**Negligible**
	Nursery Cottage	53	50	46	65	55	4550	40-	40-	4244	-Negligible	-Negligible	**Negligible**
	Plas Tan yr Ogof	53	50	46	65	55	4550	25-	25-	2634	-Negligible	-Negligible	**Negligible**
	Ty Crwn	53	50	46	65	55	4550	22-	22-	2535	-Negligible	-Negligible	**Negligible**
Onshore Cable Corridor	Bryn Bela	39	37	36	65	55	45	39-	39-	**4032**	**Low-**	**Low-**	NegligibleLow
	Caravans (South)	47	45	43	65	55	4550	43-	43-	4236	-Negligible	-Negligible	**Negligible**
	Caravans (West)	5347	5045	4643	65	55	4550	45-	45-	4541	-Negligible	-Negligible	**Negligible**
	Penrefail Cottage	47	45	43	65	55	4550	43-	43-	4438	-Negligible	-Negligible	NegligibleLow
	Sirior Bach	47	45	43	65	55	4550	29-	29-	3527	-Negligible	-Negligible	**Negligible**
	Ffynnon Meifod	3940	3739	3637	65	55	45	38-	38-	3831	-Negligible	-Negligible	NegligibleLow
	Meiford Lodge	4746	4543	4338	65	55	45	42-	42-	4241	-Negligible	-Negligible	**Low**
	Nant Meifod	5340	5039	4637	65	55	45	35-	35-	3629	-Negligible	-Negligible	**Negligible**
	Sarn Rug	4746	4543	4338	65	55	45	34-	34-	34	-Negligible	-Negligible	**Negligible**
	The Barn	4740	4539	4337	65	55	45	38-	38-	3932	-Negligible	-Negligible	NegligibleLow

Use of trenchless techniques compounds Transition Joint Bay and Joint Bay - use of pumps to dewater excavations[1]

Location	Receptor	LOAEL, dB(A)			SOAEL, dB(A)			Construction Noise Level, dB(A)			Magnitude of Impact		
		Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night
	The Gardeners Cottage	40	39	37	65	55	45	~~38~~ -	~~38~~ -	~~38~~31	~~Negligible~~ -	~~Negligible~~ -	Negligible~~Low~~
	Bryn Hen	40	35	34	65	55	45	-	-	37	-	-	Low
	Bryn ~~Heny~~ Pin	46	43	38	65	55	45	~~27~~ -	~~27~~ -	~~30~~25	~~Negligible~~ -	~~Negligible~~ -	**Negligible**
	Bryn y Pin Cottage	~~40~~46	~~39~~43	~~37~~38	65	55	45	~~29~~ -	~~29~~ -	~~30~~31	~~Negligible~~ -	~~Negligible~~ -	**Negligible**
	Bryn y Pin ~~Cottage~~Mawr	46	43	38	65	55	45	~~30~~ -	~~30~~ -	~~30~~32	~~Negligible~~ -	~~Negligible~~ -	**Negligible**
	Grouse Lodge	46	43	38	65	55	45	33	Negligible				
	Llys Awel	44	36	35	65	55	45	32	Negligible				
	Ffynnon au Farm	48	40	38	65	55	45	-	-	35	-	-	Negligible
	Springhill	48	40	38	65	55	45	-	-	36	-	-	Negligible
	Tan y Bryn ~~y Pin Mawr~~	~~40~~43	~~39~~42	37	65	55	45	~~26~~ -	~~26~~ -	~~28~~31	~~Negligible~~ -	~~Negligible~~ -	**Negligible**
	~~Grouse Lodge~~Bryntwydd	~~40~~39	~~39~~37	~~37~~36	65	55	45	~~27~~ -	~~27~~ -	28	~~Negligible~~ -	~~Negligible~~ -	**Negligible**

~~Use of trenchless techniques compounds~~Transition Joint Bay and Joint Bay - use of pumps to dewater excavations[1]

Location	Receptor		LOAEL, dB(A)			SOAEL, dB(A)			Construction Noise Level, dB(A)			Magnitude of Impact	
			Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night
~~Use of trenchless techniques compounds~~ **Transition Joint Bay and Joint Bay - use of pumps to dewater excavations**[1]														
39	36	65	45	-	40	-	-				Low			
Bryn Gwynt	48		47	46	65	55	50	-	-	39	-	-	Negligible	
Merlyn	48		47	46	65	55	50	-	-	44	-	-	Negligible	
Gwel Y Mor	48		47	46	65	55	50	-	-	31	-	-	Negligible	
Glandyfr	48		47	46	65	55	50	-	-	38	-	-	Negligible	
Ffynnon Dyfyr	48		47	46	65	55	50	-	-	37	-	-	Negligible	
Ffynnon Wen	40		39	37	65	55	45	-	-	22	-	-	Negligible	
Tyn Y Mynydd	40		39	37	65	55	45	-	-	22	-	-	Negligible	
Pistyll	40		39	37	65	55	45	-	-	26	-	-	Negligible	
Nant Bach	46		43	38	65	55	45	-	-	35	-	-	Negligible	
Caer Clawdd	46		43	38	65	55	45	-	-	41	-	-	Low	
Plas Hafod	47		39	38	65	55	45	-	-	36	-	-	Negligible	
Plas Newydd	40		35	34	65	55	45	-	-	32	-	-	Negligible	
Carreg Dafydd	40		35	34	65	55	45	-	-	39	-	-	Low	
Nant Ganol	41		40	34	65	55	45	-	-	38	-	-	Low	

Location	Receptor	LOAEL, dB(A)			SOAEL, dB(A)			Construction Noise Level, dB(A)			Magnitude of Impact		
		Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night
		~~Use of trenchless techniques compounds~~			Transition Joint Bay and Joint Bay - use of pumps to dewater excavations[1]								
Onshore Substation	Bryn Arian	~~40~~45	~~35~~41	~~34~~40	65	55	45	~~22~~ -	~~22~~ -	~~23~~27	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Cae Llwyd	~~46~~43	~~43~~42	~~38~~37	65	55	45	~~35~~ -	~~35~~ -	~~35~~30	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Cae Pwll	~~46~~43	~~43~~39	~~38~~36	65	55	45	~~7~~ -	~~7~~ -	~~8~~18	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Caer Delyn	46	~~43~~40	~~38~~37	65	55	45	~~20~~ -	~~20~~ -	~~20~~24	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Carreg Wen	46	~~43~~40	~~38~~37	65	55	45	~~17~~ -	~~17~~ -	~~18~~22	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Cefn Farm	~~45~~43	~~41~~39	~~40~~36	65	55	45	~~14~~ -	~~14~~ -	~~17~~20	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Craig Llwyd	~~43~~45	~~42~~41	~~37~~40	65	55	45	~~18~~ -	~~18~~ -	~~21~~29	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Derwen Deg	~~43~~46	~~39~~40	~~36~~37	65	55	45	~~16~~ -	~~16~~ -	~~18~~21	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Groesffordd Farm	~~46~~45	~~40~~41	~~37~~40	65	55	45	~~13~~ -	~~13~~ -	~~18~~23	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Isfryn	~~46~~47	~~40~~39	~~37~~38	65	55	45	~~51~~ -	~~51~~ -	~~54~~24	~~Low~~ -	~~Low~~ -	**Negligible**~~High~~
	Maes	~~43~~47	39	~~36~~38	65	55	45	~~20~~ -	~~20~~ -	~~23~~45	~~-~~ Negligible	~~-~~ Negligible	**Medium**~~Negligible~~
	Pant Farm	~~45~~43	~~41~~39	~~40~~36	65	55	45	~~7~~ -	~~7~~ -	~~8~~17	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Pentre Bach	~~46~~45	~~40~~41	~~37~~40	65	55	45	~~0~~ -	~~0~~ -	~~0~~37	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Pentre Mawr Farm	45	41	40	65	55	45	~~28~~ -	~~28~~ -	~~28~~32	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Pentre Meredydd	43	42	37	65	55	45	~~11~~ -	~~11~~ -	~~15~~37	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Plas yr Esgob	~~47~~46	~~39~~40	~~38~~37	65	55	45	~~43~~ -	~~43~~ -	~~44~~23	~~Low~~ -	~~Low~~ -	**Negligible**~~Low~~
	Rhos Aber	~~47~~43	39	~~38~~36	65	55	45	~~16~~ -	~~16~~ -	~~16~~19	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Squirrels Lodge	43	39	36	65	55	45	~~10~~ -	~~10~~ -	~~15~~20	~~-~~ Negligible	~~-~~ Negligible	**Negligible**
	Tan y Bryn	~~45~~43	~~41~~42	~~40~~37	65	55	45	~~17~~ -	~~17~~ -	~~18~~31	~~-~~ Negligible	~~-~~ Negligible	**Negligible**

Location	Receptor	LOAEL, dB(A)			SOAEL, dB(A)			Construction Noise Level, dB(A)			Magnitude of Impact		
		Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night
	Tan y Bryn Uchaf	~~45~~43	~~41~~42	~~40~~37	65	55	45	~~22~~-	~~22~~-	25	-~~Negligible~~	-~~Negligible~~	**Negligible**
	Tan y Graig	43	~~42~~39	~~37~~36	65	55	45	~~25~~-	~~25~~-	~~26~~21	-~~Negligible~~	-~~Negligible~~	**Negligible**
	Trebanog	~~46~~45	~~40~~41	~~37~~40	65	55	45	~~1~~-	~~1~~-	~~2~~27	-~~Negligible~~	-~~Negligible~~	**Negligible**
	Ty Celyn	43	39	36	65	55	45	~~23~~-	~~23~~-	~~23~~22	-~~Negligible~~	-~~Negligible~~	**Negligible**
	Tyddyn Meredydd	43	~~39~~42	~~36~~37	65	55	45	~~19~~-	~~19~~-	~~21~~45	-~~Negligible~~	-~~Negligible~~	**Medium**~~Negligible~~
	Tyn y Caeau	~~43~~46	~~42~~40	37	65	55	45	~~36~~-	~~36~~-	~~39~~21	-~~Negligible~~	-~~Negligible~~	**Negligible**~~Low~~
	Tyn y Fforddd	~~43~~47	~~42~~39	~~37~~38	65	55	45	~~19~~-	~~19~~-	~~20~~31	-~~Negligible~~	-~~Negligible~~	**Negligible**
	Tyn y Fforddd Bach	~~43~~44	~~39~~40	~~36~~35	65	55	45	~~5~~-	~~5~~-	~~6~~20	-~~Negligible~~	-~~Negligible~~	**Negligible**
	Tyn y Fforddd Fawr	~~45~~44	~~41~~40	~~40~~35	65	55	45	~~17~~-	~~17~~-	~~17~~21	-~~Negligible~~	-~~Negligible~~	**Negligible**
	Tyn y Fforddd Newydd	43	39	36	65	55	45	~~18~~-	~~18~~-	~~18~~19	-~~Negligible~~	-~~Negligible~~	**Negligible**
	Waen Meredydd	~~43~~44	~~42~~39	~~37~~36	65	55	45	~~9~~-	~~9~~-	~~14~~28	-~~Negligible~~	-~~Negligible~~	**Negligible**
	Ysgubor EOS	~~46~~45	~~40~~41	~~37~~40	65	55	45	~~23~~-	~~23~~-	~~24~~25	-~~Negligible~~	-~~Negligible~~	**Negligible**
	Ysgubor Newydd	47	39	38	65	55	45	~~18~~-	~~18~~-	~~20~~19	-~~Negligible~~	-~~Negligible~~	**Negligible**

Location	Receptor	Use of trenchless techniques compounds[2]											
		LOAEL, dB(A)			SOAEL, dB(A)			Construction Noise Level, dB(A)			Magnitude of Impact		
		Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night
Landfall	Caravans (Castle Cove Holiday Park)	53	50	46	65	55	50	33	33	33	Negligible	Negligible	Negligible
	Dwellings on Cae Eithin (South)	52	46	42	65	55	45	33	33	33	Negligible	Negligible	Negligible
	Dwellings on Cae Eithin (West)	52	46	42	65	55	45	35	35	35	Negligible	Negligible	Negligible
	Gwrych Castle	53	50	46	65	55	50	30	30	30	Negligible	Negligible	Negligible
	Gwyrch Cottage	53	50	46	65	55	50	43	43	43	Negligible	Negligible	Negligible
	Gwyrch House	53	50	46	65	55	50	41	41	41	Negligible	Negligible	Negligible
	Hen Wrych Farm	53	50	46	65	55	50	39	39	39	Negligible	Negligible	Negligible
	Hen Wrych Hall	53	50	46	65	55	50	38	38	38	Negligible	Negligible	Negligible
	Hen Wrych Lodge	53	50	46	65	55	50	41	41	41	Negligible	Negligible	Negligible
	Henblas	44	36	35	65	55	45	44	44	44	Low	Low	Low
	Justholme	53	50	46	65	55	50	40	40	40	Negligible	Negligible	Negligible
	North Wales Business Park	52	46	42	65	55	45	32	32	32	Negligible	Negligible	Negligible
	Northern Towers	53	50	46	65	55	50	34	34	34	Negligible	Negligible	Negligible
	Nursery Cottage	53	50	46	65	55	50	44	44	44	Negligible	Negligible	Negligible
	Plas Tan yr Ogof	53	50	46	65	55	50	34	34	34	Negligible	Negligible	Negligible
	Ty Crwn	53	50	46	65	55	50	35	35	35	Negligible	Negligible	Negligible
Onshore Cable Corridor	Bryn Bela	39	37	36	65	55	45	38	38	-	Negligible	Low	-
	Caravans (South)	47	45	43	65	55	45	46	46	-	Negligible	Low	-
	Caravans (West)	47	45	46	65	55	50	48	48	-	Low	Low	-
	Penrefail Cottage	47	45	43	65	55	45	44	44	-	Negligible	Negligible	-
	Sirior Bach	47	45	43	65	55	45	40	40	-	Negligible	Negligible	-
	Ffynnon Meifod	40	39	37	65	55	45	37	37	-	Negligible	Negligible	-
	Meiford Lodge	46	43	38	65	55	45	48	48	-	Low	Low	-
	Nant Meifod	40	39	37	65	55	45	36	36	-	Negligible	Negligible	-
	Sarn Rug	46	43	38	65	55	45	46	46	-	Negligible	Low	-
	The Barn	40	39	37	65	55	45	37	37	-	Negligible	Negligible	-

[2] Night time impacts only reported for locations close to complex locations

Location	Receptor	Use of trenchless techniques compounds[2]											
		LOAEL, dB(A)			SOAEL, dB(A)			Construction Noise Level, dB(A)			Magnitude of Impact		
		Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night
	The Gardeners Cottage	40	39	37	65	55	45	37	37	-	Negligible	Negligible	-
	Bryn Hen	40	39	37	65	55	45	42	42	-	Low	Low	-
	Bryn y Pin	46	43	38	65	55	45	33	33	-	Negligible	Negligible	-
	Bryn y Pin Cottage	46	43	38	65	55	45	36	36	-	Negligible	Negligible	-
	Bryn y Pin Mawr	46	43	38	65	55	45	31	31	-	Negligible	Negligible	-
	Grouse Lodge	46	43	38	65	55	45	31	31	-	Negligible	Negligible	-
	Llys Awel	44	36	35	65	55	45	46	46	-	Low	Low	-
	Ffynnonau Farm	48	40	38	65	55	45	42	42	-	Negligible	Low	-
	Springhill	48	40	38	65	55	45	43	43	-	Negligible	Low	-
	Tan y Bryn	43	42	37	65	55	45	33	33	-	Negligible	Negligible	-
	Bryntwydd	39	37	36	65	55	45	38	38	-	Negligible	Low	-
	Pwll Y Cibau Bach	39	37	36	65	55	45	46	46	-	Low	Low	-
	Bryn Gwynt	48	47	46	65	55	50	48	48	-	Low	Low	-
	Merlyn	48	47	46	65	55	50	51	51	-	Low	Low	-
	Gwel Y Mor	48	47	46	65	55	50	44	44	-	Negligible	Negligible	-
	Glandyfr	48	47	46	65	55	50	44	44	-	Negligible	Negligible	-
	Ffynnon Dyfyr	48	47	46	65	55	50	43	43	-	Negligible	Negligible	-
	Ffynnon Wen	40	39	37	65	55	45	45	45	-	Low	Low	-
	Tyn Y Mynydd	40	39	37	65	55	45	43	43	-	Low	Low	-
	Pistyll	40	39	37	65	55	45	33	33	-	Negligible	Negligible	-
	Nant Bach	46	43	38	65	55	45	41	41	-	Negligible	Negligible	-
	Caer Clawdd	46	43	38	65	55	45	46	46	-	Low	Low	-
	Plas Hafod	47	39	38	65	55	45	43	43	-	Negligible	Low	-
	Plas Newydd	40	35	34	65	55	45	39	39	-	Negligible	Low	-
	Carreg Dafydd	40	35	34	65	55	45	45	45	-	Low	Low	-
	Nant Ganol	41	40	34	65	55	45	43	43	-	Low	Low	-
Onshore Substation	Bryn Arian	45	41	40	65	55	45	40	40	-	Negligible	Negligible	-
	Cae Llwyd	43	42	37	65	55	45	37	37	-	Negligible	Negligible	-
	Cae Pwll	43	39	36	65	55	45	25	25	-	Negligible	Negligible	-
	Caer Delyn	46	40	37	65	55	45	38	38	-	Negligible	Negligible	-
	Carreg Wen	46	40	37	65	55	45	35	35	-	Negligible	Negligible	-

Location	Receptor	Use of trenchless techniques compounds[2]											
		LOAEL, dB(A)			SOAEL, dB(A)			Construction Noise Level, dB(A)			Magnitude of Impact		
		Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night	Day	Evening and Weekends	Night
	Cefn Farm	43	39	36	65	55	45	29	29	-	Negligible	Negligible	-
	Craig Llwyd	45	41	40	65	55	45	40	40	-	Negligible	Negligible	-
	Derwen Deg	46	40	37	65	55	45	33	33	-	Negligible	Negligible	-
	Groesffordd Farm	45	41	40	65	55	45	40	40	-	Negligible	Negligible	-
	Isfryn	47	39	38	65	55	45	32	32	-	Negligible	Negligible	-
	Maes	47	39	38	65	55	45	51	51	-	Low	Low	-
	Pant Farm	43	39	36	65	55	45	27	27	-	Negligible	Negligible	-
	Pentre Bach	45	41	40	65	55	45	44	44	-	Negligible	Low	-
	Pentre Mawr Farm	45	41	40	65	55	45	40	40	-	Negligible	Negligible	-
	Pentre Meredydd	43	42	37	65	55	45	45	45	-	Low	Low	-
	Plas yr Esgob	46	40	37	65	55	45	33	33	-	Negligible	Negligible	-
	Rhos Aber	43	39	36	65	55	45	26	26	-	Negligible	Negligible	-
	Squirrels Lodge	43	39	36	65	55	45	26	26	-	Negligible	Negligible	-
	Tan y Bryn	43	42	37	65	55	45	33	33	-	Negligible	Negligible	-
	Tan y Bryn Uchaf	43	42	37	65	55	45	35	35	-	Negligible	Negligible	-
	Tan y Graig	43	39	36	65	55	45	28	28	-	Negligible	Negligible	-
	Trebanog	45	41	40	65	55	45	42	42	-	Negligible	Low	-
	Ty Celyn	43	39	36	65	55	45	29	29	-	Negligible	Negligible	-
	Tyddyn Meredydd	43	42	37	65	55	45	49	49	-	Low	Low	-
	Tyn y Caeau	46	40	37	65	55	45	35	35	-	Negligible	Negligible	-
	Tyn y Ffordd	47	39	38	65	55	45	40	40	-	Negligible	Low	-
	Tyn y Ffordd Bach	44	40	35	65	55	45	26	26	-	Negligible	Negligible	-
	Tyn y Ffordd Fawr	44	40	35	65	55	45	25	25	-	Negligible	Negligible	-
	Tyn y Ffordd Newydd	43	39	36	65	55	45	27	27	-	Negligible	Negligible	-
	Waen Meredydd	44	39	36	65	55	45	47	47	-	Low	Low	-
	Ysgubor EOS	45	41	40	65	55	45	36	36	-	Negligible	Negligible	-
	Ysgubor Newydd	47	39	38	65	55	45	29	29	-	Negligible	Negligible	-

Location	Receptor	Substation Groundworks LOAEL, dB(A)		Substation Groundworks SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Onshore Substation	Bryn Arian	45	41	65	55	~~39~~41	~~39~~41	Negligible	Low~~Negligible~~
	Cae Llwyd	43	42	65	55	~~39~~48	~~39~~48	Low~~Negligible~~	Low~~Negligible~~
	Cae Pwll	43	39	65	55	~~47~~38	~~47~~38	~~Low~~Negligible	~~Low~~Negligible
	Caer Delyn	46	40	65	55	~~50~~42	~~50~~42	~~Low~~Negligible	Low
	Carreg Wen	46	40	65	55	~~36~~40	~~36~~40	Negligible	Negligible
	Cefn Farm	43	39	65	55	~~39~~45	~~39~~45	Low~~Negligible~~	Low
	Craig Llwyd	45	41	65	55	~~39~~43	~~39~~43	Negligible	Low~~Negligible~~
	Derwen Deg	46	40	65	55	~~39~~42	~~39~~42	Negligible	Low~~Negligible~~
	Groesffordd Farm	45	41	65	55	~~34~~41	~~34~~41	Negligible	Low~~Negligible~~
	Hendy Farm	43	42	65	55	~~39~~56	~~39~~56	Low~~Negligible~~	Medium~~Negligible~~
	Isfryn	47	39	65	55	~~41~~52	~~41~~52	Low~~Negligible~~	Low
	Maes	47	39	65	55	~~43~~25	~~43~~25	Negligible	~~Low~~Negligible
	Pant Farm	43	39	65	55	~~42~~28	~~42~~28	Negligible	~~Low~~Negligible
	Pentre Bach	45	41	65	55	~~40~~46	~~40~~46	Low~~Negligible~~	Low~~Negligible~~
	Pentre Mawr Farm	45	41	65	55	~~39~~43	~~39~~43	Negligible	Low~~Negligible~~
	Pentre Meredydd	43	42	65	55	~~39~~52	~~39~~52	Low~~Negligible~~	Low~~Negligible~~
	Plas yr Esgob	46	40	65	55	~~40~~41	~~40~~41	Negligible	Low
	Rhos Aber	43	39	65	55	~~39~~38	~~39~~38	Negligible	~~Low~~Negligible
	Squirrels Lodge	43	39	65	55	~~44~~40	~~44~~40	~~Low~~Negligible	Low
	Tan y Bryn	43	42	65	55	~~47~~46	~~47~~46	Low	Low
	Tan y Bryn Uchaf	43	42	65	55	~~48~~53	~~48~~53	Low	Low
	Tan y Graig	43	39	65	55	~~49~~26	~~49~~26	~~Low~~Negligible	~~Low~~Negligible
	Trebanog	45	41	65	55	~~33~~39	~~33~~39	Negligible	Negligible
	Ty Celyn	43	39	65	55	~~35~~46	~~35~~46	Low~~Negligible~~	Low~~Negligible~~
	Tyddyn Meredydd	43	42	65	55	~~23~~53	~~23~~53	Low~~Negligible~~	Low~~Negligible~~
	Tyn y Caeau	46	40	65	55	~~25~~41	~~25~~41	Negligible	Low~~Negligible~~
	Tyn y Ffordd	47	39	65	55	~~44~~27	~~44~~27	Negligible	~~Low~~Negligible
	Tyn y Ffordd Bach	44	40	65	55	~~46~~40	~~46~~40	~~Low~~Negligible	Low
	Tyn y Ffordd Fawr	44	40	65	55	~~41~~39	~~41~~39	Negligible	~~Low~~Negligible
	Tyn y Ffordd Newydd	43	39	65	55	~~44~~36	~~44~~36	~~Low~~Negligible	~~Low~~Negligible

Location	Receptor	Substation Groundworks							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	Waen Meredydd	44	39	65	55	~~50~~43	~~50~~43	~~Low~~Negligible	Low
	Ysgubor EOS	45	41	65	55	~~51~~35	~~51~~35	~~Low~~Negligible	~~Low~~Negligible
	Ysgubor Newydd	47	39	65	55	~~39~~29	~~39~~29	Negligible	~~Low~~Negligible

Location	Receptor	Substation Building Foundation Works							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Onshore Substation	Bryn Arian	45	41	65	55	~~33~~38	~~33~~38	Negligible	Negligible
	Cae Llwyd	43	42	65	55	~~44~~46	~~44~~46	Low	Low
	Cae Pwll	43	39	65	55	~~29~~34	~~29~~34	Negligible	Negligible
	Caer Delyn	46	40	65	55	~~32~~37	~~32~~37	Negligible	Negligible
	Carreg Wen	46	40	65	55	~~29~~35	~~29~~35	Negligible	Negligible
	Cefn Farm	43	39	65	55	~~35~~41	~~35~~41	Negligible	Low~~Negligible~~
	Craig Llwyd	45	41	65	55	~~35~~39	~~35~~39	Negligible	Negligible
	Derwen Deg	46	40	65	55	~~31~~38	~~31~~38	Negligible	Negligible
	Groesffordd Farm	45	41	65	55	~~31~~37	~~31~~37	Negligible	Negligible
	Hendy Farm	43	42	65	55	~~33~~55	~~33~~55	Low~~Negligible~~	Medium~~Negligible~~
	Isfryn	47	39	65	55	~~45~~48	~~45~~48	Low~~Negligible~~	Low
	Maes	47	39	65	55	21	21	Negligible	Negligible
	Pant Farm	43	39	65	55	~~12~~24	~~12~~24	Negligible	Negligible
	Pentre Bach	45	41	65	55	~~40~~42	~~40~~42	Negligible	Low~~Negligible~~
	Pentre Mawr Farm	45	41	65	55	~~36~~41	~~36~~41	Negligible	Negligible
	Pentre Meredydd	43	42	65	55	~~48~~53	~~48~~53	Low	Low
	Plas yr Esgob	46	40	65	55	~~32~~39	~~32~~39	Negligible	Negligible
	Rhos Aber	43	39	65	55	~~21~~34	~~21~~34	Negligible	Negligible
	Squirrels Lodge	43	39	65	55	~~31~~36	~~31~~36	Negligible	Negligible
	Tan y Bryn	43	42	65	55	~~34~~47	~~34~~47	Low~~Negligible~~	Low~~Negligible~~
	Tan y Bryn Uchaf	43	42	65	55	~~50~~54	~~50~~54	Low	Low
	Tan y Graig	43	39	65	55	~~12~~21	~~12~~21	Negligible	Negligible
	Trebanog	45	41	65	55	~~29~~35	~~29~~35	Negligible	Negligible
	Ty Celyn	43	39	65	55	~~39~~43	~~39~~43	Negligible	Low
	Tyddyn Meredydd	43	42	65	55	~~49~~53	~~49~~53	Low	Low
	Tyn y Caeau	46	40	65	55	~~31~~36	~~31~~36	Negligible	Negligible
	Tyn y Ffordd	47	39	65	55	~~12~~25	~~12~~25	Negligible	Negligible
	Tyn y Ffordd Bach	44	40	65	55	~~32~~37	~~32~~37	Negligible	Negligible
	Tyn y Ffordd Fawr	44	40	65	55	~~30~~35	~~30~~35	Negligible	Negligible
	Tyn y Ffordd Newydd	43	39	65	55	~~26~~32	~~26~~32	Negligible	Negligible

Location	Receptor	Substation Building Foundation Works							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	Waen Meredydd	44	39	65	55	~~36~~39	~~36~~39	**Negligible**	Low~~Negligible~~
	Ysgubor EOS	45	41	65	55	~~30~~33	~~30~~33	**Negligible**	**Negligible**
	Ysgubor Newydd	47	39	65	55	~~12~~25	~~12~~25	**Negligible**	**Negligible**

Location	Receptor	Substation Access Road and Car Parking Road Works							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Onshore Substation	Bryn Arian	45	41	65	55	~~44~~38	~~44~~38	Negligible	~~Low~~Negligible
	Cae Llwyd	43	42	65	55	~~48~~38	~~48~~38	~~Low~~Negligible	~~Low~~Negligible
	Cae Pwll	43	39	65	55	~~34~~33	~~34~~33	Negligible	Negligible
	Caer Delyn	46	40	65	55	~~43~~41	~~43~~41	Negligible	Low
	Carreg Wen	46	40	65	55	~~40~~41	~~40~~41	Negligible	Low
	Cefn Farm	43	39	65	55	~~37~~35	~~37~~35	Negligible	Negligible
	Craig Llwyd	45	41	65	55	~~46~~38	~~46~~38	~~Low~~Negligible	~~Low~~Negligible
	Derwen Deg	46	40	65	55	~~41~~52	~~41~~52	Low~~Negligible~~	Low
	Groesffordd Farm	45	41	65	55	~~44~~38	~~44~~38	Negligible	~~Low~~Negligible
	Hendy Farm	43	42	65	55	~~49~~42	~~49~~42	~~Low~~Negligible	~~Low~~Negligible
	Isfryn	47	39	65	55	~~45~~39	~~45~~39	Negligible	Low
	Maes	47	39	65	55	~~33~~26	~~33~~26	Negligible	Negligible
	Pant Farm	43	39	65	55	~~22~~26	~~22~~26	Negligible	Negligible
	Pentre Bach	45	41	65	55	~~47~~39	~~47~~39	~~Low~~Negligible	~~Low~~Negligible
	Pentre Mawr Farm	45	41	65	55	~~47~~39	~~47~~39	~~Low~~Negligible	~~Low~~Negligible
	Pentre Meredydd	43	42	65	55	~~49~~43	~~49~~43	Low	Low
	Plas yr Esgob	46	40	65	55	~~41~~46	~~41~~46	Low~~Negligible~~	Low
	Rhos Aber	43	39	65	55	~~37~~35	~~37~~35	Negligible	Negligible
	Squirrels Lodge	43	39	65	55	~~38~~36	~~38~~36	Negligible	Negligible
	Tan y Bryn	43	42	65	55	~~42~~40	~~42~~40	Negligible	~~Low~~Negligible
	Tan y Bryn Uchaf	43	42	65	55	~~46~~41	~~46~~41	~~Low~~Negligible	~~Low~~Negligible
	Tan y Graig	43	39	65	55	~~20~~23	~~20~~23	Negligible	Negligible
	Trebanog	45	41	65	55	~~43~~36	~~43~~36	Negligible	~~Low~~Negligible
	Ty Celyn	43	39	65	55	~~39~~38	~~39~~38	Negligible	~~Low~~Negligible
	Tyddyn Meredydd	43	42	65	55	~~49~~43	~~49~~43	Low	Low
	Tyn y Caeau	46	40	65	55	~~41~~47	~~41~~47	~~Negligible~~Low	Low
	Tyn y Ffordd	47	39	65	55	~~28~~24	~~28~~24	Negligible	Negligible
	Tyn y Ffordd Bach	44	40	65	55	~~38~~36	~~38~~36	Negligible	Negligible
	Tyn y Ffordd Fawr	44	40	65	55	~~38~~33	~~38~~33	Negligible	Negligible
	Tyn y Ffordd Newydd	43	39	65	55	~~33~~35	~~33~~35	Negligible	Negligible

Location	Receptor	Substation Access Road and Car Parking Road Works							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	Waen Meredydd	44	39	65	55	~~48~~40	~~48~~40	~~Low~~Negligible	Low
	Ysgubor EOS	45	41	65	55	~~36~~31	~~36~~31	Negligible	Negligible
	Ysgubor Newydd	47	39	65	55	~~21~~23	~~21~~23	Negligible	Negligible

Location	Receptor	Substation Building Fabrication and High-Voltage Plant Installation							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
Onshore Substation	Bryn Arian	45	41	65	55	~~34~~37	~~34~~37	Negligible	Negligible
	Cae Llwyd	43	42	65	55	~~44~~46	~~44~~46	Low	Low
	Cae Pwll	43	39	65	55	~~28~~34	~~28~~34	Negligible	Negligible
	Caer Delyn	46	40	65	55	~~31~~36	~~31~~36	Negligible	Negligible
	Carreg Wen	46	40	65	55	~~30~~35	~~30~~35	Negligible	Negligible
	Cefn Farm	43	39	65	55	~~32~~41	~~32~~41	Negligible	~~Negligible~~Low
	Craig Llwyd	45	41	65	55	~~36~~39	~~36~~39	Negligible	Negligible
	Derwen Deg	46	40	65	55	~~30~~38	~~30~~38	Negligible	Negligible
	Groesffordd Farm	45	41	65	55	~~31~~36	~~31~~36	Negligible	Negligible
	Hendy Farm	43	42	65	55	~~47~~56	~~47~~56	Low	~~Low~~Medium
	Isfryn	47	39	65	55	~~41~~49	~~41~~49	~~Negligible~~Low	Low
	Maes	47	39	65	55	~~18~~21	~~18~~21	Negligible	Negligible
	Pant Farm	43	39	65	55	~~11~~23	~~11~~23	Negligible	Negligible
	Pentre Bach	45	41	65	55	~~40~~42	~~40~~42	Negligible	~~Negligible~~Low
	Pentre Mawr Farm	45	41	65	55	~~38~~40	~~38~~40	Negligible	Negligible
	Pentre Meredydd	43	42	65	55	52	52	Low	Low
	Plas yr Esgob	46	40	65	55	~~31~~38	~~31~~38	Negligible	Negligible
	Rhos Aber	43	39	65	55	~~20~~32	~~20~~32	Negligible	Negligible
	Squirrels Lodge	43	39	65	55	~~29~~35	~~29~~35	Negligible	Negligible
	Tan y Bryn	43	42	65	55	~~33~~43	~~33~~43	Negligible	~~Negligible~~Low
	Tan y Bryn Uchaf	43	42	65	55	~~44~~53	~~44~~53	Low	Low
	Tan y Graig	43	39	65	55	~~12~~21	~~12~~21	Negligible	Negligible
	Trebanog	45	41	65	55	~~31~~35	~~31~~35	Negligible	Negligible
	Ty Celyn	43	39	65	55	~~35~~43	~~35~~43	Negligible	~~Negligible~~Low
	Tyddyn Meredydd	43	42	65	55	~~50~~53	~~50~~53	Low	Low
	Tyn y Caeau	46	40	65	55	~~30~~38	~~30~~38	Negligible	Negligible
	Tyn y Ffordd	47	39	65	55	~~15~~22	~~15~~22	Negligible	Negligible
	Tyn y Ffordd Bach	44	40	65	55	~~30~~36	~~30~~36	Negligible	Negligible
	Tyn y Ffordd Fawr	44	40	65	55	~~28~~34	~~28~~34	Negligible	Negligible
	Tyn y Ffordd Newydd	43	39	65	55	~~27~~33	~~27~~33	Negligible	Negligible

Location	Receptor	Substation Building Fabrication and High-Voltage Plant Installation							
		LOAEL, dB(A)		SOAEL, dB(A)		Construction Noise Level, dB(A)		Magnitude of Impact	
		Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends	Day	Evening and Weekends
	Waen Meredydd	44	39	65	55	~~36~~39	~~36~~39	**Negligible**	**Negligible**
	Ysgubor EOS	45	41	65	55	32	32	**Negligible**	**Negligible**
	Ysgubor Newydd	47	39	65	55	~~12~~24	~~12~~24	**Negligible**	**Negligible**

Appendix C: Construction traffic noise assessment results

Link	2026 Baseline Traffic Flows			2026 Baseline Traffic Flows + Construction Traffic Flows			Change in BNL of Closest Public Road used for Construction Traffic(dB)	Impact
	Total Vehicles (AADT)	HGVs (AADT)	BNL+C, dB(A)	Total Vehicles (AADT)	HGVs (AADT)	BNL+C, dB(A)		
A55 between Junctions 27 and 27A	53,774	2,467	80	54,261	2672	80	0	**Negligible**
A55 between Junctions 27 and 26	47,854	2,457	80	48,341	2662	80	0	**Negligible**
A55 between Junctions 26 and 25	47,854	2,457	80	48,408	2662	80	0	**Negligible**
A55 between Junctions 25 and 24A	47,854	2,457	80	48,435	2662	80	0	**Negligible**
A55 between Junctions 24A and 24	47,854	2,457	80	48,435	2662	80	0	**Negligible**
A55 between Junctions 24 and 23A	56,720	2,236	80	57,141	2441	80	0	**Negligible**
A55 between Junctions 23A and 23	71,493	2,551	81	71,914	2756	81	0	**Negligible**
A547 through Llanddulas	8,593	772	69	8,836	849	69	0	**Negligible**
A547 between Rhyd-Y-Foel and TCC 1	6,998	830	68	7,242	908	68	0	**Negligible**
A547 between TCC1 and Busnes Gogledd Cymru	6,998	830	68	7,205	863	68	0	**Negligible**
A547 between Parc Busnes Gogledd Cymru and A548 Chapel Street	9,460	857	68	9,667	890	68	0	**Negligible**
A547 between A548 Chapel Street and A55	6,131	672	62	6,374	705	63	1	**Low**
A548 Chapel Street between A547 and Lon Dirion	9,241	995	64	9,500	1061	64	0	**Negligible**
A548 Chapel Street between Lon Dirion and Abergele Hospital	4,088	842	68	4,346	908	68	0	**Negligible**
A548 Chapel Street between Abergele Hospital and B5381 Roman Road	2,983	470	66	3,242	536	67	1	**Low**
B5381 Roman Road between A548 and Moelfre	2,018	376	64	2,068	376	65	1	**Low**
B5381 Roman Road between Moelfre and Capel Carmel	1,590	229	63	1,640	229	64	1	**Low**
B5381 Roman Road between Capel Carmel and Roberts D a O	1,624	305	64	1,674	305	64	0	**Negligible**
B5381 Roman Road between Roberts D a O and to TCC 4	1,776	291	64	1,826	291	64	0	**Negligible**

Link	2026 Baseline Traffic Flows			2026 Baseline Traffic Flows + Construction Traffic Flows			Change in BNL of Closest Public Road used for Construction Traffic(dB)	Impact
	Total Vehicles (AADT)	HGVs (AADT)	BNL+C, dB(A)	Total Vehicles (AADT)	HGVs (AADT)	BNL+C, dB(A)		
B5381 Roman Road between TCC 4 and TCC 5	1,776	291	64	1,895	312	64	0	**Negligible**
B5381 Roman Road between TCC 5 and Engine Hill	1,776	291	64	2,027	359	65	1	**Low**
B5381 Glascoed Road between Engine Hill and Ffordd William Morgan	1,811	241	64	2,028	309	65	1	**Low**
B5381 Glascoed Road between Ffordd William Morgan and National Grid Substation access	4,217	509	64	4,451	604	64	0	**Negligible**
Ffordd William Morgan between A55 and Carlton Court	4,111	420	61	4,512	583	61	0	**Negligible**
Ffordd William Morgan between Carlton Court and B5381 Glascoed Road	6,373	531	63	6,774	693	63	0	**Negligible**
Engine Hill between A55 and B5381 Glascoed Road	3,574	579	67	3,723	579	67	0	**Negligible**
B5381 Roman Road west of A548 crossroad up to construction compound	768	15	60	810	15	60	0	**Negligible**
A548 south of B5381 Roman Road crossroad up to construction compound	2,865	64	66	2,907	64	66	0	**Negligible**