MONA OFFSHORE WIND PROJECT

Environmental Statement

Volume 3, Chapter 8: Traffic and Transport (F02)

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Image of an offshore wind farm

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Deadline 7 Changes

This document has been updated at Deadline 7 of the Mona Offshore Wind Project examination in order to reflect the change to the Order Limits, forming the Change Request, which was accepted by the Examining Authority on 19 December 2024.

The following figures have been updated to reflect the updated onshore Order Limit change:

- Figure 8.1: Traffic and Transport Study Area and Highway Network Overview

Errata

Document section	Description of errata
Table 8.14	The table incorrectly includes 46/2019/0806 (Development of 0.75 ha of land for residential purposes). It should instead include 46/2021/0159 PF (Glascoed Road, St Asaph Business Park).

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Glossary

Term	Meaning
Abnormal Indivisible Loads	Loads or vehicles that exceed maximum vehicle weight, axle weight or dimensions as set out in the Road Vehicles (Construction and Use) Regulations 1986 as amended.
AutoTRACK Analysis	Computer modelling of area taken up by a moving vehicle.
Bodelwyddan National Grid Substation	This is the Point of Interconnection (POI) selected by the National Grid for the Mona Offshore Wind Project.
Code of Construction Practice (CoCP)	A document detailing the overarching principles of construction, contractor protocols, construction-related environmental management measures, pollution prevention measures, the selection of appropriate construction techniques and monitoring processes
Construction Traffic Management Plan (CTMP)	A plan managing all construction traffic, including protocols for delivery of abnormal indivisible loads to site, personnel travel, measures for road cleaning and sustainable site travel measures.
Fear and intimidation	The consideration of fear and intimidation upon people created by moving objects.
Local Highway Authority	A body responsible for the public highways in a particular area of England and Wales, as defined in the Highways Act 1980.

Acronyms

Acronym	Description
AIL	Abnormal Indivisible Load
ASA	Achieving Sustainable Accessibility
AADT	Annual Average Daily Traffic
CEA	Cumulative Effect Assessment
CoCP	Code of Construction Practice
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
HGVs	Heavy Goods Vehicles
LRN	Local Road Network
MCC	Manual Classified Counts
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
NCN	National Cycle Network

Acronym	Description
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
NMWTRA	North and Mid Wales Trunk Road Agent
PEIR	Preliminary Environmental Information Report
PIA	Personal Injury Accident
PPW	Planning Policy Wales
SRN	Strategic Road Network
TEMPro	Trip End Model Presentation Programme
TA	Transport Assessment
TAG	Transport Analysis Guidance

Units

Unit	Description
gw	Gigawatt (power)
ha	Hectares
km	Kilometre (distance)
m	Metre (distance)
m^2	Metres Squared
%	Percentage
s	Seconds

8 Traffic and transport

8.1 Introduction

8.1.1 Overview

8.1.1.1 This chapter of the Environmental Statement presents the assessment of the potential impact of the Mona Offshore Wind Project on traffic and transport. Specifically, this chapter considers the potential impact of the Mona Offshore Wind Project landward of Mean High Water Springs (MHWS) during the construction, operations and maintenance, and decommissioning phases. This chapter has been informed by Volume 1, Chapter 3: Project description of the Environmental Statement and also draws upon information contained within the following annexes:

- Volume 7, Annex 8.1: Description of network links and sensitivity of the Environmental Statement
- Volume 7, Annex 8.2: Base traffic flows of the Environmental Statement
- Volume 7, Annex 8.3: Personal injury accident locations of the Environmental Statement
- Volume 7, Annex 8.4: Public transport networks of the Environmental Statement
- Volume 7, Annex 8.5: Construction vehicle trip generation assumptions of the Environmental Statement
- Volume 7, Annex 8.6: Traffic flows with construction traffic of the Environmental Statement
- Volume 7, Annex 8.7: Traffic and transport figures of the Environmental Statement.

8.1.1.2 This chapter of the Environmental Statement also contains an integrated Transport Assessment.

8.2 Legislative and policy context

8.2.1 Legislation

8.2.1.1 This section identifies the legislative context for traffic and transport. Legislation relevant to traffic and transport includes the Transport (Wales) Act 2006, the Highways Act 1980 and the Active Travel (Wales) Act 2013.

8.2.1.2 The Transport (Wales) Act 2006 imposes a duty on Welsh Ministers to *'develop policies for the promotion and encouragement of safe, integrated, sustainable, efficient and economic transport facilities and services to, from and within Wales'.* This act also imposes duty on Welsh Ministers to carry out the functions to implement the policies. Specific measures include requirements for local transport authorities to reduce road congestion and pollution. For example, local transport authorities should produce a Local Transport Plan (or Regional Transport Plans) every five years and to keep that plan under review. These plans have been considered in the assessment of traffic and transport, as set out in Table 8.5.

8.2.1.3 The Highways Act 1980 sets out the duties of the highway authorities and their responsibilities in managing and operating the highway network.

8.2.1.4 The Active Travel (Wales) Act 2013 is legislation that aims to enhance provisions for walking and cycling as methods of transport. The act requires local authorities in Wales to produce and promote maps of walking and cycling networks and to deliver year on year active travel improvements along the mapped routes.

8.2.1.5 The Active Travel (Wales) Act 2013 is intended to ensure more people can experience the health benefits of active travel, reduce greenhouse gas emissions, help address poverty and disadvantage and help the economy grow by unlocking sustainable economic growth.

8.2.1.6 It is then the responsibility of the developer to recognise the local ATRs and confirm that there are sufficient connections from the development to the existing sustainable transport network, so future residents have an accessible, direct, and safe route from their homes to the active transport network.

8.2.2 Planning policy context

8.2.2.1 The Mona Offshore Wind Project will be located in Welsh offshore waters (beyond 12 nautical miles (nm) from the Welsh coast) and inshore waters, with the onshore infrastructure located wholly within Wales. As set out in Volume 1, Chapter 1: Introduction of this Environmental Statement, as the Mona Offshore Wind Project is an offshore generating station and is a Nationally Significant Infrastructure Project (NSIP) as defined by Section 15(3) of the Planning Act 2008 (as amended) (the 2008 Act). As such, there is a requirement to submit an application for a Development Consent Order (DCO) to the Planning Inspectorate to be decided by the Secretary of State for the Department for Energy Security and Net Zero.

8.2.3 National Policy Statements

8.2.3.1 There are currently six energy National Policy Statements (NPSs), three of which contain 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, 2024)
- NPS for Renewable Energy Infrastructure (NPS EN-3) (Department for Energy Security & Net Zero, 2024)
- NPS for Electricity Networks Infrastructure (NPS EN-5) (Department for Energy Security & Net Zero, 2024).

8.2.3.2 NPS EN-1 includes guidance on what matters are to be considered in the assessment. These are summarised in Table 8.1. NPS EN-1 also highlights a number of factors relating to the determination of an application and in relation to mitigation. These are summarised in Table 8.2.

Table 8.1: Summary of the NPS EN-1 provisions relevant to Traffic and Transport.

Summary of NPS EN-1 provision	How and where considered in the Environmental Statement
NPS EN-1	
The transport of materials, goods and personnel to and from a development during all project phases can have a variety of impacts on the surrounding transport infrastructure and potentially on connecting transport networks, for example through increased congestion. Impacts may include economic, social and environmental effects. [Paragraph 5.14.1 of NPS EN-1]. Environmental impacts may result particularly from trips generated on roads which may increase noise and air pollution as well as greenhouse gas emissions. [Paragraph 5.14.2 of NPS EN-1]. Disturbance caused by traffic and abnormal loads generated during the construction phase will depend on the scale and type of the proposal. [Paragraph 5.14.3 of NPS EN-1].	This chapter of the Environmental Statement considers all relevant potential transport impacts during the construction, operations, and decommissioning phases of development. The traffic and transport study area has been established to include all relevant routes along the connecting transport network. Noise is considered in Volume 3, Chapter 9: Noise and vibration of the Environmental Statement, emissions is considered in Volume 3, Chapter 10: Air quality of the Environmental Statement and inter-related effects are considered in Volume 3, Chapter 11: Inter-related effects – onshore of the Environmental Statement.
The consideration and mitigation of transport impacts is an essential part of Government's wider policy objectives for sustainable development as set out in Section 2.6 of this NPS. [Paragraph 5.14.4 of NPS EN-1].	This chapter of the Environmental Statement considers all relevant potential transport impacts during the construction, operations, and decommissioning phases and ways to mitigate them where necessary. Any mitigation required in relation to traffic and transport has been set out in section 8.14 of this chapter.
Applicant Assessment	
If a project is likely to have significant transport implications, the applicant's Environmental Statement should include a transport appraisal. The DfT's Transport Analysis Guidance (TAG) and Welsh Governments WelTAG provides guidance on modelling and assessing the impacts of transport schemes. [Paragraph 5.14.5 of NPS EN-1].	A Transport Assessment (TA) has been incorporated into this chapter of the Environmental Statement in accordance with guidance, best practice and relevant parts of the Department for Transport's (DfT) TAG and Welsh Governments WelTAG.

Summary of NPS EN-1 provision	How and where considered in the Environmental Statement
National Highways and Highway Authorities are statutory consultees on NSIP applications including energy infrastructure where it is expected to affect the strategic road network and / or have an impact on the local road network. Applicants should consult with National Highways and Highway Authorities as appropriate on the assessment and mitigate to inform the application to be submitted. [Paragraph 5.14.6 of NPS EN-1].	Welsh Government, Denbighshire County Council (DCC) and Conwy County Borough Council (CCBC) as the relevant highway authorities have been consulted on the potential impacts and mitigation relevant to the Strategic Road Network (SRN) and the Local Road Network (LRN) as set out in section 8.3 of this chapter of the Environmental Statement.
Where appropriate, the applicant should prepare a travel plan including demand management and monitoring measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by active, public and shared transport to: • Reduce the need for parking associated with the proposal • Contribute to decarbonisation of the transport network • Improve user travel options by offering genuine modal choice. [Paragraph 5.14.7 of NPS EN-1].	Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff. Where appropriate it is expected that movement by sustainable means will be facilitated and encouraged. However, it is recognised that the linear nature of the works, the absence of a fixed permanent work site along the Onshore Cable Corridor and the rural nature of much of the Onshore Cable Corridor may make it difficult to implement a standard travel plan for the Onshore Cable Corridor working. Travel plan measures to mitigate transport impacts are set out within the Outline Construction Traffic Management Plan (CTMP) (Document Reference J26.13) to be secured as part of the Code of Construction Practice CoCP) requirement in the draft DCO.
The assessment should also consider any possible disruption to services and infrastructure (such as road, rail and airports). [Paragraph 5.14.8 of NPS EN-1].	A Transport Assessment (TA) has been incorporated into this chapter of the Environmental Statement in accordance with guidance, best practice and relevant parts of the Department for Transport's (DfT) TAG and Welsh Governments WelTAG.
If additional transport infrastructure is needed or proposed, it should always include good quality walking, wheeling and cycle routes, and associated facilities (changing/storage etc) needed to enhance active transport provision. [Paragraph 5.14.9 of NPS EN-1]. Applicants should discuss with network providers the possibility of co-funding by government for any third-party benefits. Guidance has been issued in England which explains the circumstances where this may be possible, although the government cannot guarantee in advance that funding will be available for any given uncommitted scheme at any specified time. [Paragraph 5.14.10 of NPS EN-1].	Additional transport infrastructure is limited to the provision of a number of mostly temporary construction accesses along the Onshore Cable Corridor. Accesses will be removed and the land reinstated when construction is finished save for temporary construction compound (TCC) 1 as set out in the Outline Highways Access Management Plan (OHAMP) (Document Reference J26.16) to be secured as part of the CoCP requirement in the draft DCO. The accesses to be used for maintenance will be used on a limited and irregular basis and will not be for public use therefore these considerations do not apply.

Table 8.2: Summary of NPS EN-1 policy on decision making and mitigation relevant to traffic and transport.

Summary of NPS EN-1 provision	How and where considered in the Environmental Statement
Where mitigation is needed, possible demand management measures must be considered. This could include identifying opportunities to: • Reduce the need to travel by consolidating trips • Locate development in areas already accessible by active travel and public transport • Provide opportunities for shared mobility • Re-mode by shifting travel to sustainable mode that is more beneficial to the network • Retime travel outside of the known peak times • Reroute to use parts of the network that are less busy. [Paragraph 5.14.11 of NPS EN-1].	**The** CTMP (Document Reference J26.13) sets out travel plan measures which include demand management measures. Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff.
If feasible and operationally reasonable, such mitigation should be required, before considering requirements for the provision of new inland transport infrastructure to deal with remaining transport impacts. All stages of the project should support and encourage a modal shift of freight from road to more environmentally sustainable alternatives, such as rail, cargo bike, maritime and inland waterways, as well as making appropriate provision for and infrastructure needed to support the use of alternative fuels including charging for electric vehicles. [Paragraph 5.14.12 of NPS EN-1].	The mitigation adopted considers the routeing of Heavy Goods Vehicle (HGV) movements and their movements do not require the provision of any new inland transport infrastructure apart from temporary access improvements to the Mona Onshore Development Area which would be required irrespective of any modal shift of freight from road to more environmentally sustainable alternatives.
Regard should always be given to the needs of freight at all stages in the construction and operation of the development including the need to provide appropriate facilities for HGV drivers as appropriate. [Paragraph 5.14.13 of NPS EN-1].	All accesses to the Mona Onshore Development Area have been designed to accommodate the movement of HGVs as set out within the OHAMP (Document Reference J26.16) to be secured as part of the CoCP requirement in the DCO and all TCCs will provide welfare facilities as set out in the CTMP (Document Reference J26.13) to be secured as part of the CoCP requirement in the draft DCO.
The Secretary of State may attach requirements to a consent where there is likely to be substantial HGV traffic that: • Control numbers of HGV movements to and from the site in a specified period during its construction and possibly on the routing of such movements • Make sufficient provision for HGV parking and associated high quality drive facilities either on the site or at dedicated facilities elsewhere, to support driver welfare, avoid 'overspill' parking on public roads, prolonged queuing on approach roads and uncontrolled on-street HGV parking in normal operating conditions • Ensure satisfactory arrangements for reasonably foreseeable abnormal disruption, in consultation with network providers and the responsible police force. [Paragraph 5.14.14 of NPS EN-1].	HGV routes have been identified and are set out in the CTMP (Document Reference J26.13) along with associated mitigation measures. All TCCs will provide appropriate provisions for HGVs to ensure no impact upon the highway.

Summary of NPS EN-1 provision	How and where considered in the Environmental Statement
The Secretary of State should have regard to the cost effectiveness of demand management measures compared to new transport infrastructure, as well as the aim to secure more sustainable patterns of transport development when considering mitigation measures. [Paragraph 5.14.15 of NPS EN-1].	The mitigation adopted considers the routeing of HGV movements and their movements do not require the provision of any new inland transport infrastructure apart from temporary access improvements to the Mona Onshore Development Area which would be required irrespective of any demand management measures. The CTMP (Document Reference J26.13) sets out travel plan measures which include demand management measures.
If an applicant suggests that the costs of meeting any obligations or requirements would make the proposal economically unviable this should not in itself justify the relaxation by the Secretary of State of any obligations or requirements needed to secure the mitigation. [Paragraph 5.14.17 of NPS EN-1].	The costs of transport mitigation currently envisaged by the applicant will not make the proposal economically unviable.
A new energy NSIP may give rise to substantial impacts on the surrounding transport infrastructure and the Secretary of State should therefore ensure that the applicant has sought to mitigate these impacts, including during the construction phase of the development and by enhancing active, public, and shared transport provision and accessibility. [Paragraph 5.14.18 of NPS EN-1]. Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the Secretary of State should consider requirements to mitigate adverse impacts on transport networks arising from the development, as set out below. [Paragraph 5.14.19 of NPS EN-1].	This chapter of the Environmental Statement considers all relevant potential transport impacts during the construction, operations, and decommissioning phases and ways to mitigate them where necessary. The potential transport impacts during the operations and decommissioning phases have been scoped out as set out in Table 8.7 of this chapter. The relevant potential transport impacts during the construction phase are considered taking into account mitigation measures documented in OHAMP (Document Reference J26.16) and CTMP (Document Reference J26.13) and no substantial impacts have been identified in section 8.9 and 8.11 of this chapter.
Development consent should not be withheld provided that the applicant is willing to enter into planning obligations for funding new infrastructure or requirements can be imposed to mitigate transport impacts. In this situation the Secretary of State should apply appropriately limited weight to residual effects on the surrounding transport infrastructure. [Paragraph 5.14.20 of NPS EN-1].	This chapter of the Environmental Statement considers all relevant potential transport impacts during the construction, operations, and decommissioning phases and ways to mitigate them where necessary. The potential transport impacts during the operations and decommissioning phases have been scoped out as set out in Table 8.7 of this chapter. The relevant potential transport impacts during the construction phase are considered within section 8.9 and 8.11 of this chapter which have identified no specific requirements to enter into planning obligations or requirements to be imposed to fund new infrastructure to mitigate any impacts that result in significant effects.

Summary of NPS EN-1 provision	How and where considered in the Environmental Statement
The Secretary of State should only consider refusing development on highways grounds if there would be an unacceptable impact on highway safety, residual cumulative impacts on the road network would be severe, or it does not show how consideration has been given to the provision of adequate active public or shared transport access and provision. [Paragraph 5.14.21 of NPS EN-1].	This chapter of the Environmental Statement considers all relevant potential transport impacts during the construction, operations, and decommissioning phases and ways to mitigate them where necessary. The potential transport impacts during the operations and decommissioning phases have been scoped out as set out in Table 8.7 of this chapter. The relevant potential transport impacts during the construction phase are considered within section 8.9 and 8.11 of this chapter, which has not identified any unacceptable impacts on highway safety and that the residual cumulative impacts on the road network would not be severe. The CTMP (Document Reference J26.13) to be secured as part of the CoCP requirement in the DCO sets out travel plan measures which include demand management measures.

8.2.4 Planning Policy Wales

8.2.4.1 Planning Policy Wales (Welsh Government, 2021) (PPW) sets out the land use planning policies of the Welsh Government. The objective is to ensure the planning system contributes towards sustainable development and improves the social, economic, environmental and cultural wellbeing of Wales. Those sections of particular relevance to traffic and transport are set out in Table 8.3 below. Technical Advice Note 18: Transport (Welsh Assembly Government, 2007) (TAN18: Transport) is to be read in conjunction with PPW and is a supplement to PPW. The main considerations and objectives of the TAN18: Transport are presented in Table 8.3 below.

Table 8.3: Planning Policy Wales

Summary of PPW provision	How and where considered in the Environmental Statement
PPW (February, 2021)	
Paragraph 4.1.1 Enabling More Sustainable Travel Choices – measures to increase walking, cycling and public transport, reduce dependency on the car for daily travel; Network Management – measures to make best use of the available capacity, supported by targeted new infrastructure; and Demand Management – the application of strategies and policies to reduce travel demand, specifically that of single-occupancy private vehicles.	Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff. Car sharing between construction staff is also promoted within the CTMP (Document Reference J26.13) to be secured as part of the CoCP requirement in the DCO.

Summary of PPW provision	How and where considered in the Environmental Statement
Paragraph 4.1.4 Land use and transport planning must be integrated. The planning system must ensure it enables integration: • Within and between different types of transport • Between transport measures and land use measures • Between transport measures and policies to protect the environment; and • Between transport measures and policies for education, health, social, inclusion and wealth creation.	Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff. Car sharing between construction staff is also promoted within the CTMP (Document Reference J26.13) to be secured as part of the CoCP requirement in the DCO.
TAN18: Transport (March, 2007)	
Paragraph 2.2 The Assembly Government adopts a sustainable development approach as the overarching framework within which strategies and policies are developed. PPW and the Wales Transport Strategy both aim to secure the provision of transport infrastructure and services, which improve accessibility, build a stronger economy, improve road safety and foster more sustainable communities: • Integration of transport and land use planning • Integration between different types of transport • Integration of transport policy with policies for the environment, education, social justice, health, economic development and wealth creation	Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff. Car sharing between construction staff is also promoted within the CTMP (Document Reference J26.13) to be secured as part of the CoCP requirement in the DCO. Section 8.2 of this traffic and transport chapter of the Environmental Statement presents the inclusion and considerations of legislation and national, regional and local policy within this chapter of the Environmental Statement in the assessment and commitments of the Mona Offshore Wind Project.

Summary of PPW provision	How and where considered in the Environmental Statement
Paragraph 2.3 Integration of land use planning and development of transport infrastructure has a key role to play in addressing the environmental aspects of sustainable development, in particular climate change and the outcomes identified in the Assembly Government's Environment Strategy. Integration can help the Assembly Government achieve these environmental outcomes, together with its wider sustainable development policy objectives by: • Promoting resource and travel efficient settlement patterns • Ensuring new development is located where there is, or will be, good access by public transport, walking and cycling thereby minimising the need for travel and fostering social inclusion • Managing parking provision • Ensuring that new development and major alterations to existing developments include appropriate provision for pedestrians (including those with special access and mobility requirements), cycling, public transport, and traffic management and parking/servicing • Promoting cycling and walking • Supporting the provision of high quality, inclusive public transport • Encouraging good quality design of streets that provide a safe public realm and a distinct sense of place.	Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff. Car sharing between construction staff is also promoted within the CTMP (Document Reference J26.13) to be secured as part of the CoCP requirement in the DCO. All TCCs will provide welfare facilities, services and parking facilities as set out in the CTMP (Document Reference J26.13) to be secured as part of the CoCP requirement in the DCO.

8.2.5 National Planning Policies

8.2.5.1 The assessment of potential changes to traffic and transport has also been made with consideration to the specific policies set out in:

- The National Development Framework: Future Wales – the National Plan 2040 (February 2021)
- Llwybr Newydd: The Wales Transport Strategy (March 2021)
- National Transport Delivery Plan 2022 to 2027 (August 2023).

8.2.5.2 Key provisions are set out in Table 8.4 along with details as to how these have been addressed within the assessment.

Table 8.4: National Planning Policy relevant to traffic and transport

Policy	Key provisions	How and where considered in the Environmental Statement
The National Development Framework: Future Wales – the National Plan 2040 (February 2021)		
Relating to Policy 11 – National Connectivity and Policy 12 – Regional Connectivity.	The Welsh Government will be investing significantly to improve active travel and public transport. This needs to be combined with the implementation of policies in Planning Policy Wales which require development to be directed towards sustainable travel locations and designed to make it possible for everyone to make sustainable and healthy travel choices for their daily journeys.	Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff. Car sharing between construction staff is also promoted within the CTMP.
Llwybr Newydd: The Wales Transport Strategy (March 2021)		
Priority 2: Allow people and goods to move easily from door to door by accessible, sustainable, and efficient transport services and infrastructure.	Providing safe, accessible, well-maintained, and managed transport infrastructure. Adapting to climate change and facilitating more sustainable transport choices.	Volume 7, Annex 8.3: Personal injury accident locations of the Environmental Statement sets out the personal injury accident rates for each highway link within the traffic and transport study area highlighted in Figure 8.1 of this chapter of the Environmental Statement. The potential impact of the Mona Offshore Wind Project construction traffic flows upon road safety is assessed in section 8.9 of this chapter of the Environmental Statement. Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff. Car sharing between construction staff is also promoted within the CTMP.
Priority 3: Encourage people to make the change to more sustainable transport.	Encouraging people to change their travel behaviour to use low-carbon, sustainable transport. Achieving this by making sustainable transport more attractive.	Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff. Car sharing between construction staff is also promoted within the CTMP.

Policy	Key provisions	How and where considered in the Environmental Statement
National Transport Delivery Plan 2022 -2027 (August 2023)		
Priority 1: bring services to people in order to reduce the need for people to use their cars on a daily basis.	3.1.2. Transport and new developments – locate new developments close to public transport and design them to be walking and cycling friendly from outset.	Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff. Public Rights of Way (PRoW) and cycle routes in the vicinity of the Mona Onshore Development Area have been highlighted on Figure 1.2 in Volume 7, Annex 8.7: Traffic and transport figures of the Environmental Statement and these are considered in Volume 3, Chapter 7: Land use and recreation of the Environmental Statement. The CTMP sets out travel plan measures which include demand management measures.
Priority 2: accessible, sustainable, and efficient transport services and infrastructure.	3.2.3. Integrated Journeys – Journey integration is central to achieving our ambition of accessible, sustainable, and efficient transport.	Section 8.5.2 of this chapter of the Environmental Statement sets out the available public transport adjacent to the Mona Onshore Development Area and section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. These highlight the sustainable transport options to the Mona Onshore Development Area for construction staff. PRoW and cycle routes in the vicinity of the Mona Onshore Development Area have been highlighted on Figure 1.2 in Volume 7, Annex 8.7 Traffic and transport figures of the Environmental Statement and these are considered in Volume 3, Chapter 7: Land use and recreation of the Environmental Statement. The CTMP sets out travel plan measures which include demand management measures.
Priority 3: behaviour change.	3.3.3. Motivation to make a shift away from private car use.	The CTMP sets out travel plan measures which include demand management measures.

8.2.6 Local Planning Policies

8.2.6.1 The Mona Offshore Wind Project lies within the administrative areas of CCBC and DCC.

8.2.6.2 The assessment of potential changes to traffic and transport has also been made with consideration to the specific policies set out in:

- North Wales Regional Transport Plan (September 2009)
- North Wales Joint Local Transport Plan (January 2015)
- Conwy County Borough Council Local Development Plan (October 2013)
- Denbighshire County Council: Adopted Local Development Plan (June 2013)

8.2.6.3 Key provisions are set out in Table 8.5 along with details as to how these have been addressed within the assessment.

Table 8.5: Local Planning Policy relevant to traffic and transport

Policy	Key provisions	How and where considered in the Environmental Statement
North Wales Regional Transport Plan (September 2009)		
Priority 1 – Efficiently meeting North Wales's diverse transport needs	Providing a transport network for North Wales that recognises geographic and social diversity of the Region, making best use of the available resources to give efficient movement of both people and freight.	The movement of construction vehicles has been considered to make best use of the existing network to ensure efficient movement on the network. HGV routes have been identified and are set out in the CTMP (Document Reference J26.13) along with associated mitigation measures.
Priority 3 – Reducing congestion and journey times	Resolving congestion and highway access issues.	The movement of construction vehicles has been considered to make best use of the existing network to ensure efficient movement on the network. HGV routes have been identified and are set out in the CTMP (Document Reference J26.13) along with associated mitigation measures.
North Wales Joint Local Transport Plan (January 2015)		
Local Transport Plan Outcome 1 – Connections to Key Destinations and Markets	Support for Economic Growth through an improvement in the efficiency, reliability, resilience, and connectivity of movement, including freight, within and between North Wales and other regions and countries (with particular focus on accessibility to the Enterprise Zones and an improvement in the vitality and viability of towns and other keys centres.	The movement of construction vehicles has been considered to make best use of the existing network to ensure efficient movement on the network. HGV routes have been identified and are set out in the CTMP (Document Reference J26.13) along with associated mitigation measures.
Local Transport Plan Outcome 4 – Increasing Levels of Walking and Cycling	Increasing Levels of Walking and Cycling for both necessary travel and recreation, by residents and visitors.	Section 8.5.3 of this traffic and transport chapter of the Environmental Statement sets out the existing pedestrian and cycling infrastructure adjacent to the Mona Onshore Development Area. This highlights the walking and cycling options to the Mona Onshore Development Area for construction staff. The CTMP (Document Reference J26.13) sets out travel plan measures which include demand management measures.
Local Transport Plan Outcome 5 – Improved Safety and Security	Improved Safety and Security of both actual and perceived safety of travel by all modes.	Volume 7, Annex 8.3: Personal injury accident locations of the Environmental Statement sets out the personal injury accident rates for each highway link within the traffic and transport study area highlighted in Figure 8.1 of this chapter of the Environmental Statement. The potential impact of the Mona Offshore Wind Project construction traffic flows upon road safety is assessed in section 8.9 of this chapter of the Environmental Statement.

Policy	Key provisions	How and where considered in the Environmental Statement
Conwy County Borough Council Local Development Plan (October 2013)		
Paragraph 4.8.2.1	New development is required to address the transport implications of that development. Larger schemes may be required to prepare transport assessments to illustrate how the amount of trips generated will be accommodated and how accessibility to and from the site by all modes of transport will be achieved. For non-residential proposals which are likely to have significant transport implications, the Government also requires the submission of travel plans, the purpose of which is to promote more sustainable forms of transport in relation to the activities of a particular development (for example; encouraging reductions in car usage and increased use of public transport, walking and cycling).	This chapter of the Environmental Statement incorporates a Transport Assessment and considers all relevant potential transport impacts during the construction, operations, and decommissioning phases of development. The CTMP (Document Reference J26.13) sets out travel plan measures which include demand management measures.
Denbighshire County Council: Adopted Local Development Plan (June 2013)		
Policy Achieving Sustainable Accessibility 1 – New transport infrastructure)	Development proposals for the provision of new transport infrastructure and improvements to existing infrastructure facilities will be supported providing that the following criteria are met: a. There is a need and justification for the proposal on economic and / or social grounds; and b. There are no unacceptable effects on the natural and built environment. Provision is made for safe access by all users, including cyclists, pedestrians, and the mobility impaired.	Any required improvements to existing highway infrastructure will be agreed with the relevant highway authority and has been set out within the CTMP (Document Reference J26.13) secured as part of the CoCP requirement in the DCO. The CTMP (Document Reference J26.13) sets out travel plan measures which include demand management measures.

Policy	Key provisions	How and where considered in the Environmental Statement
Policy ASA 3 – Parking Standards	Development proposals, including changes of use, will be expected to provide appropriate parking spaces for cars and bicycles. If the use of a property or premises requires parking infrastructure for mobility impaired people, these facilities will be taken into account when determining the amount of parking space required. Consideration will be given to the following circumstances (where they apply) in determining parking provision: • The site is located within a high-densely populated area • Access to and availability of public transport is secured • Parking is available within reasonable distance of the site • Alternative forms of transport are available in the area.	All parking proposals will be developed in accordance with these guidelines. Parking is provided for construction vehicles at each compound as set out in the CTMP (Document Reference J26.13) secured as part of the CoCP requirement in the DCO.

Policy	Key provisions	How and where considered in the Environmental Statement
Policy STR/3 – Mitigating Travel Impact	2. New developments will be required to mitigate the undesirable effects of travel such as; noise, pollution, impact on amenity and health and other environmental impacts. 3. Where a proposed development is likely to have significant transport, social or environmental implications, the Council will require developers to submit a Transport Assessment and a Travel Plan with the planning application. A Road Safety Audit may also be required. 4. Where the proposed development is considered to have significant transport implications on a wider area, financial contributions will be required towards improvements in transport infrastructure, in particular to support public transport, cycling and walking, in accordance with the development principles in Section 4 – Spatial Policies and Supporting Development Management Policies. 5. The Council may also require developers to submit a Transport Statement for other development proposals where there is need to understand the traffic impact of the proposal.	This chapter of the Environmental Statement incorporates a Transport Assessment and considers all relevant potential transport impacts during the construction, operations, and decommissioning phases of development. Noise is considered in Volume 3, Chapter 9: Noise and vibration of the Environmental Statement, emissions (pollution) is considered in Volume 3, Chapter 10: Air quality of the Environmental Statement, health is considered in Volume 4, Chapter 4: Human health assessment of the Environmental Statement and inter-related effects are considered in Volume 3, Chapter 11: Inter-related effects – onshore of the Environmental Statement. The CTMP (Document Reference J26.13) sets out travel plan measures which include demand management measures.

Policy	Key provisions	How and where considered in the Environmental Statement
Paragraph 4.8.4.2	A primary planning consideration is to ensure that development proposals achieve a suitable connection to the highway that is safe for pedestrians, cyclists, occupants of vehicles and other road users. Equally important is the need to ensure that road safety is not jeopardised by allowing proposals which would generate levels of traffic beyond the capacity of the surrounding road network.	All accesses to the Mona Onshore Development Area have been designed to safely accommodate the movement of HGVs as set out within the OHAMP (Document Reference J26.16) to be secured as part of the CoCP requirement in the DCO. This chapter of the Environmental Statement incorporates a Transport Assessment and considers all relevant potential transport impacts during the construction, operations, and decommissioning phases of development, which includes highway capacity.

8.3 Consultation

8.3.1.1 A summary of the key issues raised during consultation activities undertaken to date specific to traffic and transport is presented in Table 8.6 below, together with how these issues have been considered in the production of this chapter of the Environmental Statement.

Table 8.6: Summary of key consultation issues raised during consultation activities undertaken for the Mona Offshore Wind Project relevant to Traffic and Transport.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
June 2022	The Planning Inspectorate – Scoping Opinion	The Scoping Report states that during the operational and maintenance phase, the onshore transmission assets will only need to be visited for maintenance purposes as there are no manned facilities and the assets would be monitored remotely. The Inspectorate agrees that on this basis, significant operation and maintenance traffic related effects are unlikely to occur and assessment of this matter can be scoped out of the Environmental Statement. The Environmental Statement should provide a description of the likely number and type of vehicles required during all phases of development to support this conclusion.	These responses have been noted and have been reflected within Table 8.7 presenting the elements scoped into the traffic and transport assessment and Table 8.8 presenting the elements scoped out of this traffic and transport assessment.
June 2022	The Planning Inspectorate – Scoping opinion	The Applicant should make effort to identify the location of the port and O&M base, where possible, and assess any likely significant effects associated. In the event that the locations have not been confirmed, the Environmental Statement should make effort to assess the likely significant effects associated with relevant assumptions and a worst-case scenario.	All land-based traffic and transport movement generated by the offshore elements of the Mona Offshore Wind Project would be via a base port (or ports). The selection of such a port (or ports) will only be selected post-consent as part of a procurement process. Such facilities would operate under the port (or ports) existing planning consents or where any new consents are required would be subject to relevant new planning applications. Notwithstanding any existing consents or new consents that may be required at any such port (or ports), the traffic movements generated by the offshore elements of the Mona Offshore Wind Project would be low and would be in the context of baseline traffic flows along the access routes to any such port (or ports).

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
June 2022	The Planning Inspectorate – Scoping Opinion	The Scoping Report anticipates that the retired onshore infrastructure / equipment will either be left in situ or transported away from site in bulk during the decommissioning phase. The Scoping Report therefore predicts that there will be a lower number of vehicle movements on the LRN and SRN during decommissioning compared to the construction phase. The Inspectorate also understands that a decommissioning plan will be prepared post consent (Part 1, paragraph 3.8.1.2). The Inspectorate is content that the assessment of the construction phase would represent a worst case and therefore agrees a detailed assessment of decommissioning traffic impacts can be scoped out of the Environmental Statement. However, the Environmental Statement should explain the approach taken.	These responses have been noted and have been reflected within Table 8.7 presenting the elements scoped into the traffic and transport assessment and Table 8.8 presenting the elements scoped out of this traffic and transport assessment. The approach adopted for this traffic and transport chapter has been explained within section 8.9.
June 2022	The Planning Inspectorate – Scoping Opinion	The impact of abnormal indivisible loads (AILs) has been excluded from the operation, maintenance and decommissioning phase columns in Part 3, Table 8.9, however it is not identified as a 'scoped out impact' in Part 3, Table 8.10. Taking into account the nature of the operation and maintenance, the Inspectorate is content that this matter can be scoped out. The Inspectorate is also content that the assessment of the construction phase would represent a worst case and therefore, considers a detailed assessment of decommissioning traffic impacts can be scoped out of the Environmental Statement. However, the Environmental Statement should explain the approach taken.	These responses have been noted and have been reflected within Table 8.7 presenting the elements scoped into the traffic and transport assessment and Table 8.8 presenting the elements scoped out of this traffic and transport assessment.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
June 2022	Network Rail – Response to Scoping Report	Any works near to Network Rail land and infrastructure will need to be undertaken following engagement with Asset Protection to determine the interface with Network Rail assets, buried or otherwise and by entering into a Basis Asset Protection Agreement, if required, with a minimum of three months notice before works start. The Mona Offshore Wind Project is located within an area of historic mining for metals. Network Rail wish to be consulted on any site investigation and/or remediation works for historic/ abandoned mining hazards, alongside Network Rail's infrastructure. No part of the Mona Offshore Wind Project shall cause any existing level crossing road signs or traffic signals or the crossing itself to be obscured. Clear sighting of the crossing must be maintained for the construction / operational period and as a permanent arrangement. The same conditions apply to the rail approaches to the level crossing, At no point during construction on site or after completion of works should there be any deterioration of the ability of pedestrians and vehicles to see the level crossing and its signage. There must be no reduction in the distance that pedestrians and vehicles have sight of the warning signs and the crossing itself.	Noted. A commitment has been made to use trenchless techniques under the railway in Volume 5, Annex 4.3: Onshore Crossing Schedule of the Environmental Statement, therefore the impact on rail assets has been scoped out of this chapter as set out in Table 8.8 of this chapter.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
May 2023	Highways Meeting – DCC, Welsh Government and North and Mid Wales Trunk Road Agent	A meeting to introduce the Mona Offshore Wind Project and: • Provide an update on its progress through the consenting process • Provide an overview of the information that will be included in the PEIR with regards to traffic and transport and key findings to date • Identify any particular junctions or locations on the road network that are of interest to DCC, Welsh Government and North and Mid Wales Trunk Road Agent or where they may have concerns – this will be used to inform the Transport Assessment scoping exercise. The following was discussed: • DCC advised that construction HGVs should avoid St Asaph High Street and St Asaph in general • DCC advised that Engine Hill was narrow for oncoming HGVs passing one-another • Welsh Government and North and Mid Wales Trunk Road Agent advised that the A55 Junction 23 has short slip roads and there has been incidents in the past • Welsh Government and North and Mid Wales Trunk Road Agent advised that routes to the A548 from the south via the A470 / A5 can be narrow in places • DCC advised that, in principle, access junctions onto the B5381 would be acceptable if they met highway design standards • DCC, Welsh Government and North and Mid Wales Trunk Road Agent advised that a cumulative assessment in which the construction of Awel y Mor overlapped with the Mona Offshore Wind Project would represent a robust analysis • Agreed that, in accordance with the Scoping Report, an assessment of impacts during the operation and maintenance phase and decommissioning phase can be scoped out.	The output of the meeting has been used to inform the characterisation of the road network (see section 8.5) of this chapter. No construction HGVs will route through St Asaph, including St Asaph High Street, as set out in section 8.7 of this chapter, the OHAMP (Document Reference J26.16) and the CTMP (Document Reference J26.13). No construction HGVs will route via Engine Hill, as set out in section 8.7 of this chapter of the Environmental Statement, the OHAMP (Document Reference J26.16) and the CTMP (Document Reference J26.13). An analysis of road safety has not identified any clusters of Personal Injury Accidents (PIAs) at the A55 Junction 23 within the latest available five-year period covering 2018 to 2023, as set out in 8.5 of this chapter of the Environmental Statement. No construction HGVs will route from the south via the A470 / A5, as set out in section 8.7 of this chapter of the Environmental Statement, the OHAMP (Document Reference J26.16) and the CTMP (Document Reference J26.13). Access junction proposals have been prepared in accordance with highway design standards with traffic management measures to be adopted as set out in the OHAMP (Document Reference J26.16) and the CTMP (Document Reference J26.13). A cumulative assessment assuming the construction of Awel y Mor overlaps with the Mona Offshore Wind Project has been undertaken as set out in section 8.11 of this chapter of the Environmental Statement.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
June 2023	Highways Meeting – CCBC	A meeting to introduce the Mona Offshore Wind Project and: • Provide an update on its progress through the consenting process. • Provide an overview of the information that will be included in the PEIR with regards to traffic and transport and key findings to date • Identify any particular junctions or locations on the road network that are of interest to CCBC or where they may have concerns – this will be used to inform the Transport Assessment scoping exercise The following was discussed: • CCBC advised that Abergele can be busy during certain times of the day and year and that surveys of this should be undertaken • CCBC advised that routes to the A548 from the south via the A470 / A5 can be narrow in places • CCBC advised that, in principle, access junctions (including that onto the A547 via the existing gap in the wall to TCC1) would be acceptable if they met highway design standards • Agreed that, in accordance with the Scoping Report, an assessment of impacts during the operation and maintenance phase and decommissioning phase can be scoped out	The output of the meeting has been used to inform the characterisation of the road network (see section 8.5) of this chapter. A street audit of the A547 through Abergele has been undertaken as set out in section 8.9 of this chapter of the Environmental Statement and at Volume 7, Annex 8.7:Traffic and transport figures of this Environmental Statement. Traffic surveys and queue length surveys have been undertaken during July 2023 (school term time) and during August 2023 (school holiday period) at the A548 / A547 junctions within Abergele, as set out in Table 8.9 and section 8.9 of this chapter of the Environmental Statement. A pedestrian count and vehicle queue length survey has been undertaken at the two zebra crossings on the A547 within Abergele during July 2023 (school term time) and during August 2023 (school holiday period) as set out in Table 8.9 and section 8.9 of this chapter of the Environmental Statement. No construction HGVs will route from the south to the A548 via the A470 / A5, as set out in section 8.7 of this chapter of the Environmental Statement, the OHAMP (Document Reference J26.16) and the CTMP (Document Reference J26.13). Access junction proposals have been prepared in accordance with highway design standards with traffic management measures to be adopted as set out in the OHAMP (Document Reference J26.16) and the CTMP (Document Reference J26.13).

Date	Consultee and type of response	Issues raised	Response to issue raised and/or where considered in this chapter
June 2023	DCC – S42 Consultation Response	Concern regarding stopping up of rights of way and losing control of the management of rights of way. Paths should be reinstated as soon as practically possible with any new fences being consented with the highway authority. The highway authority would prefer any powers to remain with the Council to enable the Council to retain strategic oversight.	The Public Recreational Resources Plan (see Volume 7, Annex 7.3: Public Recreational Resources Plan of the Environmental Statement) identifies the locations where the Mona Onshore Development Area crosses PRoW and the proposed management measures. The Outline Public Rights of Way Management Strategy (Document Reference J26.17) sets out the outline approach for managing PRoW; the Outline Construction Fencing Plan (Document J26.5) provides an overview of the types of fencing that will be used. Both the Outline Public Rights of Way Management Strategy and Outline Construction Fencing Plan are to be secured in the DCO. Volume 3, Chapter 7: Land use and recreation of the Environmental Statement presents an assessment of the impact of the Mona Offshore Wind Project on PRoW.
June 2023	CCBC – S42 Consultation Response	Request of a Traffic Management Plan for Abnormal Indivisible Loads. Temporary traffic management arrangements to be in accordance with Chapter 8 of the Traffic Signs Manual and New Road and Streetworks Act 1991 and approved by the highway authority. Consultation with bridge owners over the A55 and railway at Sea Road, Pensarn and the bridge over Pensarn Station to ensure movement of construction traffic does not affect the integrity of those structures. The Council requests reassurance that any damage to the surface of the car park at Pensarn beach will be made good expeditiously.	The CTMP (Document Refence J26.13) considers the movement of AILs. All temporary traffic management will be in accordance with relevant guidance. No large HGVs that exceed any weight restrictions on any bridges over the A55 or over the railway line will cross said bridges.

8.4 Baseline methodology

8.4.1 Relevant guidance

8.4.1.1 The traffic and transport impact assessment has followed the methodology set out in Volume 1, Chapter 5: Environmental Impact Assessment methodology of the Environmental Statement. Specific to the traffic and transport impact assessment, the following guidance documents have also been considered:

- Environmental Assessment of Traffic and Movement (IEMA, 2023) (the 'IEMA guidelines')
- Design Manual for Roads and Bridges (DMRB) LA104: Environmental Assessment and Monitoring (Highways England (now National Highways), Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland, 2020)
- Technical Advice Note 18: Transport (TAN18: Transport) (Welsh Government, 2007).

8.4.2 Scope of the assessment

8.4.2.1 The scope of this Environmental Statement has been developed in consultation with relevant statutory and non-statutory consultees as detailed in Table 8.7.

8.4.2.2 Taking into account the scoping and consultation process, Table 8.7 summarises the issues considered as part of this assessment.

Table 8.7: Issues considered within this assessment

Activity	Potential effects scoped into the assessment
Construction phase	
Additional vehicle movements or works required to facilitate construction of the Mona Offshore Wind Project.	The impact upon driver (including public transport) and pedestrian/non-motorised user delay and fear and intimidation (non-motorised user amenity) for users of the LRN and SRN.
	The impact upon severance for users of the LRN and SRN.
	The impact upon road safety for users of the LRN, SRN and other transport receptors.
	The impact of AILs on the safety of and delay to users of the LRN, SRN and other transport receptors.

8.4.2.3 Effects which are not considered likely to be significant have been scoped out of the assessment. A summary of the effects scoped out, together with justification for scoping them out and whether the approach has been agreed with key stakeholders through either scoping or consultation, is presented in Table 8.8.

Table 8.8: Impacts scoped out of the assessment for traffic and transport

Potential impact	Justification
Assessment of effects during the operational phase.	During the operational phase, the only vehicle movements generated will be maintenance visits, which will be typically one vehicle on an approximate weekly basis. These visits are likely to be made by light vehicles only and would use the existing road network. One vehicle arrival per week is very low and infrequent and is significantly under thresholds on which assessment is required. Even if repair work was required, for example to a section of cable, such vehicle movements would be low and would be under the thresholds on which assessment would be required. Therefore, there will be no significant effects resulting from the traffic generated during the operational phase and an assessment of this is scoped out, as agreed with the Planning Inspectorate via the Scoping Report and Scoping Opinion and with CCBC, DCC and North and Mid Wales Trunk Road Agent (NMWTRA) on behalf of Welsh Government during consultation as set out in Table 8.6.
Assessment of effects during the decommissioning phase.	Vehicle movements generated during the decommissioning phase will be lower than those during the construction phase since the removal of materials does not need to be in any order and/or delicately transported and some infrastructure may be retained in-situ. Background traffic flows are generally increasing year on year, therefore, in comparison to the construction phase, the combination of lower decommissioning traffic flows against higher baseline traffic flows results in a lower impact. Therefore, the assessments undertaken for the construction assessment will cover the decommissioning phase together with the measures identified. An assessment of the decommissioning phase is therefore scoped out. However, all measures that are identified for the construction phase will also be adopted during the decommissioning phase, thus, for a worst case assessment, it can be determined that the identification of significant effects resulting from traffic generated during the construction phase, would also apply to the decommissioning phase. An assessment of effects during the decommissioning phase is scoped out as agreed with the Planning Inspectorate via the Scoping Opinion and with CCBC, DCC and NMWTRA on behalf of Welsh Government during consultation as set out in Table 8.6.
Impact on railway assets	Commitment to using trenchless techniques under the railway has been made within Volume 5, Annex 4.3: Onshore crossing schedule of the Environmental Statement. Therefore the impact of the construction of Mona Offshore Wind Project on rail assets has been scoped out as there will be no impact on the railway when using trenchless techniques.

8.4.3 Methodology to inform baseline

8.4.3.1 This section provides details on the baseline studies and surveys undertaken to characterise the baseline for the Mona Offshore Wind Project.

8.4.4 Study area

8.4.4.1 The Mona Offshore Wind Farm EIA Scoping Report (Mona Offshore Wind Ltd, 2022) and the Traffic and transport chapter of the Mona Offshore Wind Project Preliminary Environmental Information Report (PEIR) (Mona Offshore Wind Ltd, 2023) set out that the traffic and transport study area to be used for the assessment of traffic and transport (including on active travel routes and active travel movement) will focus on areas (landward of MHWS) where potential impacts are most likely to occur and that this includes areas located near construction sites and access routes where construction traffic would not be dispersed across the highway network. That traffic and transport study area remains the same for this chapter of the Environmental Statement and is defined as:

- The area of land to be temporarily or permanently occupied during construction, operation and maintenance and decommissioning of the onshore transmission assets, including the LRN
- The LRN most likely to be used by construction traffic generated by the transportation of construction materials and staff movements, including highways located within 1 km of the Mona Onshore Development Area
- The SRN most likely to be used by construction traffic generated by the transportation of construction materials and staff movements, including highways located within 1 km of the Mona Onshore Development Area
- Potential temporary accesses and/or potential road improvements that may be required to facilitate the construction of the Mona Offshore Wind Project.

8.4.4.2 The highway links that form the traffic and transport study area based upon the above are shown on Figure 8.1 of this chapter of the Environmental Statement, below.

8.4.4.3 Impacts on PRoW are identified in Volume 3, Chapter 7: Land use and recreation of the Environmental Statement.

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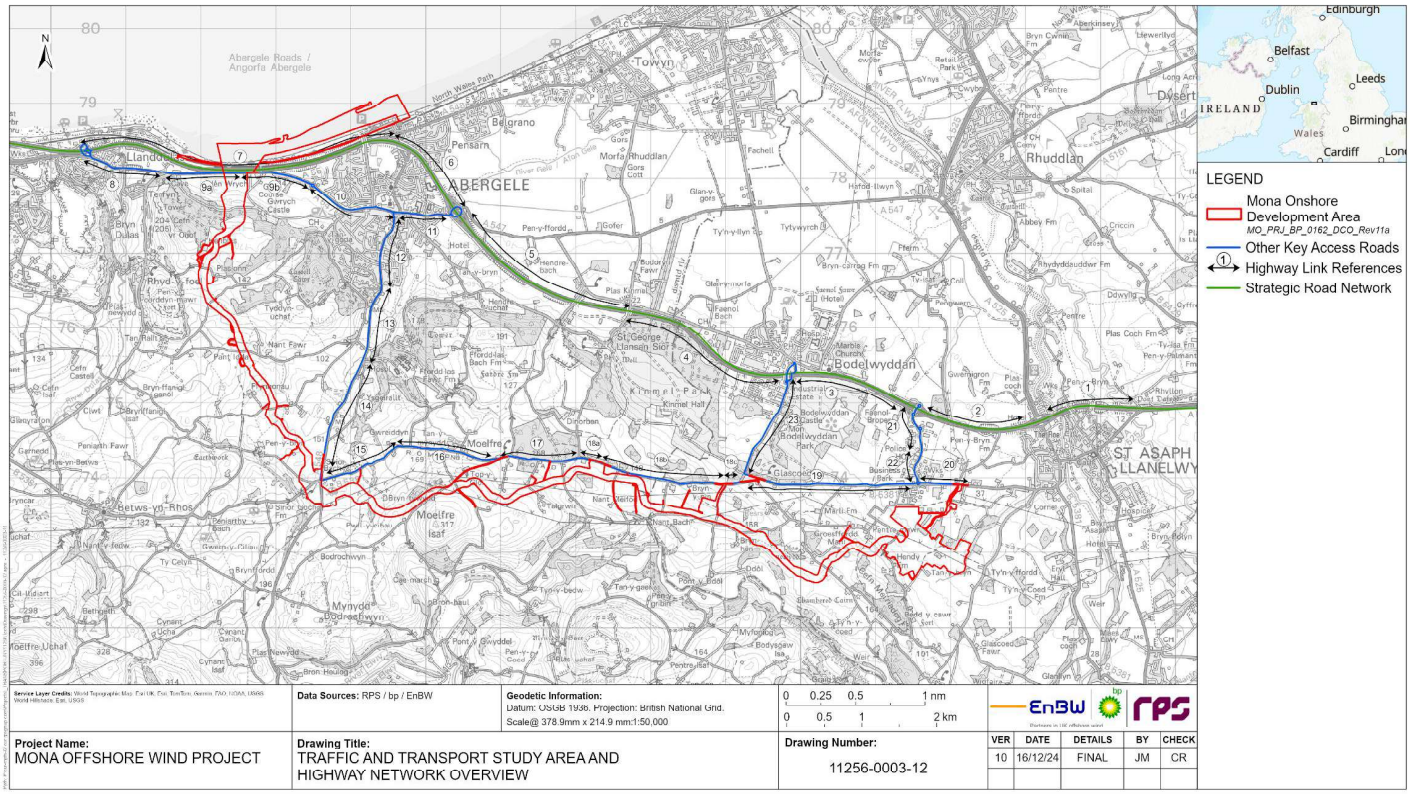

Figure 8.1: Traffic and Transport Study Area and Highway Network Overview.

8.4.5 Desktop study

8.4.5.1 Information on traffic and transport within the traffic and transport study area was collected through a detailed desktop review of existing studies and datasets. These are summarised at Table 8.9 below.

Table 8.9: Summary of key desktop reports.

Title	Source	Year
Identification of sensitive receptors including PRoWs , cycle routes, schools / colleges, and open space / recreational areas.	Google Maps https://www.google.co.uk/maps Conwy County Borough Council Denbighshire County Council Ordnance Survey (1:50 000 scale) Land Ranger Map Series Rowmaps https://www.rowmaps.com/kmls/CW/ and https://www.rowmaps.com/kmls/DE/	N/A
Road geometries and layouts	Google Maps https://www.google.co.uk/maps Ordnance Survey (1:50 000 scale) Land Ranger Map Series	2022 and 2023
Identification of facilities for sustainable travel	Google Maps https://www.google.co.uk/maps Arriva Bus M and H Coaches Transport for Wales	N/A
Identification of potential route options	Google Maps https://www.google.co.uk/maps Ordnance Survey (1:50 000 scale) Land Ranger Map Series	2022 and 2023
Existing publicly available traffic survey data including traffic counts and speed survey information for LRN and SRN	Department for Transport https://roadtraffic.dft.gov.uk/#6/55.254/-6.053/basemap-regions-countpoints Survey data from Denbighshire County Council and Conwy County Borough Council advised from highway officers via email.	Various
Personal Injury Accident data and Locations	Crash Map Welsh Government	Crashmap data covers 2017 to 2021 inclusive. Welsh Government data covers 2018 to 2023.

8.4.6 Site specific surveys

8.4.6.1 In order to inform the assessment, site-specific surveys were undertaken. A summary of the surveys undertaken are outlined in Table 8.10 below.

Table 8.10: Summary of site-specific survey data.

Title	Extent of survey	Overview of survey	Survey contractor	Date	Reference to further information
Traffic Surveys	Along predicted access routes within the traffic and transport study area.	Daily traffic flows and traffic speeds on key road links were measured by placing Automatic Traffic Counts (ATCs) for two-week periods and weekday peak period traffic flows through junctions were measured by undertaking Manual Classified Counts (MCCs).	360 TSL	2022	Volume 7, Annex 8.2: Base Traffic Flows of the Environmental Statement.
Traffic Surveys	At two signalised junctions within Abergele and at two zebra crossings within Abergele.	An MCC and queue length survey at the A547 Market Street / A548 Chapel Street signalised junction and another MCC and queue length survey at the A547 Market Street / A548 Water Street signalised junction. Pedestrian count survey and vehicle queue length survey on zebra pedestrian crossing over the A547 located by Ty Wyn Jones bus stop in Abergele. Another pedestrian count survey and vehicle queue length survey on zebra pedestrian crossing over the A547 located by Abergele Library.	Nationwide Data Collection	2023	Volume 7, Annex 8.2: Base Traffic Flows of the Environmental Statement.

8.5 Baseline environment

8.5.1 Highway network

8.5.1.1 The main routes into the traffic and transport study area are via the A55, which forms part of the SRN and is operated and maintained by NMWTRA on behalf of Welsh Government.

8.5.1.2 All other roads within the traffic and transport study area, including those that access onto the A55, form part of the LRN and are operated and maintained by DCC or CCBC as determined by their respective administrative boundaries.

8.5.1.3 The highway network within the traffic and transport study area includes the A55 and relevant parts of the LRN (determined as being likely to be used by construction vehicles) and has been depicted into highway links, as shown on Figure 8.1 of this chapter of the Environmental Statement.

8.5.1.4 A description of all of these highway links, their geometries and layout and their local environs is presented in Volume 7, Annex 8.1: Description of network links and sensitivity of the Environmental Statement.

8.5.2 Public transport services

8.5.2.1 Details of local bus services accessible from bus stops located within potential walking distance of the Mona Onshore Development Area are summarised in Table 8.11 and shown graphically at Volume 7, Annex 8.4: Public transport networks of the Environmental Statement.

Table 8.11: Summary of Local Bus Services.

Service	Operator	Route	Frequency (Monday to Friday)	Frequency (Saturday)	First Service	Last Service
12	Arriva Wales	Rhyl – Llandudno	Every 12 minutes	Every 15 minutes	5:20	23:00
X12	Arriva Wales	Rhyl – Llandudno	Mon-Sat 05:50 (Return Mon-Fri 18:12, 19:22 or 23:40) (Return Saturday 18:34, 23:40)			
13	Arriva Wales	Llandudno – Prestatyn	Every 50 minutes	Every 50 minutes	08:10	20:20
21	M & H Coaches	Colwyn Bay – Betws yn Rhos, Rhyd Y Foel – Abergele	5 per day	5 per day	09:25	15:45
43	M & H Coaches	Llangernyw – Pensarn via Llanfair, Abergele, Belgrano	4 per day	6 per day	07:43	17:52
45	M & H Coaches	Rhyl – Ysbyty Glan Clwyd via Kinmel Bay	4 per day	6 per day	09:40	14:22
46	M & H Coaches	Rhyl – Ysbyty Glan Glywd via Kinmel Bay	2 per day	2 per day	13:25	17:05
51	Arriva Wales	Rhyl – Denbigh	Hourly	Hourly	05:50	23:05
51B	Arriva Wales	Rhyl – Denbigh	Hourly	Hourly	05:00	20:48
52	Arriva Wales	Denbigh – Rhyl	2 per day (00:10 and 23:55)			
54	M & H Coaches	Trefnant – St Asaph Business Park via Rhyl	Mon-Fri 07:25 (Return 16:30)			

8.5.2.2 Abergele and Pensarn Railway Station is located in Pensarn on the North Wales Coast Line. Details of train services at the Railway Station are summarised in Table 8.12.

Table 8.12: Summary of local train services at Abergele and Pensarn Railway Station.

Destination	Weekday			Saturday		
	First service	Last service	Typical frequency	First service	Last service	Typical frequency
Manchester Airport	07:05	19:05	Hourly	07:05	20:05	Hourly
Cardiff Central	3 services at 05:27,17:35 and 20:02			No Saturday Service		
Holyhead	08:02	23:37	Hourly	18:04	22:06	4 per day

8.5.3 Pedestrian and cycle infrastructure

8.5.3.1 Guidance on walking and cycling distances is set out in Table 4.1 of the Welsh Government publication 'Active Travel Act Guidance', July 2021, an extract of which is shown in Figure 8.2.

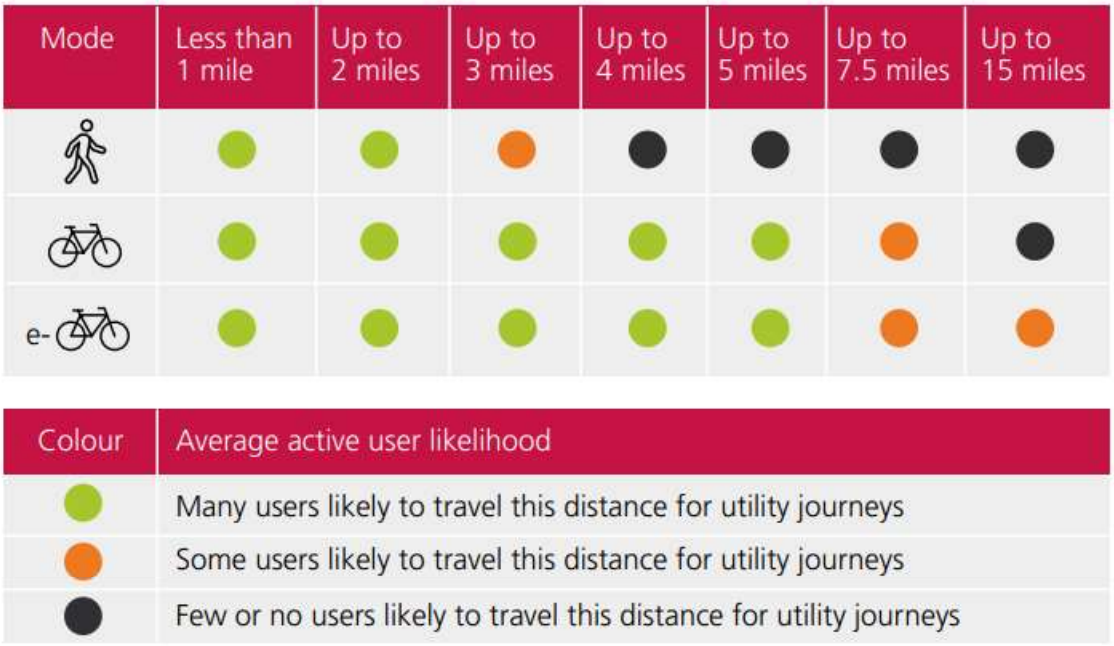

Figure 8.2: Welsh Government Guidance on Walking and Cycling Distances

8.5.3.2 As can be seen, Welsh Government considers many users are likely to walk up to two miles (3.2 km) for utility journeys with some users likely to walk up to three miles (4.8 km) for such uses.

8.5.3.3 In terms of cycling, Welsh Government considers many users are likely to cycle up to five miles (8.0 km) for utility journeys with some users likely to cycle up to 7.5 miles (12.0 km) for such uses.

8.5.3.4 Residential areas in Abergele, St Asaph, Bodelwyddan and LLanddulas are in close proximity to the Mona Onshore Development Area, although footway provision in some areas is poor.

8.5.3.5 The Mona Onshore Development Area is located within a section of North Wales which consists primarily of agricultural land, with few heavy urbanised areas; however, several residential areas lie within 5km of the Mona Onshore Development Area. Route 84 of the National Cycle Network (NCN84) routes south from Rhyl and ends in St Asaph.

8.5.3.6 Construction staff for the Mona Offshore Wind Project will not be commuting to a fixed location for the duration of the construction phase; therefore, the capacity to commute via walking or cycling will vary.

8.5.3.7 Figure 1.2 of Volume 7, Annex 8.7: Traffic and transport figures of the Environmental Statement shows sensitive receptors which includes PRoW and cycle routes in the vicinity of the traffic and transport study area.

8.5.4 Base traffic flows

8.5.4.1 Table 8.9 and Table 8.10 set out that existing publicly available traffic surveys have been obtained and that site-specific traffic surveys have been undertaken. Table 8.13 below sets out the Annual Average Daily Traffic flow (AADT) for every link within the traffic and transport study area, the sources and year of the data is also included.

8.5.4.2 For data acquired through ATCs commissioned for this project a factor has been applied to covert this to an AADT that can be used for the Environmental Impact Assessment (EIA).

8.5.4.3 Where DfT data has been used, data has been taken from their most recent year available which is 2022.

8.5.4.4 Table 8.13 below includes total vehicles (all classifications of all vehicles) and Heavy Vehicles (HVs), which comprise all vehicles in excess of 7.5 tonnes gross weight and include HGVs and buses.

8.5.4.5 The highway link numbers and their locations are shown graphically on Figure 8.1 of this chapter of the Environmental Statement.

8.5.4.6 The daily base traffic flows along key highway links that form the traffic and transport study area are set out in Volume 7, Annex 8.2: Base traffic flows of the Environmental Statement.

Table 8.13: Base traffic flows

Link reference	Description	2022 AADT		Source	Base year
		Total vehicles	HVs		
Link 1	A55 between Junctions 27 and 27A	51,683	2,384	DfT	2022
Link 2	A55 between Junctions 27 and 26	45,899	2,374	Adjusted from link 3 DfT	2022
Link 3	A55 between Junctions 26 and 25	45,899	2,374	DfT	2022
Link 4	A55 between Junctions 25 and 24A	45,899	2,374	Adjusted from link 3 DfT	2022
Link 5	A55 between Junctions 24A and 24	45,899	2,374	DfT	2022
Link 6	A55 between Junctions 24 and 23A	54,487	2,160	DfT	2022
Link 7	A55 between Junctions 23A and 23	68,796	2,465	DfT	2022
Link 8	A547 through Llanddulas	8,408	755	Adjusted from 12hr ATC weekday survey	2022

Link reference	Description	2022 AADT		Source	Base year
Link 9	A547 between Llanddulas and Parc Busnes Gogledd Cymru	6,847	812	Adjusted from 12hr ATC weekday survey	2022
Link 10	A547 between Parc Busnes Gogledd Cymru and A548 Chapel Street	9,256	839	Adjusted from 12hr ATC weekday survey	2022
Link 11	A547 between A548 Chapel Street and A55	5,955	657	Adjusted from 12hr ATC weekday survey	2022
Link 12	A548 Chapel Street between A547 and Lon Dirion	9,042	974	Adjusted from 12hr ATC weekday survey	2022
Link 13	A548 Chapel Street between Lon Dirion and Abergele Hospital	4,000	824	Adjusted from 12hr ATC weekday survey	2022
Link 14	A548 Chapel Street between Abergele Hospital and B5381 Roman Road	2,919	460	Adjusted from 12hr ATC weekday survey	2022
Link 15	B5381 Roman Road between A548 and Moelfre	1,972	368	Adjusted from 12hr ATC weekday survey	2022
Link 16	B5381 Roman Road between Moelfre and Capel Carmel	1,554	223	Adjusted from 12hr ATC weekday survey	2022
Link 17	B5381 Roman Road between Capel Carmel and Roberts D a O	1,586	298	Adjusted from 12hr ATC weekday survey	2022
Link 18	B5381 Roman Road between Roberts D a O and Engine Hill	1,736	284	Adjusted from 12hr ATC weekday survey	2022
Link 19	B5381 Glascoed Road between Engine Hill and Ffordd William Morgan	1,745	234	Adjusted from 12hr ATC weekday survey	2022
Link 20	B5381 Glascoed Road between Ffordd William Morgan and National Grid Substation access	4,046	493	Adjusted from 12hr ATC weekday survey	2022
Link 21	Ffordd William Morgan between A55 and Carlton Court	3,481	398	Adjusted from 12hr ATC weekday survey	2022
Link 22	Ffordd William Morgan between Carlton Court and B5381 Glascoed Road	5,991	505	Adjusted from 12hr ATC weekday survey	2022
Link 23	Engine Hill between A55 and B5381 Glascoed Road	3,492	565	Adjusted from 12hr ATC weekday survey	2022

8.5.5 Road safety

8.5.5.1 PIA data is being used to consider the road safety record within the traffic and transport study area. Given that the traffic and transport study area covers a large area, a two-stage assessment of road safety has been undertaken.

8.5.5.2 Stage 1 is to calculate the injury accident rate along each of the key highway links that form the traffic and transport study area as shown on Figure 8.1 of this chapter of the Environmental Statement using the Crashmap database. This is then compared to the national average injury accident rate set out in Table RAS1002 of the DfT document 'Reported Road Casualties Great Britain 2022'.

8.5.5.3 This analysis is set out at Volume 7, Annex 8.3: Personal injury accident locations of the Environmental Statement.

8.5.5.4 Where injury accident rates are in excess of national averages, this does not necessarily indicate a poor safety record. Indeed, because they are an average, this means that 50% of all roads will have an injury accident rate that exceeds the national average.

8.5.5.5 For robustness, stage 2 of the analysis will identify the highway links with an injury accident rate that is 25% higher than the national average rate and then assess each individual injury accident on those to identify any consistent contributory factors which would then indicate if there were any deficiencies with the highway network.

8.5.5.6 The stage 1 assessment indicated that five links had injury accident rates 25% higher than the national average. These links were; Link 14, Link 16, Link 18, Link 19 and Link 32. These then underwent a stage 2 assessment; PIA data was acquired from Welsh Government for these links covering the most recent 5-year period available covering 2018 to 2023.

8.5.5.7 Welsh Government only provide PIA data on a confidential basis with strict controls over its reporting, hence the below analysis reflects this.

8.5.5.8 Link 16 did not have any injury accidents along it within the time period of data provided from Welsh Government. This was due to the Welsh Government data being more up to date and the injury accident recorded in Crashmap being historical. It was also due to that sole injury accident on the link resulting in the stage 2 assessment being triggered. It is consequently determined that there is not a road safety issue along this link.

8.5.5.9 An analysis of the contributory factors along the other four links determined there was not a highway safety issue along any of these links.

8.5.5.10 A further assessment has been undertaken to assess road safety within the traffic and transport study area. Using the most recently available five years data on Crashmap covering 2017 to 2022, PIA clusters within the traffic and transport study area can be identified. A PIA cluster is defined as four or more PIAs at the same location.

8.5.5.11 From this analysis there were no clusters of injury accidents identified.

8.5.5.12 It is thus concluded that there are no road safety issues along the highway network (the LNR and the SRN) that forms the traffic and transport study area.

8.5.6 Future baseline scenario

8.5.6.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires that "an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge" is included within the Environmental Statement. In the event that Mona Offshore Wind Project does not come forward, an assessment of the future baseline conditions is to be carried out.

8.5.6.2 Base traffic flows are set out at Table 8.13 of this chapter. Future baseline traffic flows are calculated by applying growth rates to these and then adding the traffic flows generated by any committed developments. Committed developments are those that have been through the consenting process and have planning consent, are not yet generating any traffic flows (for example, because the development has not yet been

built out yet) but are expected to generate traffic flows during the construction phase of the Mona Offshore Wind Project.

8.5.6.3 This methodology in treating other developments is a Transport Assessment methodology. The Transport Assessment considers sustainability, the ultimate capacity of the highway network and the impact of development upon the transport network. Developments that already have planning consent have already been through that process and have identified any highway and transport improvements/interventions that may or may not be necessary to mitigate their impact. There is no further opportunity for these developments to provide additional highway or transport mitigation and so these developments and their highway and transport schemes are treated as committed within any future year scenarios.

8.5.6.4 For this reason, those developments (traffic flows and their highway and transport mitigation schemes) form part of a future transport baseline scenario for any other developments that follow. In doing that, the impact of development proposals that follow consented developments is able to be determined in the knowledge of what has already been consented in transport and highways terms along with the need for any additional highway and transport improvements that may be necessary.

8.5.6.5 Other developments that emerge at the same time are treated together and are cumulatively assessed against the baseline scenario described above to determine their cumulative impact and their cumulative highway and transport mitigation requirements (if required).

8.5.6.6 The Transport Assessment is undertaken in this way so that the transport impacts on highway capacity and the transport network is correctly judged and correct conclusions are drawn. This chapter of the Environmental Statement adopts this same approach in terms of committed developments and cumulative developments as part of the integrated Transport Assessment.

8.5.6.7 The only exception to this is the recently consented Awel y Môr Offshore Wind Farm. Given its close proximity and overlapping traffic and transport study areas and similar nature of development and construction traffic generation, this development has been considered as part of the cumulative assessment as set out in section 8.11 of this chapter of the Environmental Statement.

8.5.6.8 Traffic growth rates to 2026 (the anticipated year of the commencement of construction of the Mona Offshore Wind Project and also the year of peak generated traffic flows) have been obtained from the DfT's Trip End Model Presentation Programme (TEMPro), which is a computer software program developed by the DfT for providing traffic growth projections. Growth rates are obtained for the respective road types and growth years for the highway links set out in Table 8.10 of this chapter of the Environmental Statement. These have been applied to the base traffic flows set out in Table 8.13 of this chapter of the Environmental Statement and are set out in Volume 7, Annex 8.2: Base traffic flows of the Environmental Statement.

8.5.6.9 Using the Cumulative Effects Assessment (CEA) long list, those projects that have planning consent are firstly identified to establish those that are all committed development. A filtering process is then undertaken to establish the level of traffic that each would generate within the traffic and transport study area. Those that would generate negligible levels are discounted from the process and those that would generate an amount higher than negligible are retained.

8.5.6.10 The traffic growth rates obtained from TEMPro include for organic changes in background traffic flows and also for changes in traffic caused by new development. Therefore, the application of traffic growth rates makes an allowance for new traffic

flows generated by committed developments. The committed developments that are discounted from the above process are not therefore discounted entirely because the traffic flows that they would generate are included as part of the growth rates that are applied to the base traffic flows. The traffic flows generated by those committed developments are therefore allowed for within the assessment via the growth rates.

8.5.6.11 To establish which committed developments are retained, a filtering process is undertaken. Once that process is complete, the traffic flows generated by those that are retained are added to the base traffic flows to create the future baseline traffic flows. For those that are not retained, their traffic flows that would be generated form part of the growth rates and are therefore included within the future baseline traffic flows accordingly.

8.5.6.12 Upon identifying the committed developments, those that are significantly outside of the traffic and transport study area (i.e. their traffic flows will be dispersed through the highway network and be negligible within the traffic and transport study area) and those that do not have a temporal overlap with the Mona Offshore Wind Project are discounted.

8.5.6.13 The planning applications of the remaining committed developments are then interrogated to determine their traffic generation. Committed developments are only retained if a form of Transport Assessment or traffic and transport chapter of an Environmental Statement was submitted in support of their planning application (i.e. they would generate a level of traffic that could be higher than negligible within the traffic and transport study area and are therefore retained as a committed development).

8.5.6.14 The Transport Assessment / Environmental Statement of the remaining committed developments are then interrogated to establish their estimations of vehicle movements within the traffic and transport study area. Professional judgement is used to determine whether these traffic flows are higher than negligible and whether the development should be retained as a committed development.

8.5.6.15 Those remaining are then confirmed as committed developments and these are set out in Table 8.14 below.

8.5.6.16 The evolution of the 2022 base traffic flows to the 2026 baseline traffic flows is set out in Volume 7, Annex 8.2 Base traffic flows of the Environmental Statement. This also sets out the estimated traffic flows of those committed developments that were retained.

Table 8.14: Committed developments

Project/plan	Status	Distance from the Mona Onshore cable corridor (km)	Description of project/plan
Major Development: 0/49141	Pre-construction	0.97	Demolition of existing buildings and erection of an over 55s affordable housing development comprising of 43 apartments, access, parking, landscaping, drainage infrastructure and associated development
Major Development: 40/2021/0309	Pre-construction	1.01	Erection of a 198 bed Registered Care Home (Use Class C2), landscaping, parking facilities and associated works (Resubmission)
Major Development: 40/2017/1232	Pre-construction	0.64	Erection of 7 industrial units with associated parking, landscaping, access road and external storage areas
Major Development: 46/2019/0806	Construction	1.28	Development of 0.75 ha of land for residential purposes (outline application including access)
Major Development: 46/2021/1161	Construction	2.16	Erection of 113 dwellings, construction of a new vehicular access, landscaping and associated works

8.5.7 Data limitations

8.5.7.1 The base data has been obtained from recognised sources and methodologies and is considered representative of current conditions.

8.5.7.2 The base data and survey data have been obtained from recognised sources and methodologies. In this sense, there are few limitations to their use. The traffic survey data is considered representative of current conditions.

8.5.7.3 At this stage, there are no procurements in place and the resultant origins of materials cannot be confirmed. The procurement of material affects the movement of construction HGVs and thus affects the number of construction HGVs along each road link. It is likely that the origin of materials will change as the construction phase progresses as there is only a finite amount of material from each source. For example, an amount of material is sourced from one location, but when this amount is reached, material is then sourced from another location. This will change the movement of HGVs as the construction phase progresses and result in day-to-day variances. Section 8.7 of this chapter of the Environmental Statement has therefore devised a methodology that accounts for this day-to-day variance by increasing the average amount of vehicles travelling to / from any particular location and thus maximising this variance within the assessment.

8.5.7.4 Overall, there are few limitations to the data and the use of that data, these limitations are considered to be typical of this project type and size.

8.6 Impact assessment methodology

8.6.1 Overview

8.6.1.1 The traffic and transport impact assessment has followed the methodology set out in Volume 1, Chapter 5: Environmental Impact Assessment methodology of the Environmental Statement. Specific to the traffic and transport impact assessment, the following guidance documents have also been considered:

- Environmental Assessment of Traffic and Movement (IEMA, 2023) (the 'IEMA guidelines')
- Design Manual for Roads and Bridges (DMRB) LA104: Environmental Assessment and Monitoring (Highways England (now National Highways), Transport Scotland, Welsh Government and Department for Infrastructure Northern Ireland, 2020)
- Technical Advice Note 18: Transport (TAN18: Transport) (Welsh Government, 2007).

8.6.2 Impact assessment criteria

Assessment guidance

8.6.2.1 The assessment within this chapter of the Environmental Statement has been prepared in accordance with the IEMA guidelines with reference to DMRB LA104: Environmental Assessment and Monitoring (Welsh Government et al, 2020) and TAN18: Transport (Welsh Government, 2007).

8.6.2.2 The significance of transport environmental effects has been assessed by considering the interaction between the magnitude of the impacts and the sensitivity of the receptors in the vicinity of transport corridors. The assessment within this chapter of the Environmental Statement has assessed the construction traffic flows against the 2026 baseline traffic flows (the peak year of construction).

8.6.2.3 Consistent with the IEMA guidelines, the following has been considered in this chapter. A description of each of these is set out in section 8.9.3 to 8.9.8 respectively:

- Driver delay (including temporary delays to public transport services)
- Severance
- Pedestrian delay (incorporating delay to all non-motorised users)
- Non-motorised user amenity and fear and intimidation
- Road safety
- AILs.

8.6.2.4 A Transport Assessment has been incorporated into this traffic and transport chapter of the Environmental Statement and has been prepared in accordance with the guidance contained within TAN18: Transport (Welsh Government, 2007).

8.6.2.5 The assessment of abnormal indivisible load movements is informed by the Road Vehicles (Construction and Use) Regulations 1986 (as amended) and the Road Vehicles (Authorisation of Special Types) (General) Order 2003. The ability of vehicles to negotiate links and junctions has been considered using the AutoTrack computer programme (Savoy Computing Services Ltd, 2012) that models the areas required to allow the passage of vehicles and loads.

8.6.2.6 The effects of construction traffic upon noise and air quality are considered separately within Volume 3, Chapter 9: Noise and vibration of the Environmental Statement and Volume 3, Chapter 10: Air quality of the Environmental Statement and are based upon traffic flows derived from this chapter. PRoW are considered within Volume 3, Chapter 7: Land use and recreation of the Environmental Statement.

Delimiting the extent of assessment

8.6.2.7 In terms of the assessment of the environmental impacts of traffic and movement, the IEMA guidelines sets out the following two 'rules' to delimit the geographic extent of assessment:

- Rule 1: include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)
- Rule 2: include any other specifically sensitive areas where traffic flows will increase by 10% or more.

8.6.2.8 The assessment therefore identifies the sensitivity of affected transport routes, taking into account the presence and location of sensitive receptors or route users. The definition of sensitivity in this chapter uses professional judgement, guidance provided in the IEMA guidelines.

8.6.2.9 In accordance with the IEMA guidelines, for rule 1, any highway link with increases in total traffic flows that exceed 30% or HGVs that exceed 30% are screened into the assessment. For rule 2, those highway links that were not screened into the assessment under rule 1 but are deemed to be sensitive and have increases in total traffic flows that exceed 10% will also be screened into the assessment.

8.6.2.10 It should be noted that the IEMA guidelines notes that the day-to-day variation of traffic on a road is frequently at least + or – 10% and goes on to set out that changes in traffic flows of less than 10% creates no discernible environmental impact.

8.6.2.11 The IEMA rule 1 and rule 2 thresholds which delimit the extent of EIA do not on their own apply to this impact as this relates to junction / highway capacity and operation and the impact upon this is defined by the TA. Generally, a potential impact upon driver delay may result when the highway network is at or close to capacity and not just with reference to the rule 1 and rule 2 thresholds.

8.6.2.12 The IEMA rule 1 and rule 2 thresholds are therefore not applied to this potential impact to delimit the extent of assessment and the extent of assessment is considered across the whole traffic and transport study area, from which key junctions or locations for assessment are identified using observations of existing driver delay, judgement and advice from highway authorities. The IEMA rule 1 and rule 2 thresholds which delimit the extent of EIA also do not on their own apply to the impact upon road safety as this relates to the consideration of road safety along a highway and the impact upon this which is defined by the TA. Generally, a potential impact upon road safety may result at locations where there is an existing road safety issue or where proposals may create a road safety issue.

8.6.2.13 The IEMA rule 1 and rule 2 thresholds are therefore not applied to this potential impact to delimit the extent of assessment and the extent of assessment is considered across the whole traffic and transport study area, from which key locations for assessment are identified from an analysis of PIAs and advice from highway authorities.

8.6.2.14 The determination of key locations within the traffic and transport study area for assessment upon driver delay and road safety are set out in section 8.9 of this chapter of the Environmental Statement.

Significance of effect

8.6.2.15 The criteria for determining the significance of effect is a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter of the Environmental Statement to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity are based on those which are described in further detail in Volume 1, Chapter 5: Environmental Impact Assessment methodology of the Environmental Statement.

Magnitude of impact

8.6.2.16 The criteria for defining magnitude in this chapter of the Environmental Statement are based upon the guidance set out in the IEMA guidelines and are outlined in Table 8.15 below.

Table 8.15: Magnitude of impact criteria

	Negligible	Low	Medium	High
Driver Delay	Defined in conjunction with the Transport Assessment and a review of the change in operation of a junction or highway link with a particular focus on the weekday peak hour periods when baseline traffic flows are at their highest.			
Severance	Change in total traffic flow of less than 30%	Change in total traffic flow of 30% to 60%	Change in total traffic flow of 60% to 90%	Change in total traffic flows of over 90%
Pedestrian (incorporating non-motorised user) delay	Defined from a review of a locations' urban / rural context, site specific local considerations and pedestrian infrastructure, baseline traffic flows and the change in traffic flows.			
Fear and intimidation and non-motorised user amenity	No step changes in the level of fear and intimidation	One step change in the level of fear and intimidation, with <400 vehicle increase in average 18hr vehicle movements and / or <500 HV increase in total 18hr HV flow	One step change in the level of fear and intimidation, but with >400 vehicle increase in average 18hr vehicle movements and / or >500 HV increase in total 18hr HV flow	Two step changes in the level of fear and intimidation
Road safety	Defined from a review of PIA data along road links and the predicted changes in traffic flow			
AILs	Defined by an assessment of the suitability of the access routes to accommodate AILs			

8.6.2.17 Table 8.16 below presents the definition of terms relating to magnitude of impact.

Table 8.16: Definition of terms relating to the magnitude of an impact

Magnitude of impact	Definition
High	Substantial or total loss of capability for movement along or across transport corridors, loss of access to key facilities and loss of highway safety. Severe delays to travellers (Adverse)
	Large scale improvement in the capability for movement along and across transport corridors, major improvement in access to key facilities, in highway safety and in delays to travellers (Beneficial)
Medium	Loss of capability for movement along or across transport corridors, loss of access to key facilities and loss of highway safety. Delays to travellers (Adverse)
	Improvement in the capability for movement along and across transport corridors, improvement in access to key facilities, in highway safety and in delays to travellers (Beneficial)
Low	Some measurable loss of capability for movement along and across transport corridors, some measurable loss of access to key facilities and some measurable loss of highway safety. Some measurable increase in delays to travellers (Adverse)
	Some measurable increase in the capability for movement along and across transport corridors, some measurable increase in access to key facilities and some measurable increase in highway safety. Some measurable increase in delays to travellers. Reduced risk of negative impacts occurring (Beneficial)
Negligible	Very minor loss of capability for movement along and across transport corridors, very minor loss of access to key facilities and very minor loss of highway safety. Very minor increase in delays to travellers (Adverse)
	Very minor increase in capability for movement along and across transport corridors, very minor increase in access to key facilities and very minor increase in highway safety. Very minor decreases in delays to travellers (Beneficial)

Sensitivity of receptor

8.6.2.18 The criteria for defining the sensitivity of a highway link in this chapter for assessment against the rule 1 and rule 2 thresholds are outlined in Table 8.17 below.

Table 8.17: Definition of terms relating to the sensitivity of the receptor

Sensitivity	Definition
Very high	Very high concentration of receptors with greatest sensitivity due to site-specific characteristics which make them particularly sensitive to changes in traffic flow, high instances of road collisions and PIA rates being well above the national average, urban/residential/built-up roads without commensurate footway provision, very high footfall, severely congested junctions.
High	High concentration of receptors with some sensitivity to changes in traffic flows, roads with PIA rates being slightly above the national average, urban/residential/built-up roads without commensurate footway provision, high footfall, congested junctions.
Medium	Some concentrations of receptors with some sensitivity to traffic flows including urban/residential/built-up areas with narrow footway provision for its use, demand and footfall or with receptors where there are no setbacks from affected roads and junctions, unsegregated cycleways, roads with PIA rates at/close to the national average.

Sensitivity	Definition
Low	Low concentrations of receptors with some sensitivity to traffic flows including urban/residential/built-up areas with good footway provision commensurate for its use, demand and footfall and other receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.
Negligible	Receptors with negligible sensitivity to traffic flows and those sufficiently distant from affected roads and junctions or where no receptors are present.

8.6.2.19 All links are assessed against the rule 1 threshold. Links that are defined as high or very high sensitivity are deemed as sensitive, in accordance with the IEMA guidance thresholds, and are additionally assessed against the rule 2 threshold.

8.6.2.20 Table 8.18 below highlights the qualification of the sensitivity assessment for each of the highway links (as shown on Figure 8.1 of this chapter of the Environmental Statement) within the traffic and transport study area. The sensitivity for each highway link has been defined using Table 8.17 using professional judgement and by incorporating all receptor groups along that link identified and discussed above.

Table 8.18: Sensitivity of receptor relevant to the Mona Offshore Wind Project.

Link	Sensitivity	Justification
Link 1: A55 between Junctions 27 and 27A	Negligible	No sensitive receptors
Link 2: A55 between Junctions 27 and 26	High	National speed limit dual carriageway road. Combined footway / cycleway adjacent to the carriageway
Link 3: A55 between Junctions 26 and 25	High	National speed limit dual carriageway road. Combined footway / cycleway adjacent to the carriageway
Link 4: A55 between Junctions 25 and 24A	Negligible	No sensitive receptors
Link 5: A55 between Junctions 24A and 24	Negligible	No sensitive receptors
Link 6: A55 between Junctions 24 and 23A	Negligible	No sensitive receptors
Link 7: A55 between Junctions 23A and 23	Negligible	No sensitive receptors
Link 8: A547 through Llanddulas	Medium	Residential areas, adequate footways for the demand, green spaces, some commercial spaces, church
Link 9: A547 between Llanddulas and Parc Busnes Gogledd Cymru	Negligible	No sensitive receptors
Link 10: A547 between Parc Busnes Gogledd Cymru and A548 Chapel Street	Very high	Built up area and town centre location with footways provided and high footfall in locations
Link 11: A547 between A548 Chapel Street and A55	Very high	Built up area and town centre location with footways provided and high footfall in locations
Link 12: A548 Chapel Street between A547 and Lon Dirion	Very high	Built up area and town centre location with footways provided and high footfall in locations

Link	Sensitivity	Justification
Link 13: A548 Chapel Street between Lon Dirion and Abergele Hospital	Low	Footways provided, small section of residential area with limited pedestrian demand, limited frontage access.
Link 14: A548 Chapel Street between Abergele Hospital and B5381 Roman Road	Negligible	No sensitive receptors
Link 15: B5381 Roman Road between A548 and Moelfre	Low	Two adjacent caravan parks and residential properties all separated from the carriageway by hedgerow
Link 16: B5381 Roman Road between Moelfre and Capel Carmel	Negligible	No sensitive receptors
Link 17: Roman Road between Capel Carmel and Roberts D a O	Negligible	No sensitive receptors
Link 18: B5381 Roman Road between Roberts D a O and Engine Hill	Negligible	No sensitive receptors
Link 19: B5381 Glascoed Road between Engine Hill and Ffordd William Morgan	Negligible	No sensitive receptors
Link 20: B5381 Glascoed Road between Ffordd William Morgan and National Grid Substation access	Low	Some business parks, adequate footway provision for demand
Link 21: Ffordd William Morgan between A55 and Carlton Court	Low	Business units on both sides set back with good screening from carriageway, footway/cycleway on western side segregated from the carriageway by a verge and footway on eastern side with provisions suitable for demand
Link 22: Ffordd William Morgan between Carlton Court and B5381 Glascoed Road	Low	Business units on both sides set back with good screening from carriageway, footway/cycleway on western side segregated from the carriageway by a verge and footway on eastern side with provisions suitable for demand
Link 23: Engine Hill between A55 and B5381 Glascoed Road	Low	Hotel, commercial areas and some residential properties all set back and screened from carriageway. Footways provided at location of demand and segregated from carriageway by a grass verge and trees
Link 31: B5381 Roman Road west of A548 crossroad	Negligible	No sensitive receptors
Link 32: A548 south of B5381 Roman Road	Negligible	No sensitive receptors

8.6.2.21 On the basis of the above, the following links (as shown on Figure 8.1 of this chapter of the Environmental Statement) are deemed to be sensitive and assessed against the rule 2 threshold:

- Link 2: A55 between Junctions 27 and 26
- Link 3: A55 between Junctions 26 and 25
- Link 10: A547 between Parc Busnes Gogledd Cymru and A548 Chapel Street
- Link 11: A547 between A548 Chapel Street and A55

- Link 12: A548 Chapel Street between A547 and Lon Dirion.

Significance of effect

8.6.2.22 The significance of the effect upon traffic and transport is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The particular method employed for this assessment is presented Table 8.19 below. Where a range of significance of effect is presented in Table 8.19, the final assessment for each effect is based upon expert judgement.

8.6.2.23 For the purposes of this assessment, any effects with a significance level of minor or less have been concluded to be not significant in terms of The Infrastructure Planning (EIA) Regulations 2017.

Table 8.19: Matrix used for the assessment of the significance of the effect.

Sensitivity of Receptor	Magnitude of Impact			
	Negligible	**Low**	**Medium**	**High**
Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	Negligible or Minor	Minor	Moderate	Moderate or Major
High	Minor	Minor or Moderate	Moderate or Major	Major
Very High	Minor	Moderate or Major	Major	Major

8.7 Key parameters for assessment

8.7.1 Maximum design scenario

8.7.1.1 The Maximum Design Scenarios (MDSs) identified in Table 8.20 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the Project Design Envelope provided in Volume 1, Chapter 3: Project description of the Environmental Statement. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g. different infrastructure layout), to that assessed here be taken forward in the final design scheme.

8.7.1.2 There is an inter-relationship with this chapter and the Air Quality, Noise and Vibration and Human Health chapters in so far as these chapters consider traffic flows. The traffic flows and conclusions of the chapter have been made available to the Air Quality, Noise and Vibration and Human Health authors, and these have been utilised as part of their assessments and are therefore fully consistent with the above. Any inter-related impact between traffic and transport and another assessment has been considered and set out in section 8.12 of this chapter.

Table 8.20: Maximum design scenario considered for the assessment of potential impacts on Traffic and Transport.

[a] C=construction, O=operations and maintenance, D=decommissioning

Potential impact	Phase[a]			Maximum design scenario	Justification
	C	O	D		
The impact on driver and pedestrian delay/pedestrian amenity (incorporating non-motorised users) caused by construction works or construction traffic using the LRN and SRN	✓	×	×	**Construction phase** • There are up to four cable trenches within the permanent Onshore Cable Corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m. • The maximum number of joint bays along the Onshore Cable Corridor is 80. This is based on a minimum distance of 750 m between each joint bay. • The maximum number of link boxes along the Onshore Cable Corridor is 80. This is based on a minimum distance of 750 m between each link box. • There is one haul road within the Onshore Cable Corridor along the length of the corridor; it is 6 m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400 mm and a maximum thickness of up to 1,000 mm. • The maximum number of trenchless technique locations along the Onshore Cable Corridor and 400 kV Grid Connection Cable Corridor is 45 and three respectively. The temporary works areas for trenchless techniques will measure up to 2,500 m^2) and will be located within the temporary construction corridor. • Construction of the Onshore Cable Corridor via open trenching generates more construction vehicles in comparison to minor trenchless techniques. Therefore, minor trenchless techniques locations have not been specified and trenching has been assumed in all such locations for traffic generation purposes.	The greatest reasonable estimates of the number of cable trenches, link boxes, joint bays, trenchless techniques compounds, TCCs, number of buildings and the greatest depth of the engineered fill for the haul road and stabilised backfill represents the greatest potential for impacts on pedestrian (incorporating non-motorised users) delay and amenity; community severance; temporary delays to public transport services; and road safety for transport receptors as a result of larger numbers of HGV movements. The shortest duration of construction represents the greatest potential for impacts on pedestrian (incorporating non-motorised users) delay and amenity; community severance; temporary delays to public transport services; and road safety for transport receptors as a result of larger numbers of HGV movements. Adopting the first full year of construction for assessing the impact of construction traffic represents the year in which the greatest impact will result. This is because baseline traffic flows generally grow year-on-year and therefore such a year results in the greatest increases in traffic flows relative to the baseline traffic flows. Assuming that all materials are transported by HGV rather than rail or maritime results in the greatest number of HGV movements and thus the greatest impact on the highway network. Assuming a reasonable estimation of working days and working hours results in a reasonable balance of maximum Mona construction traffic flows for both daily and weekday peak hour periods. The maximum number of work fronts will maximise the number of HGV movements.
The impact of community severance caused by construction works or construction traffic using the LRN and SRN and the disruption of other transport receptors	✓	×	×		
The impact of temporary delays to public transport services caused by construction of the onshore transmission assets	✓	×	×		
The impact of construction traffic on road safety for users of the LRN, SRN and other transport receptors	✓	×	×		

Potential impact	Phase[a]			Maximum design scenario	Justification
	C	O	D		
				• Assume 36 HGV deliveries to each major trenchless technique site (72 HGV movements). • There will be one primary TCC (measuring up to 22,500 m^2) and up to four secondary TCCs including landfall (each measuring up to 15,000 m^2) located along the Onshore Cable Corridor. The TCCs will be located within the Mona Onshore Development Area. Soils will be removed and stored on site and crushed stone or other suitable materials will be used to create hardstanding. • The maximum duration of construction of the onshore export cable construction and installation is 33 months. • The depth of stabilised backfill in each of the four onshore cable trenches is up to 600 mm which results in an expected average along the Onshore Cable Corridor of 450 mm. • HGV payloads with aggregate of 20 tonnes. • The maximum footprint of the Mona Onshore Substation will measure 65,000 m^2: this area will include the buildings; the earthworks to create the platform will measure up to 75,000 m^2. The Onshore Substation will comprise up to four buildings. The maximum dimensions of the main building are 15 m high, 40 m wide and 90 m long. • Access to the Mona Onshore Substation will be via a temporary access road of 500 m in length during construction and a new permanent access road measuring up to 15 m wide (including associated area required for drainage and services trench) and 800 m in length. • A TCC will be required to support the construction of the Onshore Substation with an area extending up to 150,000 m^2. The duration of construction and installation of the Onshore Substation is 33 months.	

Potential impact	Phase[a]			Maximum design scenario	Justification
	C	O	D		
				• The Mona 400 kV Grid Connection Cable Corridor will be up to 1 km long. There are up to two cable trenches within the permanent 400 kV Grid Connection Cable corridor, each trench measures up to 2.5 m wide at the top, 1.5 m at the base and the depth is 1.8 m. • The maximum number of joint bays along the 400 kV Grid Connection Cable Corridor is two - based on a minimum distance of 500 m between each joint bay. • The maximum number of link boxes along the 400 kV Grid Connection Cable Corridor is two - based on a minimum distance of 500 m between each link box. • There is one haul road within the 400 kV Grid Connection Cable Corridor for the entire length of the corridor; it is 6 m wide excluding passing places. It will be constructed using imported engineered granular fill with geotextile style layers with a nominal thickness of 400 mm and a maximum thickness of up to 1,000 mm. • A reasonable assumption is that 75 % of staff are assumed to drive themselves to work with limited access by sustainable modes of travel. (Additional 25 % of staff assumed to car share). • A construction assessment year of 2026 is adopted. • It is assumed that all materials are transported by HGV and no allowance for rail or maritime has been included. • A six day working week (Monday to Saturday) 07.00 to 19.00 has been adopted. • Average of 10 staff per day at trenchless technique sites. • Average of 20 staff per day at every work front on the Onshore Cable Corridor.	

Potential impact	Phase[a]			Maximum design scenario	Justification
	C	O	D		
The impact of abnormal indivisible loads on the safety of users of the LRN, SRN and other transport receptors	✓	×	×	**Construction phase** • A reasonable maximum estimate for cable drum dimensions and weights will maximise the transportation requirements for AILs in terms of highway geometries. • A reasonable maximum estimate of the number of heavy electrical components (for example transformers) will maximise the number of AILs.	The maximum weight and dimensions of the cable drums will maximise the AIL requirements and present the greatest potential for impact on transport receptors. A maximum transportation dimension of 4.5 m in width (load width including overhang of vehicle) and 28.8 m in length (vehicle length) has been adopted. The greatest number of heavy electrical components will maximise the number of AILs and present the greatest potential for impact on transport receptors.

8.7.2 Construction vehicle trip generation, distribution, and assignment

Access

8.7.2.1 Six temporary construction accesses to the Mona Offshore Wind Project have been identified. Five of these are to the Onshore Cable Corridor (one of which includes Landfall) and one of these is to the Onshore Substation.

8.7.2.2 The location of these accesses and a preliminary access design layout with any associated traffic management measures for each are set out within the OHAMP (Document Reference J26.16) to be secured as part of the CoCP requirement in the draft DCO.

8.7.2.3 The Street Work and Access to Works Plan (Document Reference B15) submitted as part of the draft DCO presents a high level overview of the locations and all works areas required for the construction accesses and crossing locations

Construction vehicle trip generation

8.7.2.4 The construction vehicle movements associated with the construction of the Mona Offshore Wind Project has been developed based upon estimates of construction materials, construction and engineering requirements and construction programme. The construction traffic flows use the MDS set out in Table 8.20 of this chapter of the Environmental Statement. The construction vehicle movement assumptions and calculations are set out in Volume 7, Annex 8.5: Construction vehicle trip generation assumptions of the Environmental Statement.

8.7.2.5 For the purposes of calculating construction traffic flows, given its length, the Onshore Cable Corridor and 400 kV Grid Connection Cable Corridor are separated into sections and the number of daily construction vehicle movements are estimated for each section and for each month of the construction programme.

8.7.2.6 From that, the peak months (in terms of construction vehicle movements) for each section of the Onshore Cable Corridor and 400 kV Grid Connection Cable Corridor can be identified. In turn, this allows the peak number of daily construction vehicle movements to be calculated for each section of the Onshore Cable Corridor and 400 kV Grid Connection Cable Corridor.

8.7.2.7 The peak number of daily construction vehicle movements for each section are then aggregated to calculate the total number of daily construction vehicle movements for the Onshore Cable Corridor and 400 kV Grid Connection Cable Corridor.

8.7.2.8 Similar estimates are made for Landfall and the Onshore Substation (albeit they do not have 'sections'). Based on this, the total number of peak daily construction vehicle movements for the Mona Offshore Wind Project are determined.

Origin of construction HGV movements

8.7.2.9 The origin of construction HGVs will be predicated upon the procurement of materials at the time of construction. Construction HGVs may therefore arrive from a range of origins.

8.7.2.10 To ensure a robust assessment whereby a reasonable maximum number of construction HGVs are assigned onto each highway link, it is assumed that all materials are procured from outside of the traffic and transport study area. This ensures that construction HGVs are assigned onto all relevant highway links within the traffic and transport study area.

8.7.2.11 There are two entry points to the traffic and transport study area for construction HGVs as follows:

- The A55 east of junction 27
- The A55 west of junction 23.

8.7.2.12 Based upon a simple spread of entries to the traffic and transport study area (and thus a spread of origins for construction HGVs), this would equate to 50% of all construction HGVs arriving from (and then departing to) each of these.

8.7.2.13 However, there is no certainty on this. Therefore, to ensure a robust assessment it is assumed that up to 75% of all construction HGVs could arrive from (and then depart to) each of these.

8.7.2.14 This assumption allows for a reasonable maximum number of construction HGVs on each of these highway links for assessment purposes.

8.7.2.15 The aggregation of the above equates to 150% when reaching the LRN, however, to ensure the assessment remain reasonable, the proportion of construction HGVs on any one highway link is capped at 100%.

Origin of construction staff movements

8.7.2.16 Consistent with the assumption for construction HGVs and to ensure a reasonable maximum number of construction vehicle movements are assigned onto each highway link, it is assumed that all construction staff arrive from outside of the traffic and transport study area.

8.7.2.17 The same two entry points along the A55 east and west have been assumed however two additional entry points have also been considered. The two additional entry points are the A548 south of the Penrefail crossroads and the B5381 Roman Road west of the Penrefail crossroads.

8.7.2.18 It is expected that a proportion of the construction staff will stay overnight at locations around the traffic and transport study area and these four locations will cover all entry points from these areas.

8.7.2.19 Based upon the surrounding urban areas and location of potential accommodation for construction staff, it is assumed that 75% of all staff will enter the traffic and transport study area via the A55 east of junction 27 and 75% via the A55 west of junction 23.

8.7.2.20 These entry points will account for all construction staff staying in areas to the north of the A55 (for example, Rhyl) because it covers the movement of all such arrivals from (and departures to) these areas and maximises the number of highway links they utilise within the traffic and transport study area (i.e. a robust assessment). Similarly, it also covers all construction staff arriving from (and departing to) areas east and west of the traffic and transport study area via the A55.

8.7.2.21 It is also assumed that 10% of staff will enter the traffic and transport study area via the A548 south and 10% via the B5381 west, this allows for any staff staying temporarily at accommodation to the south and west of the traffic and transport study area who would not enter the study via the A55. Given the far reduced amounts of accommodation in these areas, this is reasonable.

8.7.2.22 The aggregation of the above equates to 170%, however, to ensure the assessment remain reasonable, the proportion of construction HGVs on any one highway link is capped at 100%.

Assignment of construction vehicle movements

8.7.2.23 The OHAMP (Document Reference J26.16) resents the locations of temporary construction access to the Mona Offshore Wind Project. Each access has been matched to its respective section of the Onshore Cable Corridor, 400 kV Grid Connection Cable Corridor, landfall and the Onshore Substation.

8.7.2.24 A plan showing the access routes to each access is set out in Volume 7, Annex 8.7: Traffic and transport figures of the Environmental Statement. The following key construction vehicle movement management measures will be adopted as part of the CTMP (Document Reference J26.13) which has informed the access routes:

- Due to a carriageway narrowing of the B5381 Roman Road between the Penrefail crossroads (the A548) and Moelfre (link 15), no construction vehicles save for cable drum deliveries and construction staff routeing between compounds will be permitted to arrive or depart using this section of the LRN
- Due to the geometries of Engine Hill between the A55 Junction 25 and the B5381 Glascoed Road (link 23), no construction HGVs will be permitted to arrive or depart using this section of the LRN
- Due to the sensitivities along the A525 through St Asaph, no construction vehicles will be permitted to arrive or depart using this section of the LRN
- Due to the geometries of the A547 Market Street / A548 Chapel Street signalised junction within Abergele, construction HGVs must:
  - Arrive to the A548 Chapel Street from the west via the A55 Junction 23 only and turn right onto the A548 Chapel Street. There are no left turns permitted onto the A548 Chapel Street from the east via the A55 Junction 24.
  - Depart from the A548 Chapel Street to the east via the A55 Junction 24 only by turning right onto the A547 Market Street. There are no left turns permitted onto the A547 Market Street to the west via the A55 Junction 23.

8.7.2.25 These restrictions are reflected on the access route shown in Volume 7, Annex 8.7 Traffic and transport figures of the Environmental Statement and in Table 8.21 below. They are also set out within the CTMP (Document Reference J26.13) and will be secured as a DCO requirement therein.

Table 8.21: Routes to temporary construction compounds

Access	Mona Onshore Development Area	Access route
TCC 1	Landfall Onshore Cable Corridor	A55, A547
TCC 2	Onshore Cable Corridor	A55, A547, A548, B5381
TCC 3	Onshore Cable Corridor	A55, A547, A548
TCC 4	Onshore Cable Corridor	A55, Ffordd William Morgan, B5381
TCC 5	Onshore Cable Corridor	A55, Ffordd William Morgan, B5381
Onshore Substation	400 kV Grid Connection Cable Corridor Onshore Substation	A55, Ffordd William Morgan, B5381

8.7.2.26 The peak daily construction vehicle movements have been assigned onto the SRN and LRN in accordance with the above and as attached at Volume 7, Annex 8.6: Traffic flows with construction traffic of the Environmental Statement.

8.8 Measures adopted as part of the Mona Offshore Wind Project

8.8.1.1 For the purposes of the EIA process, the term 'measures adopted as part of the project' is used to include the following measures (adapted from IEMA, 2016):

- Measures included as part of the project design. These include modifications to the location or design of the Mona Offshore Wind Project which are integrated 6into the application for consent. These measures are secured through the consent itself through the description of the development and the parameters secured in the DCO and/or marine licences (referred to as primary mitigation in IEMA, 2016)
- Measures required to meet legislative requirements, or actions that are generally standard practice used to manage commonly occurring environmental effects and are secured through the DCO requirements and/or the conditions of the marine licences (referred to as tertiary mitigation in IEMA, 2016).

8.8.1.2 A number of measures (primary and tertiary) have been adopted as part of the Mona Offshore Wind Project to reduce the potential for impacts on traffic and transport. These are outlined in Table 8.22 below. As there is a commitment to implementing these measures, they are considered inherently part of the design of the Mona Offshore Wind Project and have therefore been considered in the assessment presented in section 8.9 below (i.e. the determination of magnitude and therefore significance assumes implementation of these measures).

Table 8.22: Measures adopted as part of the Mona Offshore Wind Project

Measures adopted as part of the Mona Offshore Wind Project	Justification	How the measure will be secured
Primary measures: Measures included as part of the project design		
All major crossings (such as public highways and rail crossings) will be undertaken using trenchless techniques	To minimise delays to existing highway users and to maintain highway safety.	The commitment is documented in Volume 5, Annex 4.3: Onshore Crossing Schedule of the Environmental Statement
Tertiary measures: Measures required to meet legislative requirements, or adopted standard industry practice		
The preparation of a detailed Code of Construction Practice (CoCP) that will be in general accordance with Outline COCP (Document Reference J26). The CoCP will set out the construction working hours for the Mona Offshore Wind Project.	To avoid adverse effects on communities	The preparation of a detailed CoCP would be secured through Requirement 9 in the draft DCO.
The preparation of a detailed Construction Traffic Management Plan (CTMP) as part of the detailed Code of Construction Practice. The CTMP will be in general accordance with Outline CTMP (Document Reference J26.13) and will include: • Suitable HGV routes • Requirement for construction vehicles to use the haul road where possible • Pre-entry condition surveys • Restrictions on HGV operating hours • The provision of appropriate parking facilities for construction workers • Monitoring of vehicle use.	To minimise delays to existing highway users and to maintain highway safety. To avoid adverse effects on communities and road users. To ensure that construction traffic has no lasting adverse impact on the condition of highways To minimise adverse impacts on local communities and vulnerable highway users. To eliminate risks associated with inappropriate parking	The preparation of a detailed CoCP would be secured through Requirement 9 in the draft DCO. The detailed CoCP would include a detailed CTMP.
The preparation of a detailed Highways Access Management Plan (HAMP) as part of the detailed CoCP. The HAMP will be in general accordance with the OHAMP (Document reference J26.16) and will include: • The design of HGV access points, including visibility standards • Reinstatement of the original highway after construction work is completed	To maintain highway safety. To ensure the ongoing safe and efficient functioning of the highway	The preparation of a detailed CoCP would be secured through Requirement 9 in the draft DCO. The detailed CoP would include a detailed HAMP.
A route for AILs will be identified (this will be between the port of entry, the SRN and Onshore Substation). The route timing and method of transport of AILs will be discussed and agreed with the relevant highway and bridge authorities and the police.	To avoid damage to inappropriate highways, to minimise delays and risks to road users and to avoid adverse impacts on local communities.	As part of a Special Order to permit the movement of AILs on the highway as issued by the Secretary of State for Transport on behalf of Welsh Ministers following an application by the appointed heavy haulage contractor.

8.8.1.3 Where significant effects have been identified, further mitigation measures (referred to as secondary mitigation in IEMA, 2016) have been identified to reduce the significance of effect to acceptable levels following the assessment. These are measures that could further prevent, reduce and, where possible, offset any adverse effects on the environment. These measures are set out, where relevant, in section 8.9 below.

8.9 Assessment of significant effects

8.9.1 Overview

8.9.1.1 The impacts of the construction phase of the Mona Offshore Wind Project have been assessed on traffic and transport. As set out in Table 8.8 above, the impacts of the operations and maintenance and decommissioning phases of the Mona Offshore Wind Project on traffic and transport have been scoped out of the assessment.

8.9.1.2 The potential impacts arising from the construction of the Mona Offshore Wind Project are listed in Table 8.20, along with the MDS against which each impact has been assessed.

8.9.1.3 A description of the potential effect on traffic and transport receptors caused by each identified impact is given below.

8.9.2 Screening for assessment of transport environmental impacts

8.9.2.1 In accordance with the IEMA guidelines, the peak daily construction vehicle movements generated by the Mona Offshore Wind Project are assessed against the baseline traffic flows in Table 8.23.

Table 8.23: Impact of Mona Offshore Wind Project peak daily construction traffic flows.

Link	2026 baseline traffic flows		Construction traffic flows		% Increase	
	Total vehicles	HVs	Total vehicles	HGVs	Total vehicles	HVs
Link 1: A55 between Junctions 27 and 27A	53,774	2,467	674	285	1%	12%
Link 2: A55 between Junctions 27 and 26	47,854	2,457	674	285	1%	12%
Link 3: A55 between Junctions 26 and 25	47,854	2,457	755	285	2%	12%
Link 4: A55 between Junctions 25 and 24A	47,854	2,457	784	285	2%	12%
Link 5: A55 between Junctions 24A and 24	47,854	2,457	784	285	2%	12%
Link 6: A55 between Junctions 24 and 23A	56,720	2,236	562	285	1%	13%
Link 7: A55 between Junctions 23A and 23	71,493	2,551	562	285	1%	11%
Link 8: A547 through Llanddulas	8,593	772	326	115	4%	15%
Link 9a: A547 between Rhyd-Y-Foel and TCC 1	6,998	830	326	115	5%	14%
Link 9b: A547 between TCC 1 and Busnes Gogledd Cymru	6,998	830	273	48	4%	6%
Link 10: A547 between Parc Busnes Gogledd Cymru and A548 Chapel Street	9,460	857	273	48	3%	6%
Link 11: A547 between A548 Chapel Street and A55	6,131	672	320	48	5%	7%
Link 12: A548 Chapel Street between A547 and Lon Dirion	9,241	995	336	95	4%	10%
Link 13: A548 Chapel Street between Lon Dirion and Abergele Hospital	4,088	842	336	95	8%	11%

Link	2026 baseline traffic flows		Construction traffic flows		% Increase	
Link 14: A548 Chapel Street between Abergele Hospital and B5381 Roman Road	2,983	470	336	95	11%	20%
Link 15: B5381 Roman Road between A548 and Moelfre	2,018	376	50	0	2%	0%
Link 16: B5381 Roman Road between Moelfre and Capel Carmel	1,590	229	50	0	3%	0%
Link 17: B5381 Roman Road between Capel Carmel and Roberts D a O	1,624	305	50	0	3%	0%
Link 18a: B5381 Roman Road between Roberts D a O and TCC 4	1,776	291	50	0	3%	0%
Link 18b: B5381 Roman Road between TCC 4 and TCC 5	1,776	291	123	37	7%	13%
Link 18c: B5381 Roman Road between TCC 5 and Engine Hill	1,776	291	297	101	17%	35%
Link 19: B5381 Glascoed Road between Engine Hill and Ffordd William Morgan	1,811	241	261	101	14%	42%
Link 20: B5381 Glascoed Road between Ffordd William Morgan and National Grid Substation Access	4,217	509	233	123	6%	24%
Link 21: Ffordd William Morgan between A55 and Carlton Court	4,111	420	535	218	13%	52%
Link 22: Ffordd William Morgan between Carlton Court and B5381 Glascoed Road	6,373	531	535	218	8%	41%
Link 23: Engine Hill between A55 and B5381 Glascoed Road	3,574	579	173	0	5%	0%

8.9.2.2 In terms of total vehicle movements, no links are predicted to exceed their respective rule 1 or rule 2 thresholds as defined in the IEMA guidelines and in section 8.6 of this chapter of the Environmental Statement.

8.9.2.3 In terms of HVs, Link 18c B5381 Roman Road between TCC 5 and Engine Hill (35%), Link 19 B5381 Glascoed Road between Engine Hill and Ffordd William Morgan (42%), Link 21 Ffordd William Morgan between A55 and Carlton Court (52%) and Link 22 Ffordd William Morgan between Carlton Court and B5381 Glascoed Road (41%) are predicted to exceed the rule 1 threshold.

8.9.2.4 Therefore, in accordance with the IEMA guidelines and section 8.6 of this chapter of the Environmental Statement, these four links have been analysed as part of the Environment Impact Assessment. These links are summarised in Table 8.24.

Table 8.24: Highway links for environmental impact assessment.

Link	Sensitivity	Percentage change in daily traffic flows due to Mona Offshore Wind Project	
		Total Vehicles	HVs
Link 18c: B5381 Roman Road between TCC 5 and Engine Hill	Negligible	17%	35%
Link 19: B5381 Glascoed Road between Engine Hill and Ffordd William Morgan	Negligible	14%	42%
Link 21: Ffordd William Morgan between A55 and Carlton Court	Low	13%	52%
Link 22: Ffordd William Morgan between Carlton Court and B5381 Glascoed Road	Low	8%	41%

8.9.2.5 The similarity of the characteristics of links 18c with 19 (i.e. the B5381 Glascoed Road and Roman Road) and of links 21 with 22 (i.e. Ffordd William Morgan) in terms of local environs, street lighting, highway geometries, footway provision, environmental sensitivity/receptors, road users, base traffic flows and peak daily Mona construction traffic flows along each are noted. Given this, link 18c can be assessed together with link 19 and link 21 can be assessed together with link 22, save for those circumstances where they are considered individually, below.

8.9.2.6 In terms of the other highway links (all highway links save for links 18c, 19, 21 and 22), in accordance with the IEMA guidelines, these highway links are screened out of the assessment and therefore the effect along these will be of **negligible adverse** significance, which is not significant in EIA terms.

8.9.2.7 In terms of driver delay, road safety and AILs, in accordance with TAN18, the impacts upon each of these are assessed throughout the entire traffic and transport study area and not only those links set out in Table 8.24 above.

8.9.3 The impact on driver delay caused by construction works or construction traffic (including temporary delays to public transport services)

8.9.3.1 Driver delay during the construction phase can result from the following:

- An increase in traffic flows, particularly during peak hours resulting in increased queues on links and at junctions
- The passage of slow-moving vehicles such as AILs
- Reduction in link capacity resulting from changes in carriageway width or other highway characteristics.

8.9.3.2 The IEMA rule 1 and rule 2 thresholds which delimit the extent of EIA do not on their own apply to this impact as this relates to junction / highway capacity and operation and the impact upon this is defined by the TA. Generally, a potential impact upon driver delay may result when the highway network is at or close to capacity and not just with reference to the rule 1 and rule 2 thresholds.

8.9.3.3 The IEMA rule 1 and rule 2 thresholds are therefore not applied to this potential impact to delimit the extent of assessment and the extent of assessment is considered across the whole traffic and transport study area, from which key junctions or locations for

assessment are identified using observations of existing driver delay, judgement and advice from highway authorities.

8.9.3.4 In order to determine key junctions and locations within the traffic and transport study area for assessment of driver delay within this chapter, the relevant highway authorities have been consulted. As set out in Table 8.5, the highway authorities have not advised of any particular junctions within the traffic and transport study area that are sensitive to changes in traffic flows; only CCBC have advised that Abergele can be 'busy'.

8.9.3.5 As presented in Table 8.13 the assessment of driver delay incorporates analysis as part of a TA where a review of the change in the operation of junctions or highway links during the weekday peak hour periods when the baseline traffic flows are at their highest.

8.9.3.6 Based upon this, an assessment of driver delay has been undertaken with consideration of:

- Driver delay during peak hours at key junctions within the traffic and transport study area as a result of construction traffic (whilst noting that only Abergele has been identified by the highway authorities as a location to consider in terms of driver delay), consisting of:
  - A55 Junction 26 / Ffordd William Morgan roundabout
  - A55 Junction 24 / Rhuddlan Road roundabout
  - A55 Junction 23 / Abergele Road roundabout
  - A547 Abergele Road / Rhyd-Y-Foel priority junction
  - A548 / B5381 Roman Road Penrefail Crossroad junction
  - B5381 Glascoed Road / B5381 Roman Road priority junction
  - B5381 Glascoed Road / Ffordd William Morgan
- Driver delay during peak hours through Abergele as a result of construction traffic
- Driver delay caused by the passage of AILs
- Driver delay during peak hours as a result of temporary traffic signals at accesses

Magnitude of impact

8.9.3.7 In accordance with section 8.6.2, the magnitude of impact upon driver delay has been assessed across the whole traffic and transport study area (rather than only those links where traffic flow increases exceed the rule 1 and rule 2 thresholds) with consideration to delay at key junctions, delay through Abergele, delay due to AILs and delay as a result of temporary traffic signals. Each of these are considered separately, from which the overall magnitude of impact is then identified. In relation to Abergele, the assessment considers the cause of current delays by analysing traffic flows, queue length surveys and undertaking a street audit, from which assessments are then undertaken to consider the magnitude of impact.

Potential driver delay at key junctions within the traffic and transport study area

8.9.3.8 An analysis of the 2022 peak hour base traffic flows at the key junctions within the traffic and transport study area has been undertaken using the MCCs commissioned for this project attached at Volume 7, Annex 8.2 Base traffic flows of the Environmental Statement, as set out in Table 8.25 below.

Table 8.25: Peak hour base traffic flows at key junctions within the traffic and transport study area

Junction	Adjacent links	AM peak hour	AM peak hour flows	PM peak hour	PM peak hour flows
A55 junction 26 / Ffordd William Morgan roundabout	L2 / L3 / L21	07:45-08:45	960	16:30-17:30	845
A55 junction 24 / Rhuddlan Road roundabout	L5 / L6 / L11	08:00-09:00	2,215	16:30-17:30	2,351
A55 junction 23 / Abergele Road roundabout	L7 / L8	08:00-09:00	1,103	16:45-17:45	1,147
A547 Abergele Road / Rhyd-Y-Foel priority junction	L8 / L9	08:15-09:15	608	16:30-17:30	722
A548 / B5381 Roman Road Penrefail Crossroad junction	L14 / L15 / L31 / L32	08:00-09:00	392	16:30-17:30	496
B5381 Glascoed Road / B5381 Roman Road priority junction	L18 / L19 / L23	08:00-09:00	181	16:30-17:30	171
B5381 Glascoed Road / Ffordd William Morgan	L19 / L20 / L22	07:45-08:45	666	16:30-17:30	661

8.9.3.9 It should be noted that these traffic flows represent the total number of vehicle movements travelling through their respective junction during the peak hours and do not necessarily represent only those that are opposing one-another.

8.9.3.10 In simple terms, it is only those vehicles that oppose one-another that creates the potential for driver delay to occur. Consideration of the total vehicle movements through a junction therefore represents an over-estimate in the context of driver delay.

8.9.3.11 However, it provides a reasonable initial consideration of the performance of a junction and therefore the potential for driver delay to occur. It is noted that the highway authorities have not advised of any particular junctions within the traffic and transport study area that are sensitive to changes in traffic flows.

8.9.3.12 Using professional judgement based upon the form, layout and geometries of each of the junctions, the peak hour base traffic flows through the key junctions are very low and are substantially lower than the level at which congestion could occur (and therefore the level at which drivers could experience delay).

8.9.3.13 It is noted that the peak hour base traffic flows through the A55 Junction 24/Rhuddlan Road roundabout are the highest of the key junctions considered and so a further assessment to the vehicle movements through it has been undertaken which is specific to the routes of the construction traffic.

8.9.3.14 The construction traffic would not utilise the A547 east arm of the roundabout and so the peak hour traffic flows associated with this arm of the junction have been removed to consider the traffic through the junction relevant to the construction traffic, as set out in Table 8.24 below.

8.9.3.15 In addition, since the A547 Rhuddlan Road west arm will be utilised by the construction traffic the peak hour traffic flows on this arm only have been assessed to further consider the traffic through the junction relevant to the construction traffic in Table 8.26 below.

Table 8.26: Peak hour base traffic flows at the A55 junction 24 / Rhuddlan Road roundabout

	AM peak hour	AM peak hour flows	PM peak hour	PM peak hour flows
A55 Junction 24 / Rhuddlan Road roundabout – Without A547 / Rhuddlan Road east arm traffic flows	08:00-09:00	1,428	16:30-17:30	1,566
A55 Junction 24 / Rhuddlan Road roundabout – A547 / Rhuddlan Road west arm traffic flows only	08:00-09:00	732	16:30-17:30	671

8.9.3.16 Using professional judgement based upon the form, layout and geometries of the A55 Junction 24/Rhuddlan Road roundabout, the peak hour base traffic flows through it are low and are far lower than the level at which congestion could occur (and therefore the level at which drivers could experience delay).

8.9.3.17 To consider the performance of the key junctions with the construction flows and the potential for any changes in driver delay as a result, the peak hour committed development traffic flows and the peak hour construction traffic flows have been added to the peak hour base traffic flows, as set out in Table 8.27 and Table 8.28 below.

8.9.3.18 The peak hour construction traffic flows have been generated on a robust basis. Whilst the construction working hours are between 07:00 to 19:00, it has been assumed that there could be construction HGV movements during the peak hours. Allowing for hourly fluctuations, the daily construction HGV movements have been divided by 10 rather than 12 to allow for the upper / higher hours of fluctuation.

8.9.3.19 Given the construction working hours, it is expected that the vast majority of all construction staff movements would be before and after the peak hours. However, to ensure a robust assessment, and for the purposes of this assessment only, it has been assumed that half of all construction staff arrivals could be during the AM peak hour and half of all construction staff departures could be during the PM peak hour.

Table 8.27: Peak hour traffic flows with construction at key junctions within the traffic and transport study area

Junction	2026 Baseline AM peak hour flows	2026 Baseline PM peak hour flows	Baseline + construction AM peak hour flows	Baseline + construction PM peak hour flows
A55 junction 26 / Ffordd William Morgan roundabout	1,042	928	1,143	1,029
A55 junction 24 / Rhuddlan Road roundabout	2,290	2,430	2,391	2,531
A55 junction 23 / Abergele Road roundabout	1,139	1,184	1,240	1,285
A547 Abergele Road / Rhyd-Y-Foel priority junction	621	738	722	839
A548 / B5381 Roman Road Penrefail Crossroad junction	401	508	502	609
B5381 Glascoed Road / B5381 Roman Road priority junction	189	178	290	279

Junction	2026 Baseline AM peak hour flows	2026 Baseline PM peak hour flows	Baseline + construction AM peak hour flows	Baseline + construction PM peak hour flows
B5381 Glascoed Road / Ffordd William Morgan	720	708	821	809

8.9.3.20 Using professional judgement based upon the form, layout and geometries of each of the junctions, the peak hour traffic flows with construction through the key junctions would remain very low and remain substantially lower than the level at which congestion could occur (and therefore the level at which drivers could experience delay).

Table 8.28: Peak hour traffic flows with construction at the A55 junction 24 / Rhuddlan Road roundabout

	Baseline AM peak hour flows	Baseline PM peak hour flows	Baseline + construction AM peak hour flows	Baseline + construction PM peak hour flows
A55 Junction 24 / Rhuddlan Road roundabout – Without A547 / Rhuddlan Road east arm traffic flows	1,477	1,620	1,550	1,693
A55 Junction 24 / Rhuddlan Road roundabout – A547 / Rhuddlan Road west arm traffic flows only	759	696	831	769

8.9.3.21 Using professional judgement based upon the form, layout and geometries of the A55 Junction 24 / Rhuddlan Road roundabout, the peak hour traffic flows with construction through it would remain low and remain far lower than the level at which congestion could occur (and therefore the level at which drivers could experience delay).

8.9.3.22 The impact in terms of driver delay at key junctions within the traffic and transport study area resulting from construction is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be **negligible**.

Potential driver delay caused by abnormal indivisible loads

8.9.3.23 The movement of large AILs transporting transformers associated with the Onshore Substation are not expected to use links 18c or 19, however may use links 21 and 22.

8.9.3.24 The transport of these AILs from the port of entry to the Onshore Substation would necessarily be timed to minimise delays to other road users and would be controlled by the police (using their escort powers) to manage the AILs and other road users accordingly to minimise driver delay.

8.9.3.25 Furthermore, the movement of the large AILs in terms of their route and precise dates and times would be advertised in advance so that other users of the route are forewarned and would be able to plan their own journey accordingly.

8.9.3.26 Smaller AILs transporting cable drums will be an irregular movement but would need to access the Onshore Cable Corridor and will be using all four links for these purposes and other links throughout the traffic and transport study area.

8.9.3.27 However, such movements would be irregular, would not be a daily occurrence and would be a low number (in the order of approximately 240 over the 33 month construction period, equating to approximately one delivery on average per week over that period).

8.9.3.28 Although the movement of cable drums have been classified as AILs, this is dependent upon the cable drum size and their transportation arrangements and their movement may not in fact be an AIL. In the event that they are deemed to be AILs their speeds when travelling along the highway might on occasion be slower than other vehicles, however in such any instance they would not be substantially slower and should not be sufficiently slow to result in any noticeable delay to other drivers.

8.9.3.29 In terms of AILs, the impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be **negligible**.

Potential driver delay within Abergele

8.9.3.30 Abergele is characterised in highway terms by the A547 and A548 forming a signalised staggered crossroads around which is the town centre with associated frontages and activity for which observations and the CCBC Highway Officer described as ‘busy’.

8.9.3.31 To consider the movement of construction HGVs through Abergele, a street audit, queue length surveys and MCCs have been undertaken.

8.9.3.32 The street audit has identified all on-street restrictions and/or markings along the A547 between the Tesco roundabout and Faenol Avenue and the A548 for its initial sections to the north and south of the A547 that form the town centre area. The street audit figures are attached in Volume 7, Annex 8.7 Traffic and transport figures of this Environmental Statement.

8.9.3.33 From analysing the street audit and from on-site observations and surveys, described below, it was determined that the on-street restrictions and / or markings along the A547 do not form any meaningful contribution to any queueing or vehicular delay through Abergele.

8.9.3.34 Queue length surveys have been undertaken at the A547 / A548 signalised staggered junction, at the zebra crossing along the A547 outside the Abergele Library and the zebra crossing along the A547 outside of the Ty Gwyn Jones bus stop. MCCs have been undertaken at the signalised staggered junction.

8.9.3.35 An analysis of the zebra crossing survey results identified that only small queues formed throughout the day along the A547 and that the crossings do not form any meaningful contribution to the wider queuing and vehicles delays through Abergele.

8.9.3.36 An analysis of the survey results for the A547 / A548 signalised staggered junction determined that this was the source of queuing and vehicular delay through Abergele.

Queue length and traffic surveys

8.9.3.37 Traffic and queue length surveys were undertaken at the A547 / A548 signalised staggered crossroads junction between 06:00 and 20:00 on Wednesday 12 July and Wednesday 9 August 2023. The data from the surveys undertaken are presented in Volume 7, Annex 8.2 Base traffic flows.

8.9.3.38 Upon the undertaking of these surveys, it was possible to compare the two data sets to identify any seasonal variation between July (prior to the summer holiday period) and August (within the summer holiday period).

8.9.3.39 This highlighted that daily traffic flows through Abergele are approximately 10% higher during August that during July. Associated queue lengths were similarly higher during August.

8.9.3.40 There are two zebra crossings over the A547 within the town centre area, one to the west of the A548 and one to the east of the A548, both of which were also surveyed during the same time periods and on the same days as the A547 / A548 junction survey. The zebra crossing survey identified each occasion when a pedestrian crossed, the number of pedestrians crossing and the resultant queues on the A547 that formed.

8.9.3.41 An analysis of the zebra survey results identified that only small queues formed throughout the day along the A547 and that the crossings do not form any meaningful contribution to the wider queueing and vehicular delay through Abergele.

8.9.3.42 An analysis of the survey results for the A547 / A548 signalised junctions determined that these were the source of queuing and vehicular delay through Abergele.

8.9.3.43 Results for peak hour traffic flows through the two signalised junctions are presented in Table 8.29 with the August 2023 results presented in Table 8.30.

Table 8.29: Peak hour traffic flows within Abergele during July 2023

Month		AM peak hour	AM peak hour flows	PM peak hour	PM peak hour flows
July	A547 Market Street / A548 Chapel Street	08:15-09:15	952	17:00-18:00	1,153
	A547 Market Street / A548 Water Street	08:00-09:00	1,008	16:45-17:45	1,120

Table 8.30: Peak hour traffic flows within Abergele during August 2023

Month		AM peak hour	AM peak hour flows	PM peak hour	PM peak hour flows
August	A547 Market Street / A548 Chapel Street	08:45-09:45	915	17:00-18:00	1,134
	A547 Market Street / A548 Water Street	08:45-09:45	924	17:00-18:00	1,133

8.9.3.44 Queue length surveys are used to support the peak hour traffic flows presented in the above two tables that help set out the baseline environment in regards to congestion and the impact on driver delay through Abergele of Mona Offshore Wind Project. The queue length survey results including the average queue length throughout the day and the peak queue length during the day are shown for the A547 Market Street / A548 Chapel Street junction in Table 8.31 and graphically on Figure 8.3 and Figure 8.4 respectively.

Table 8.31: Peak and average queue length at A547 Market Street/A548 Chapel Street junction

	Average queue length (vehicles)			Peak queue length (vehicles)		
	Arm A A547 Market Street east	Arm B A548 Chapel Street	Arm C A547 Market Street west	Arm A A547 Market Street east	Arm B A548 Chapel Street	Arm C A547 Market Street west
July 2023	2.27	6.31	7.70	10	21	25
August 2023	2.66	7.23	10.62	9	19	30

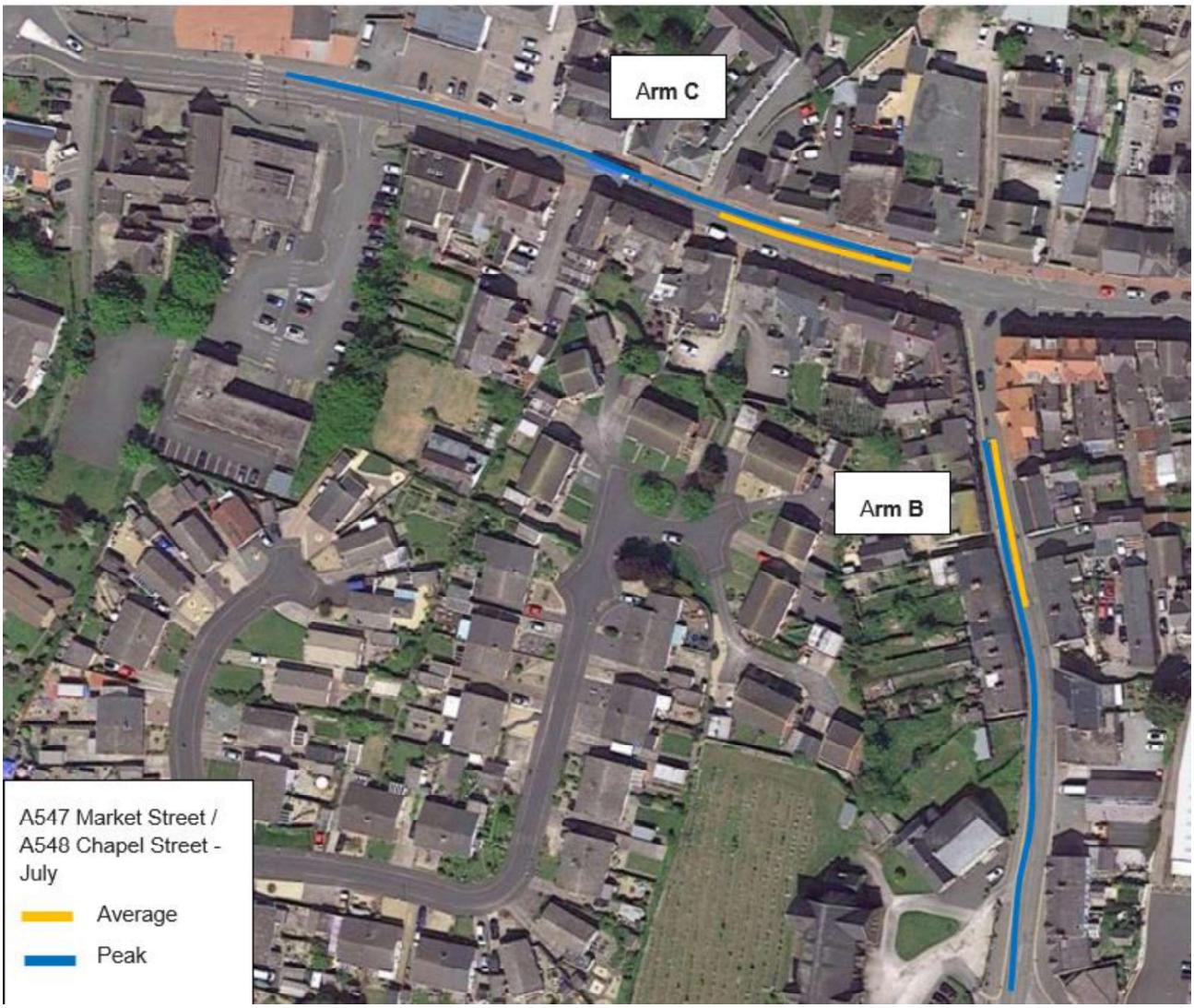

Figure 8.3: Peak and average queue lengths at Market Street/A548 Chapel Street in July 2023.

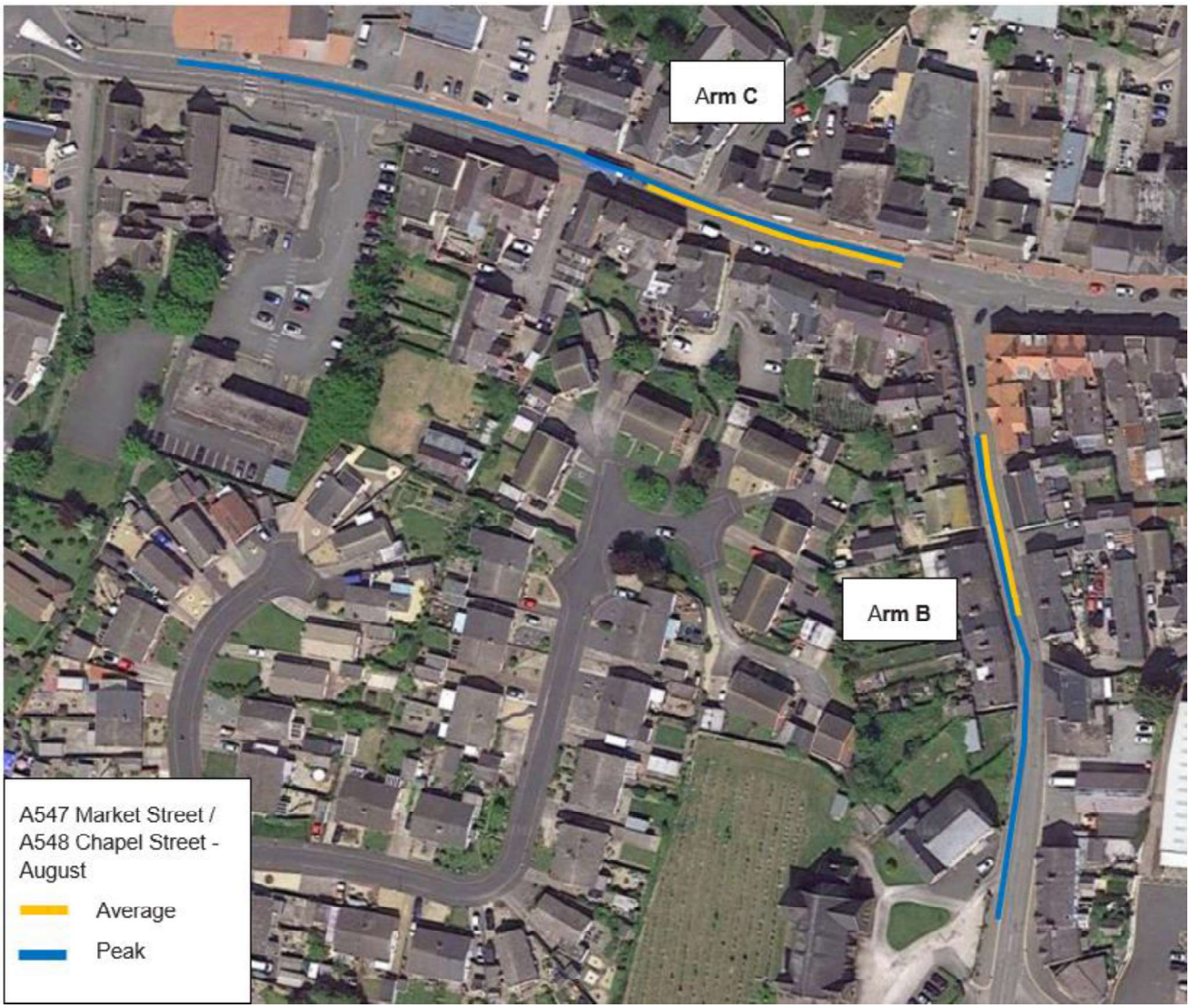

Figure 8.4: Peak and average queue lengths at Market Street/A548 Chapel Street in August 2023.

8.9.3.45 The queue length survey results including the average queue length throughout the day and peak queue length during the day are shown for the A547 Market Street / A548 Water Street junction in Table 8.32 and graphically on Figure 8.5 and Figure 8.6 respectively.

Table 8.32: Peak and average queue lengths at A547 Market Street/A548 Water Street junction

	Average queue length (vehicles)			Peak queue length (vehicles)		
	Arm A A548 Water Street	Arm C A547 Market Street west	Arm C A547 Market Street east	Arm A A548 Water Street	Arm C A547 Market Street west	Arm C A547 Market Street east
July 2023	3.31	10.31	2.28	7	40	8
August 2023	6.83	12.37	2.47	18	49	8

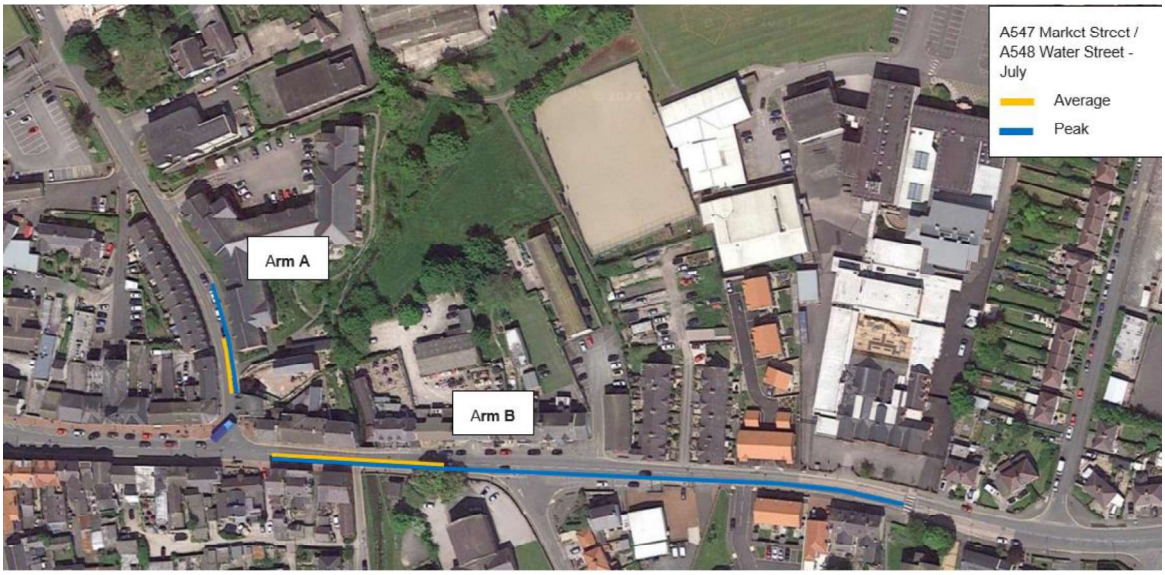

Figure 8.5: Peak and average queue lengths at A547 Market Street/A548 Water Street junction in July 2023.

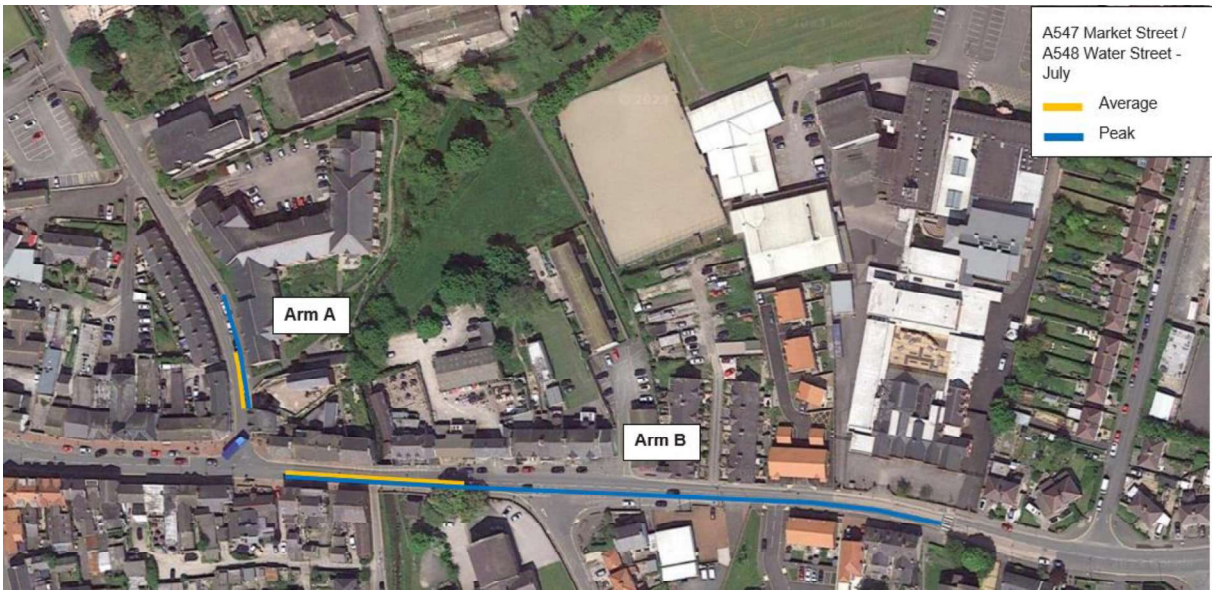

Figure 8.6: Peak and average queue lengths at A547 Market Street / A548 Water Street junction in August 2023.

8.9.3.46 The average observed queue lengths throughout the day are considered to be typical of what would normally occur at signalised junctions. As can be seen, the extent of the peak observed queue lengths extend over a far longer distance, which is a result of a higher demand during the peak hours.

8.9.3.47 It should be noted that traffic signal controlled junctions provide higher capacities than priority controlled junctions. However, due to the nature of providing alternate green signals to opposing traffic flows, there is a subsequent build up of queues that form. However, the overall driver delay experienced through the junction would be lower than that of priority controlled junctions due to their lower capacities.

8.9.3.48 It is therefore normal for queues to be experienced at signalised junctions and the queues observed in the surveys are quite typical of what may be expected at a signalised junction where there is queuing throughout the day (but less driver delay in comparison to a priority controlled junction) with peak queuing occurring during periods of peak demand (the peak hours).

Studies on Abergele traffic flows

8.9.3.49 To further consider the A547/A548 signalised staggered crossroads junction, documentation from a consented planning application for 73 dwellings at Land off Llanfair Road, Abergele (CCBC reference: 0/45297) has been reviewed along with recent studies undertaken on behalf of CCBC.

8.9.3.50 In 2018, CCBC commissioned two traffic capacity studies of Abergele ('Abergele Traffic Signals: Assessment of Existing Traffic Signal Controlled Junctions', January 2018, and 'Abergele Traffic Signals: Options Assessment Report', October 2018), only the latter of which is publicly available (a redacted version), and which formed part of the planning application documentation for Land off Llanfair Road, Abergele (CCBC reference: 0/45297).

8.9.3.51 Combined with the highway related documents and CCBC Highway Officer comments from the Land off Llanfair Road planning application, the following has been deduced:

- The A547/A548 signalised junctions operate close to or at practical capacity during the AM and PM peak hours
- Changes to the traffic signal controller and optimisation of the traffic signal stages and timings has been made over recent years and CCBC consider that the traffic signals are operating as efficiently as is possible
- The Land off Llanfair Road proposal was predicted to generate 44 total vehicle movements through the A547/A548 signalised junctions during the peak hours (i.e. up to 44 vehicle arrivals and departures per hour)
- CCBC described this level of movement as 'modest' and stated that there were no highway planning grounds on which to refuse the application (i.e. there would be no material changes to the performance of the junction or to driver delay)
- CCBCs highways response stated:

'Due to the modest traffic levels that will be generated by the proposed development peak hour (average) which will use the traffic signals, there are no highway planning grounds to refuse this planning application as submitted with revisions'. (CCBC, Highways Response, 2019)

- CCBC did not raise any highway related objections to the planning application and planning consent was granted.

8.9.3.52 Noting that 44 vehicle movements during the peak hours generated by Land off Llanfair Road proposal (assumed to be all cars) was deemed acceptable to CCBC and would not result in any material changes to the performance of the junction or to driver delay, for context, in traffic modelling terms, this is equivalent to 15 HGV movements per hour. This is similar to that of the construction traffic generated by the Mona Offshore Wind Project which would be in the order of six HGV movements during an average peak hour.

8.9.3.53 Based upon the above, CCBC acknowledge that a modest number of new vehicle movements generated through the A547 / A548 signalised junctions is not a highways related reason for objecting to development proposals as it would not result in any material changes to the performance of the junction or to driver delay.

8.9.3.54 This is broadly consistent with comments from the CCBC Highways Officer during discussions on construction HGVs in June 2023, as set out in Table 8.6, whereby although they stated the route was 'busy', they did not raise any objections.

Impact of Mona Offshore Wind Project through Abergele

8.9.3.55 The conditions of Abergele highlighted by the queue length and traffic surveys results highlighted above are the same as the conditions assessed as part of the planning application documentation for Land off Llanfair Road, Abergele (CCBC reference: 0/45297) and the same conditions presented in the CCBCs 2018 traffic capacity studies.

8.9.3.56 The same conditions highlighted in the Land off Llanfair planning application in Abergele are expected during the construction of the Mona Offshore Wind Project. Therefore, if CCBC considered a 'modest' increase of 44 vehicle movements during the peak hours with these conditions would not result in any material changes to the performance of the junction or to driver delay then a similarly 'modest' increase in construction vehicles generated by the Mona Offshore Wind Project would be acceptable.

8.9.3.57 It should also be noted that the Land off Llanfair planning application was considered on the basis of there being a permanent increase in vehicle movements during the peak hours whereas that generated by the Mona Offshore Wind Project would only be temporary.

8.9.3.58 It has also been noted that no concerns were presented by CCBC relating to the A547/A548 signalised junctions in their responses to the PEIR (Table 8.6).

8.9.3.59 In terms of Abergele, the impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be **low**.

Potential driver delay caused by temporary traffic signals at accesses

8.9.3.60 As set out in the OHAMP (Document Reference J26.16), temporary traffic signals may be adopted as part of temporary traffic management at TCC 1 on the A547 Abergele Road and at TCC 5 on the B5381 Roman Road. The details of the temporary traffic signals are presented within the OHAMP (Document Reference J26.16) which will be secured as part of the CoCP requirement of the draft DCO. The access designs including the proposed use of the signals will be discussed and agreed with the relevant highway authority.

8.9.3.61 The use of temporary traffic signals as proposed management associated with the Mona Offshore Wind Project may have an impact on driver delay depending on the levels of traffic flows along the LRN where the temporary signals are proposed.

8.9.3.62 It is expected that temporary traffic signals would be provided in both directions along the A547 Abergele Road and another temporary traffic signal would be provided on the access road to TCC 1 to provide three-way operation. A similar arrangement is expected to be provided on the B5381 Roman Road at TCC 5.

8.9.3.63 The Traffic Signs Manual Chapter 8 Part 01 discusses levels of traffic flows that can cause delays when temporary traffic signals are used for works. Paragraph D5.1.6 states:

'On roads where flows are very high, overload of the controlled area is possible and exceptional delays may result. This can occur with two-way flows as low as 1300 vehicles per hour (for sites about 50 m long) and with a one-way flow of 900 vehicles per hour (for longer sites with balanced flows) with signal control'.

8.9.3.64 Analysis of ATC data along the A547 Abergele Road shows that the hourly traffic flows along it are well within these. The two-way traffic flows are shown in Table 8.31 and show that two-way traffic flows are a maximum of 583 vehicle movements per hour, well within the 1,300 vehicle movements per hour whereby exceptional delay may result.

8.9.3.65 An analysis of ATC data along the B5381 Roman Road shows that the hourly traffic flows along it are also well within these. These are also shown in Table 8.31 where two-way traffic flows are a maximum of 156 vehicle movements per hour, significantly within the 1,300 vehicle movements per hour whereby exceptional delay may result.

8.9.3.66 These guidelines are more applicable for shuttle working road works where a junction is not involved however the traffic flows are considerably below the guidelines and it is considered that significant delay to drivers on the A547 Abergele Road or the B5381 Roman Road would not result.

8.9.3.67 Using junction surveys completed within Abergele within the months July and August 2023 to determine any seasonal variation as a result of tourism on the A547 Abergele

Road, it has been concluded that any increased tourist vehicle movements would not have a significant impact on the operation of portable traffic signals through this area.

Table 8.31: Two-way traffic flows along the A547 Abergele Road and B5381 Roman Road

Hour Beginning	A547 Abergele Road	B5381 Roman Road
00:00	19	5
01:00	9	3
02:00	4	1
03:00	5	1
04:00	6	4
05:00	22	12
06:00	66	29
07:00	223	88
08:00	409	131
09:00	398	111
10:00	446	109
11:00	514	123
12:00	527	120
13:00	510	121
14:00	538	111
15:00	559	130
16:00	583	156
17:00	558	150
18:00	379	96
19:00	276	63
20:00	205	35
21:00	142	29
22:00	90	17
23:00	41	8

8.9.3.68 In terms of temporary traffic signals at accesses, the impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be negligible (on the B5381 Roman Road) to low (on the A547 Abergele Road).

Sensitivity of the receptor

8.9.3.69 Table 8.25 and Table 8.26 above have highlighted that the key junctions within the traffic and transport study have low peak hour traffic flows, do not suffer from any material congestion and are therefore not particularly sensitive to changes in traffic flows This is reaffirmed as the highway authorities have not indicated any specific junctions or locations that need to be considered as part of the traffic impact of the traffic impact assessment. These key junctions within the traffic and transport study

are deemed to be of low vulnerability, high recoverability, and low value. The sensitivity of the receptor is therefore, considered to be **negligible**.

8.9.3.70 The access route used by the AILs would necessarily be of a good standard to accommodate the transport delivery vehicles. Any driver delay that may be incurred as a result of the movement of AILs would not necessarily be a static delay, would be an irregular and infrequent delay and only at the times in which AILs are on the network. The links to be used by AILs are deemed to be of negligible to medium vulnerability, high recoverability, and low to high value. The sensitivity of the receptor is therefore, considered to be low.

8.9.3.71 Abergele is highlighted by CCBC to be 'busy' and the cause of this has been traced to the A547/A548 signalised junctions. These junctions are deemed to be of high vulnerability, high recoverability, and high value. The sensitivity of the receptor is therefore, considered to be **high**.

8.9.3.72 With regards to the use of temporary traffic signals on the A547 Abergele Road and on the B5381 Roman Road, these links are deemed to be of low vulnerability, high recoverability, and low value. The sensitivity of the receptor is therefore, considered to be **low**.

Significance of the effect

8.9.3.73 Overall:

- For the key junctions within the traffic and transport study area, the magnitude of impact is deemed to be **negligible**, and the sensitivity of the receptor is considered to be **negligible**. The effect will, therefore, be of **negligible adverse** significance, which is not significant in EIA terms
- For the movement of AILs within the traffic and transport study area, the magnitude of impact is deemed to be **negligible**, and the sensitivity of the receptor is considered to be **low**. The effect will, therefore, be of **negligible adverse** significance, which is not significant in EIA terms
- For Abergele, the magnitude of impact is deemed to be **low,** and the sensitivity of the receptor is considered to be **high**. The effect will, therefore, be of **minor adverse** significance, which is not significant in EIA terms
- For the use of temporary traffic signals on the A547 Abergele Road and on the B5381 Roman Road the magnitude of impact is deemed to be **negligible to low,** and the sensitivity of the receptor is considered to be **low**. The effect will, therefore, be of **negligible to minor adverse** significance, which is not significant in EIA terms.

8.9.4 The impact on pedestrian delay (incorporating delay to all non-motorised users) caused by construction works or construction traffic

8.9.4.1 The IEMA guidelines sets out that the assessment of pedestrian delay serves as a proxy for the delay that other modes of non-motorised users may experience when crossing roads.

8.9.4.2 Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend upon the general level of pedestrian and non-motorised user activity, visibility and general physical conditions.

8.9.4.3 Given the range of local factors and conditions that can influence pedestrian and non-motorised user delay, for example, a discrete delay may have a lesser impact in an urban environment than a rural setting, the IEMA guidelines do not set out definitive thresholds against which to assess pedestrian and non-motorised user delay. The IEMA guidelines recommends that the competent traffic and movement expert uses judgement to determine whether any changes in pedestrian and non-motorised user delay may be significant.

8.9.4.4 The previous IEMA guidance document which the IEMA guidelines replaced (Guidelines for the Environmental Assessment of Road Traffic, IEMA, 1993) set out that pedestrian delay is perceptible or considered significant beyond a delay threshold of 10 seconds, for a link with no crossing facilities. It goes on to say that a 10 second pedestrian delay in crossing a road broadly equates to a two-way link flow of approximately 1,400 vehicle movements per hour. This means that where two-way traffic flows on a road exceed 1,400 vehicle movements per hour, then a pedestrian seeking to cross that road would perceive a delay.

8.9.4.5 Although this guidance has been superseded, it does provide a useful guide to assist when considering whether any changes in pedestrian and non-motorised user delay may be significant.

Magnitude of impact

8.9.4.6 To consider the potential for pedestrian delay to occur on the four highway links, the maximum peak hour base traffic flows on each has been set out and summarised in Table 8.32 below along with those with the addition of construction traffic flows.

Table 8.31: Summary of peak hourly traffic flows to consider pedestrian (incorporating non-motorised users) delay

	2026 Baseline traffic flow (peak hourly)	Baseline traffic flow with construction (peak hourly)
Links 18c and 19: B5381 Roman Road / Glascoed Road between TCC 5 and Ffordd William Morgan	187	246
Links 21 and 22: Ffordd William Morgan	908	1,009

8.9.4.7 As can be seen, the peak base hourly traffic flows on the four links are very low and are far lower than the 1,400 vehicle movements per hour whereby pedestrian (incorporating non-motorised users) delay may be perceptible. This would remain so with the addition of the construction traffic flows.

8.9.4.8 The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **negligible**.

Sensitivity of the receptor

8.9.4.9 The two links along the B5381 Roman Road/Glascoed Road (link 18c and link 19) have few surrounding dwellings along their lengths and generators of pedestrian (and non-motorised user) demand are particularly focused towards the eastern extent of link 19. There are few locations where there are footways or any non-motorised user facilities and the non-motorised user crossing demand is limited.

8.9.4.10 These two links (link 18c and link 19) are deemed to be of negligible vulnerability, high recoverability, and negligible value. The sensitivity of the receptor is therefore considered to be **negligible**.

8.9.4.11 The two links through St Asaph business park (link 21 and link 22) have commercial units along both sides of their lengths with a shared footway/cycleway on its western side, footway on its eastern side and dropped kerb crossings at locations of crossing desire lines. From a non-motorised user perspective, there are few surrounding areas that would generate high levels of demand along the links whilst some demand is also created from those travelling to / from bus stops. Overall, non-motorised user crossing demand is low.

8.9.4.12 These two links (link 21 and link 22) are deemed to be of low vulnerability, high recoverability, and low value. The sensitivity of the receptor is therefore considered to be **low**.

Significance of the effect

8.9.4.13 Overall, for the four highway links, the magnitude of the impact is deemed to be **negligible,** and the sensitivity of the receptor is considered to be **negligible to low**. The effect will, therefore, be of **negligible adverse** significance which is not significant in EIA terms.

8.9.5 The impact on non-motorised user amenity and fear and intimidation caused by construction works or construction traffic

8.9.5.1 The term non-motorised user amenity is broadly defined as the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and footway width/separation from traffic. This definition also includes fear and intimidation.

8.9.5.2 The IEMA guidelines refers to a tentative threshold for judging the significance of changes in non-motorised user amenity where the traffic flow (or its HGV component) is halved or doubled.

8.9.5.3 The IEMA guidelines sets out that fear and intimidation from traffic, in terms of vehicular criteria, encompasses total traffic movements, HGV movements and vehicle speeds. It assigns a 'degree of hazard' score to each of these from which a total degree of hazard score is calculated and from which impacts can then be determined. This is calculated using the criteria set out in the IEMA guidelines, which is replicated in Table 8.33 below.

Table 8.33: Degree of hazard score criteria.

Average traffic flow over 18 hour day (vehicles/hour) (a)	Total 18 hour heavy goods vehicle flow (b)	Average vehicle speed (c)	Degree of hazard score
1,800 +	3,000 +	>40	30
1,200–1,800	2,000–3,000	30-40	20
600–1,200	1,000–2,000	20-30	10
<600	<1,000	<20	0

8.9.5.4 A 'total hazard score' is then calculated for each link for traffic flow scenarios. Table 3.2 of the IEMA guidelines provides an example of the total hazard score calculation to identify a level of fear and intimidation and is replicated in Table 8.34 below.

Table 8.34: Total hazard score and level of fear and intimidation calculation.

Level of fear and intimidation	Total hazard score (a) + (b) + (c)
Extreme	71+
Great	41-70
Moderate	21-40
Small	0-20

Magnitude of impact

8.9.5.5 With regards to pedestrian and non-motorised user amenity and the tentative threshold where the traffic flow (or its HGV component) is halved or doubled, Table 8.23 sets out that the maximum increase in total daily vehicle movements and in HGVs as a result of construction on the four links would be 17% (on link 18c) and 52% (on link21) respectively. Therefore, in accordance with the IEMA guidelines, this on its own would not result in any significant impact upon pedestrian or non-motorised amenity.

8.9.5.6 In regards to fear and intimidation Table 8.35 and Table 8.36 calculate the level of fear and intimidation for the baseline and the baseline plus construction scenarios. Table 8.37 then calculates the magnitude of impact upon fear and intimidation.

Table 8.35: Level of fear and intimation (baseline traffic flows).

Link	Average traffic flow over 18-hour day – all vehicles/hour	Total 18-hour HV flow	Average vehicle speed	Total hazard score	Level of fear and intimidation
18c	99	291	30-40	20	Small
19	101	242	30-40	20	Small
21	228	420	20-30	10	Small
22	354	531	20-30	10	Small

Table 8.36: Level of fear and intimation (baseline plus construction traffic flows).

Link	Average traffic flow over 18-hour day – all vehicles/hour	Total 18-hour HV flow	Average vehicle speed	Total hazard score	Level of fear and intimidation
18c	115	392	30-40	20	Small
19	115	342	30-40	20	Small
21	258	637	20-30	10	Small
22	384	748	20-30	10	Small

Table 8.37: Magnitude of impact upon fear and intimidation.

Link	Level of fear and intimidation – baseline	Level of fear and intimidation – baseline plus construction	Step change	Magnitude of impact
18c	Small	Small	No change	Negligible
19	Small	Small	No change	Negligible
21	Small	Small	No change	Negligible
22	Small	Small	No change	Negligible

8.9.5.7 The impacts are predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impacts will affect the receptor directly. The magnitude is therefore, considered to be **negligible**.

Sensitivity of the receptor

8.9.5.8 The two links along the B5381 Roman Road/Glascoed Road (link 18c and link 19) have few surrounding dwellings along their lengths and generators of pedestrian (and non-motorised user) demand are particularly focused towards the eastern extent of link 19. There a few locations where there are footways or any non-motorised user facilities and the non-motorised user demand is limited.

8.9.5.9 These two links (link 18c and link 19) are deemed to be of negligible vulnerability, high recoverability, and negligible value. The sensitivity of the receptor is therefore considered to be **negligible**.

8.9.5.10 The two links through St Asaph business park (link 21 and link 22) have commercial units along both sides of their lengths with a shared footway / cycleway on its western side, footway on its eastern side and dropped kerb crossings at locations of crossing desire lines. From a non-motorised user perspective, there are few surrounding areas that would generate high levels of demand along the links whilst some demand is also created from those travelling to / from bus stops. Overall, non-motorised user demand is low.

8.9.5.11 These two links (link 21 and link 22) are deemed to be of low vulnerability, high recoverability, and low value. The sensitivity of the receptor is therefore considered to be **low**.

Significance of the effect

8.9.5.12 Overall, the magnitude of the impact is deemed to be **negligible,** and the sensitivity of the receptor is considered to be **negligible to low**. The effect will, therefore, be of **negligible adverse** significance which is not significant in EIA terms.

8.9.6 The impact on severance caused by construction works or construction traffic

8.9.6.1 Severance is only likely to occur on highly trafficked roads and result from the perceived division the road and traffic creates between communities on either side.

8.9.6.2 The IEMA guidelines sets out that increases in total traffic flows of between 30 % and 60 % could result in a slight impact (the lowest category) upon severance.

Magnitude of impact

8.9.6.3 The change in total traffic flow as a result of the construction traffic on the four links are all significantly lower than the 30% that the IEMA guidelines sets out is required for a slight effect (the lowest category) to occur. Table 8.23 sets out that the maximum increase in total daily vehicle movements as a result of construction on the four links would be 17% (on link 18c).

8.9.6.4 The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be **negligible**.

Sensitivity of the receptor

8.9.6.5 The two links along the B5381 (link 18c and link 19) have few surrounding dwellings / farms and these are generally spread far apart from one-another with a rural feel to them. These two links are deemed to be of negligible vulnerability, high recoverability and negligible value. The sensitivity of the receptor is therefore considered to be **negligible**.

8.9.6.6 Links 21 and 22 form the estate road through St Asaph business park where there are a number of commercial units set back from both sides of the road with trees screening the majority of those on the western side. The commercial units are individual to one-another and are accessed from a number of access roads that form junctions onto the estate road. These two links are deemed to be of low vulnerability, high recoverability and low value. The sensitivity of the receptor is therefore considered to be **low**.

Significance of the effect

8.9.6.7 Overall, the magnitude of the impact is deemed to be **negligible,** and the sensitivity of the receptor is considered to be **negligible to low**. The effect will, therefore, be of **negligible adverse** significance which is not significant in EIA terms.

8.9.7 The impact of construction traffic on road safety

8.9.7.1 It is possible to estimate the impact of increased traffic on road safety from existing injury accident records, national statistics and the type and quantity of traffic generated. The assessment of the baseline environment in relation to road safety is set out in Section 8.5.5 of this chapter and Volume 7, Annex 8.3 Personal injury accident locations of the Environmental Statement.

8.9.7.2 The IEMA rule 1 and rule 2 thresholds which delimit the extent of EIA do not on their own apply to this impact as this relates to the consideration of road safety along a highway and the impact upon this which is defined by the TA. Generally, a potential impact upon road safety may result at locations where there is an existing road safety issue or where proposals may create a road safety issue.

8.9.7.3 The IEMA rule 1 and rule 2 thresholds are therefore not applied to this potential impact to delimit the extent of assessment and the extent of assessment is considered across the whole traffic and transport study area, from which key locations for assessment are identified from an analysis of PIAs and advice from highway authorities.

8.9.7.4 In order to determine key locations within the traffic and transport study area for assessment within this chapter, section 8.5.5 and Volume 7, Annex 8.3: Personal injury accident locations of the Environmental Statement analyse PIAs and the relevant highway authorities have been consulted. As set out in Table 8.6, the highway authorities have not advised of any particular locations of interest within the traffic and transport study area.

8.9.7.5 Analysis of PIA data is set out in section 8.5.5 and Volume 7, Annex 8.3 Personal injury accident locations of the Environmental Statement and highlights any links within the traffic and transport study area with PIA rates higher than the national average and any clusters of injury accidents.

8.9.7.6 The analysis undertaken determined that there were no common contributory factors amongst the PIAs on highway links within the traffic and transport study area that had injury accident rates 25% higher than the national average and there were no clusters of injury accidents within the traffic and transport study area. The conclusion of this assessment was that there are no road safety issues within the traffic and transport study area.

8.9.7.7 The construction vehicles would not result in significant increases in traffic or the composition of traffic and would not alter the injury accident rates by any noticeable amount.

8.9.7.8 The construction HGVs would all be routeing through the traffic and transport study area under strict traffic management control via the CTMP (Document Reference

J26.13), and warning signage will be used where relevant (for example at access junctions) to alert other drivers of the construction traffic.

8.9.7.9 The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **low**.

Sensitivity of the receptor

8.9.7.10 An analysis of road safety identified that there are no road safety issues within the traffic and transport study area.

8.9.7.11 In terms of road safety, the links throughout the traffic and transport study area are deemed to be of low vulnerability, highly recoverability and low to high value. The sensitivity of the receptor is therefore considered to be **negligible to low**.

Significance of the effect

8.9.7.12 Overall, it is predicted that the sensitivity of the receptor is considered to be **negligible to low,** and the magnitude is deemed to be **low**. The effect will, therefore, be of **negligible to minor adverse** significance, which is not significant in EIA terms.

8.9.8 The impact of AILs on the safety of users of the LRN, SRN and other transport receptors

Magnitude of impact

8.9.8.1 The AILs are expected to be components that exceed standard load weight and possibly exceed standard width and length.

8.9.8.2 It is expected that some larger AILs would transport transformers to the Onshore Substation. In addition, smaller AILs will also need access for cable drum deliveries to several points along the Onshore Cable Corridor.

8.9.8.3 Depending on the width, length or weight of the laden vehicle, different notice periods have to be provided to highway authorities, bridge authorities and the police. These can vary between two and five days. The following activities would need to be undertaken in accordance with the Road Vehicles (Authorisation of Special Types) Order 2003 (STGO):

- Before the start of any journey, notify in accordance with Schedule 5 the chief office of police for each area in which the vehicle or vehicle-combination is to be used
- Ensure that the vehicle or vehicle-combination is used in accordance with the requirements of that Schedule
- Ensure that the vehicle or vehicle-combination is accompanied during the journey by one or more attendants employed in accordance with Schedule 6.

8.9.8.4 There would be in the order of approximately 240 cable drum deliveries over the 33 month construction period, equating to approximately one delivery on average per week over that period and there would be up to four transformer deliveries.

8.9.8.5 Each load would be present on the network for a short period of time and standard measures (including traffic management measures) would be applied in accordance with the notification set out in paragraph 8.5.1.2 above and the heavy haulage company's insurance requirements in terms of route, timing and method of delivering to minimise delays to other highway users. The police will be notified of all AIL movements they will give prior notification to the locality via local newspapers/radio etc

so that other users have advance notification and can avoid or re-time their journeys so as to negate any impact.

8.9.8.6 Some AILs would also be under escort, as directed by the local police authority or as voluntary provided by the haulage contractor, with those delivering transformers being under police escort. Escorts would not only control the AILs but would also interact with other road users to control, guide and protect them accordingly so as to safeguard their safe and expedient passage. This includes not just other vehicles but also non-motorised users and those who simply wish to watch / observe the movement of the AILs transporting the larger transformers from the roadside.

8.9.8.7 Based upon the above, the impact is predicted to be of local spatial extent, short term duration, intermittent and highly reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be **negligible**.

Sensitivity of the receptor

8.9.8.8 The access route used by the AILs would necessarily be of a good standard to accommodate the transport delivery vehicles.

8.9.8.9 Any restrictions would also necessarily be removed to accommodate the transport delivery vehicles and they would travel under controlled environments.

8.9.8.10 Given the controlled environment, the road users are deemed to be of negligible vulnerability, high recoverability and low to high value. The sensitivity of the receptor is therefore, considered to be **low.**

Significance of the effect

8.9.8.11 Overall, it is predicted that the magnitude is deemed to be **negligible,** and the sensitivity of the receptor is considered to be **low**. The effect will, therefore, be of **negligible adverse** significance, which is not significant in EIA terms.

8.10 Cumulative effects assessment methodology

8.10.1 Methodology

8.10.1.1 The Cumulative Effects Assessment (CEA) takes into account the impact associated with the Mona Offshore Wind Project together with other projects and plans. The projects and plans selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise (see Volume 5, Annex 5.1: Cumulative Effects Assessment screening matrix). Each project has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

8.10.1.2 The traffic and transport CEA methodology has generally followed the methodology set out in Volume 1, Chapter 5: EIA methodology of the Environmental Statement. Whilst the cumulative projects considered for traffic and transport are grouped into different tiers these have been assessed as one cumulative impact. As set out in Table 8.39 below the maximum design scenario is greatest when the greatest number of schemes are considered.

8.10.1.3 As Awel y Môr has had consent granted this should be assessed as part of the committed developments however due to the close proximity of Awel y Môr to Mona Offshore Wind Farm and the use of routes the same as Mona Offshore Wind Farm this project has been considered alongside the other cumulative developments to ensure a robust development.

8.10.1.4 The specific projects, plans and activities scoped into the CEA, are outlined in Table 8.38.

Table 8.38: List of other projects, plans and activities considered within the CEA.

Project / Plan	Status	Distance from the Onshore Cable Corridor (km)	Distance from the Mona Onshore Substation (km)	Description of project / plan
Tier 1				
Awel y Môr Offshore Wind Farm (Onshore infrastructure)	Determined	0.00	0.1	Capacity of 500 MW. Construction to commence 2026, commissioned by 2030. (As Awel y Môr has had consent granted, from a TA perspective, this should be considered as a committed development and form part of the baseline scenario, however due to the close proximity and overlapping of the traffic and transport study areas of Awel y Môr and Mona Offshore Wind Farm and the shared use of some construction vehicle access routes, Awel y Môr has been considered alongside the other cumulative developments to ensure a robust assessment.)
Tier 3				
St. Asaph Solar Farm	Pre-application	0	0.87	A proposed solar farm with a potential generating capacity of between 10MW and 350MW.
NGET 31/2023/0525	Pre-application	0.03	0.41	Extension to the existing Bodelwyddan electricity substation (EIA Screening Opinion request).
NGET	Pre-application	0.03	0.41	Application under Section 37 of the Electricity Act 1989 for the installation of new overhead lines required to facilitate extension to the existing Bodelwyddan electricity substation (31/2023/0525).
NGET	Pre-application	0.03	0.41	Permitted development comprising extension to Gas Insulated Substation (GIS) hall required to facilitate extension to the existing Bodelwyddan electricity substation (31/2023/0525).

8.10.2 Maximum design scenario

8.10.2.1 The MDS identified in Table 8.39 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. The cumulative effects presented and assessed in this section have been selected from the Project Design Envelope provided in Volume 1, Chapter 5: Project Description of the Environmental Statement as well as the information available on other projects and plans, in order to inform the MDS. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g. different turbine layout), to that assessed here, be taken forward in the final design scheme.

8.10.2.2 The CEA has considered the Mona Offshore Wind Project, alongside the National Grid Bodelwyddan substation extension proposal. The CEA has been undertaken on the basis of the latest available information in the public domain, which is the Autumn 2023 consultation material. It is understood that the application for the proposal is imminent. If further information is available for the proposal before the Mona Offshore Wind Project receives Development Consent, the Applicant will provide an update to the cumulative assessment presented within this chapter.

8.10.2.3 The MARES Connect project is proposing to submit a planning application in 2024 for an interconnector cable, landfall and onshore substation with connection to the National Grid. The project has identified several landfall zones and zones for its onshore substation and there is the potential for overlap with the Mona Onshore Development Area. The CEA has not considered the Mona Offshore Wind Project, alongside the MARES Connect project as insufficient information was publicly available prior to the Mona Offshore Wind Project DCO submission (see Volume 1, Chapter 3: Environmental Impact Assessment Methodology of the Environmental Statement). However, if further information becomes available for the proposal before the Mona Offshore Wind Project receives Development Consent, the Applicant will review the information and provide any update needed to the CEA.

Table 8.39: MDS considered for the assessment of potential cumulative effects on traffic and transport.

[a] C=construction, O=operations and maintenance, D=decommissioning

Potential cumulative effect	Phase[a]			Maximum Design Scenario	Justification
	C	O	D		
Construction Phase					
The impact on driver and pedestrian delay/pedestrian amenity (incorporating non-motorised users) caused by construction works or construction traffic using the LRN and SRN	✓	×	×	Inclusion of all relevant identified cumulative schemes **Tier 3** • St. Asaph Solar Farm • Major Development: 31/2023/0525 • Awel y Môr Offshore Wind Farm (for the reasons set out in Table 8.37, this is considered cumulatively to ensure a robust assessment, albeit noting that from a TA perspective, this should normally be considered as a committed development and form part of the baseline scenario. Table 8.37 sets out Awel y Môr as Tier 1, however, for TA purposes, to create a MDS with maximised cumulative traffic flows, all cumulative development is considered together and thus, for the reasons above, Awel y Môr is considered together with the other cumulative developments, which in this instance are all Tier 3.)	Outcome of the CEA will be greatest when the greatest number of other relevant identified schemes are considered.
The impact on community severance caused by construction works or construction traffic using the LRN and SRN and the disruption of other transport receptors	✓	×	×		
The impact of temporary delays to public transport services caused by construction of the onshore transmission assets	✓	×	×		
The impact of construction traffic on road safety for users of the LRN, SRN and other transport receptors	✓	×	×		
The impact of AILs on the safety of users of the LRN, SRN and other transport receptors	✓	×	×		

8.10.2.4 The CEA has considered the Mona Offshore Wind Project, alongside the National Grid Bodelwyddan substation extension proposal. The CEA has been undertaken on the basis of the latest available information in the public domain, which is the Autumn 2023 consultation material. It is understood that the application for the proposal is imminent. If further information is available for the proposal before the Mona Offshore Wind Project receives Development Consent, the Applicant will provide an update to the cumulative assessment presented within this chapter.

8.10.2.5 Major Development 31/2023/0525 involves the extension to the existing Bodelwyddan National Grid Substation, there are two associated development applications in relation this extension including the installation of overhead lines for facilitating the extension and the extension to the GIS hall also to facilitate the extension. These three associated applications have been grouped as one to create the MDS.

8.11 Cumulative effects assessment

8.11.1 Overview

8.11.1.1 The estimated traffic generation from the cumulative developments have been taken from their respective transport document submissions and are replicated in Volume 7, Annex 8.6: Traffic flows with construction traffic of the Environmental Statement.

8.11.1.2 A description of the potential cumulative effect on traffic and transport receptors caused by each identified impact is given below.

8.11.2 Screening for Assessment of Transport Cumulative Environmental Impacts

8.11.2.1 In accordance with the IEMA guidelines, the peak daily construction vehicle movements generated by the Mona Offshore Wind Project are assessed against the baseline traffic flows in Table 8.40.

Table 8.40: Impact of Mona Offshore Wind Project Daily Construction Traffic Flows.

Link	Baseline traffic flows		Cumulative traffic flows		% Increase	
	Total Vehicles	HGVs	Total Vehicles	HGVs	Total Vehicles	HGVs
Link 1: A55 between Junctions 27 and 27A	53,774	2,467	1,027	458	2%	19%
Link 2: A55 between Junctions 27 and 26	47,854	2,457	1,019	450	2%	18%
Link 3: A55 between Junctions 26 and 25	47,854	2,457	755	285	2%	12%
Link 4: A55 between Junctions 25 and 24A	47,854	2,457	784	285	2%	12%

Link	Baseline traffic flows			Cumulative traffic flows	% Increase	
Link 5: A55 between Junctions 24A and 24	47,854	2,457	784	285	2%	12%
Link 6: A55 between Junctions 24 and 23A	56,720	2,236	562	285	1%	13%
Link 7: A55 between Junctions 23A and 23	71,493	2,551	562	285	1%	11%
Link 8: A547 through Llanddulas	8,593	772	326	115	4%	15%
Link 9a: A547 between Rhyd-Y-Foel and TCC 1	6,998	830	326	115	5%	14%
Link 9b: A547 between TCC 1 and Busnes Gogledd Cymru	6,998	830	273	48	4%	6%
Link 10: A547 between Parc Busnes Gogledd Cymru and A548 Chapel Street	9,460	857	273	48	3%	6%
Link 11: A547 between A548 Chapel Street and A55	6,131	672	320	48	5%	7%
Link 12: A548 Chapel Street between A547 and Lon Dirion	9,241	995	336	95	4%	10%
Link 13: A548 Chapel Street between Lon Dirion and Abergele Hospital	4,088	842	336	95	8%	11%
Link 14: A548 Chapel Street between Abergele Hospital and B5381 Roman Road	2,983	470	336	95	11%	20%
Link 15: B5381 Roman Road between A548 and Moelfre	2,018	376	50	0	2%	0%
Link 16: B5381 Roman Road between Moelfre and Capel Carmel	1,590	229	50	0	3%	0%
Link 17: B5381 Roman Road between Capel Carmel and Roberts D a O	1,624	305	50	0	3%	0%
Link 18a: B5381 Roman Road between Roberts D a O and TCC 4	1,776	291	50	0	3%	0%

Link	Baseline traffic flows		Cumulative traffic flows		% Increase	
Link 18b: B5381 Roman Road between TCC 4 and TCC 5	1,776	291	123	37	7%	13%
Link 18c: B5381 Roman Road between TCC 5 and Engine Hill	1,776	291	297	101	17%	35%
Link 19: B5381 Glascoed Road between Engine Hill and Ffordd William Morgan	1,811	241	523	244	29%	101%
Link 20: B5381 Glascoed Road between Ffordd William Morgan and National Grid Substation Access	4,217	509	302	142	7%	28%
Link 21: Ffordd William Morgan between A55 and Carlton Court	4,111	420	880	383	21%	91%
Link 22: Ffordd William Morgan between Carlton Court and B5381 Glascoed Road	6,373	531	880	383	14%	72%
Link 23: Engine Hill between A55 and B5381 Glascoed Road	3,574	579	173	0	5%	0%

8.11.2.2 In terms of total vehicle movements, no links are predicted to exceed their respective rule 1 or rule 2 thresholds as defined in the IEMA guidelines and in section 8.6 of this chapter of the Environmental Statement.

8.11.2.3 In terms of HVs, Link 18c B5381 Roman Road between TCC 5 and Engine Hill (35%), Link 19 B5381 Glascoed Road between Engine Hill and Ffordd William Morgan (101%), Link 21 Ffordd William Morgan between A55 and Carlton Court (91%) and Link 22 Ffordd William Morgan between Carlton Court and B5381 Glascoed Road (72%) are predicted to exceed the rule 1 threshold.

8.11.2.4 It is noted that the cumulative vehicle movements on link 18c are the same as the construction vehicle movements that were assessed in section 8.9 of this chapter of the Environmental Statement. Therefore, the same impacts would result and there is no requirement for any further assessment.

8.11.2.5 Therefore, in accordance with the IEMA guidelines and section 8.6 of this chapter of the Environmental Statement, the three links of Link 19 B5381 Glascoed Road between Engine Hill and Ffordd William Morgan, Link 21 Ffordd William Morgan between A55 and Carlton Court and Link 22 Ffordd William Morgan between Carlton Court and B5381 Glascoed Road have been analysed as part of the CEA. These are summarised in Table 8.41: Highway links for transport CEA.

Table 8.41: Highway links for transport CEA.

Link	Sensitivity	Percentage change in daily traffic flows due to cumulative developments	
		Total vehicles	HGVs
Link 19: B5381 Glascoed Road between Engine Hill and Ffordd William Morgan	Negligible	29%	101%
Link 21: Ffordd William Morgan between A55 and Carlton Court	Low	21%	91%
Link 22: Ffordd William morgan between Carlton Court and B5381 Glascoed Road	Low	14%	72%

8.11.2.6 The similarity of the characteristics of links 21 with 22 (i.e. Ffordd William Morgan) in terms of local environs, street lighting, highway geometries, footway provision, environmental sensitivity/receptors, road users, base traffic flows and cumulative development traffic flows along each are noted. Given this, link 18c can be assessed together with link 19 and link 21 can be assessed together with link 22, save for those circumstances where they are considered individually, below.

8.11.2.7 In terms of the other links (all links save for links 18c, 19, 21 and 22), in accordance with the IEMA guidelines, these highway links are screened out of the CEA and therefore the effect along these will be of negligible adverse significance, which is not significant in EIA terms.

8.11.2.8 In terms of driver delay, road safety and AILs, in accordance with TAN18, the impacts upon each of these are assessed throughout the entire traffic and transport study area and not only those links set out in Table 8.41 above.

8.11.3 The impact on driver delay caused by construction works or cumulative development traffic (including temporary delays to public transport services)

8.11.3.1 The assessments on driver delay in section 8.9 of this chapter of the Environmental Statement consisted of key junctions within the traffic and transport study area, through Abergele, the passage of AILs and temporary traffic signals at accesses.

8.11.3.2 The assessment of driver delay also incorporates analysis as part of a TA where a review of the change in the operation of junctions or highway links during the weekday peak periods when the baseline traffic flows are at their highest.

8.11.3.3 Of these, only an assessment at key junctions is necessary for cumulative developments. This is because the cumulative traffic flows through Abergele are the same as the construction traffic flows, the movement of AILs would not be at the same time (as dictated by the Police, in part due to their resources and in part to spread such movements) and the temporary traffic signals at accesses are specific to the Mona Offshore Wind Project.

8.11.3.4 In terms of key junctions, the cumulative traffic flows through these are the same as the construction traffic flows with the exception of two; the A55 junction 26/Ffordd William Morgan roundabout and the B5381 Glascoed Road/Ffordd William Morgan roundabout.

8.11.3.5 It is therefore only necessary to undertake a CEA of driver delay at the A55 junction 26/Ffordd William Morgan roundabout and the B5381 Glascoed Road/Ffordd William Morgan roundabout.

8.11.3.6 For all other aspects of driver delay, the same impacts would result as those set out in section 8.9 of this chapter of the Environmental Statement and there is no requirement for any further assessment.

Magnitude of Impact

8.11.3.7 To consider the performance of the key junctions with the cumulative developments and the potential for any changes in driver delay as a result, the peak hour cumulative development traffic flows have been added to the peak hour baseline traffic flows, as set out in Table 8.42 below.

Table 8.42: Peak hour traffic flows with cumulative developments at key junctions within the traffic and transport study area.

	2026 Baseline AM peak hour flows	2026 Baseline PM peak hour flows	Baseline + cumulative development AM peak hour flows	Baseline + cumulative development PM peak hour flows
A55 junction 26 / Ffordd William Morgan roundabout	1,042	928	1,195	1,081
B5381 Glascoed Road / Ffordd William Morgan	720	708	873	861

8.11.3.8 Building upon the analyses in section 8.9.3 of this chapter of the Environmental Statement and using professional judgement based upon the form, layout and geometries of each of the junctions, the peak hour traffic flows with cumulative developments through the key junctions would remain very low and remain substantially lower than the level at which congestion could occur (and therefore the level at which drivers could experience delay).

8.11.3.9 The cumulative impact in terms of driver delay at key junctions within the traffic and transport study area is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be **negligible**.

Sensitivity of the receptor

8.11.3.10 Tables Table 8.25 and Table 8.26 above have highlighted that the key junctions within the traffic and transport study have low peak hour traffic flows, do not suffer from any material congestion and therefore are not particularly sensitive to changes in traffic flows. This is reaffirmed as the highway authorities have not indicated any specific junctions or locations that need to be considered as part of the traffic impact assessment. These key junctions within the traffic and transport study are deemed to be of low vulnerability, high recoverability, and low value. The sensitivity of the receptor is therefore, considered to be **negligible**.

Significance of the effect

8.11.3.11 Overall, the magnitude of the cumulative impact is deemed to be **negligible** and the sensitivity of the receptor is considered to be **negligible**. The cumulative effect will, therefore, be of **negligible adverse** significance, which is not significant in EIA terms.

8.11.4 The impact on pedestrian delay (incorporating delay to all non-motorised users) caused by construction works or cumulative development traffic

Magnitude of impact

8.11.4.1 To consider the potential for pedestrian delay to occur on the three highway links, the maximum peak hour base traffic flows on each has been set out and summarised in Table 8.43 below along with those with the addition of cumulative development traffic flows.

Table 8.43: Summary of peak hourly traffic flows to consider pedestrian (incorporating non-motorised users) delay.

	2026 Baseline traffic flow (peak hourly)	Baseline traffic flow with cumulative development (peak hourly)
Links 18c and 19: B5381 Roman Road / Glascoed Road between TCC 5 and Ffordd William Morgan	187	270
Links 21 and 22: Ffordd William Morgan	908	1,061

8.11.4.2 As can be seen, the peak base hourly traffic flows on the three links are very low and are far lower than the 1,400 vehicle movements per hour whereby pedestrian (incorporating non-motorised users) delay may be perceptible. This would remain so with the addition of the construction traffic flows.

8.11.4.3 The cumulative impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **negligible**.

Sensitivity of the receptor

8.11.4.4 Link 19, the B5381 Roman Road/Glascoed Road, has few surrounding dwellings along its length and generators of pedestrian (and non-motorised user) demand are particularly focused towards the eastern extent of link 19. There are few locations where there are footways or any non-motorised user facilities and the non-motorised user crossing demand is limited.

8.11.4.5 Link 19 is deemed to be of negligible vulnerability, high recoverability, and negligible value. The sensitivity of the receptor is therefore considered to be **negligible**.

8.11.4.6 The two links through St Asaph business park (link 21 and link 22) have commercial units along both sides of their lengths with a shared footway / cycleway on its western side, footway on its eastern side and dropped kerb crossings at locations of crossing desire lines. From a non-motorised user perspective, there are few surrounding areas that would generate high levels of demand along the links whilst some demand is also created from those travelling to / from bus stops. Overall, non-motorised user crossing demand is low.

8.11.4.7 These two links (link 21 and link 22) are deemed to be of low vulnerability, high recoverability, and low value. The sensitivity of the receptor is therefore considered to be **low**.

Significance of the effect

8.11.4.8 Overall, for the four highway links, the magnitude of the cumulative impact is deemed to be **negligible,** and the sensitivity of the receptor is considered to be **negligible to low**. The cumulative effect will, therefore, be of **negligible adverse** significance which is not significant in EIA terms.

8.11.5 The impact on non-motorised user amenity and fear and intimidation caused by construction works or cumulative development traffic

Magnitude of impact

8.11.5.1 With regards to pedestrian and non-motorised user amenity, and the tentative threshold where the traffic flows (or its HGV component) is halved or doubled, Table 8.41 sets out that the maximum increase in total daily vehicle movements as a result of cumulative developments on the three links would be 29% (link 19). In terms of HGVs, the increases on links 19, 21 and 22 would be 101%, 91% and 72% respectively.

8.11.5.2 The IEMA guidelines suggested a tentative threshold for judging the significance of changes in non-motorised user amenity where the traffic flow (or its HGV component) is halved or doubled, however, sets out a more detailed methodology to consider fear and intimidation encompassing total traffic movements, HGV movements and vehicle speeds together.

8.11.5.3 Table 8.44 calculates the level of fear and intimidation for the baseline plus cumulative development traffic flows and Table 8.45 then calculates the cumulative magnitude of impact upon fear and intimidation.

Table 8.44: Summary of peak hourly traffic flows to consider pedestrian (incorporating non-motorised users) delay.

Link	Average traffic flow over 18-hour day – all vehicles/hour	Total 18-hour HV flow	Average vehicle speed	Total hazard score	Level of fear and intimidation
19	130	485	30-40	20	Small
21	277	802	20-30	10	Small
22	403	913	20-30	10	Small

Table 8.45: Cumulative magnitude of impact upon fear and intimidation.

Link	Level of fear and intimidation – baseline	Level of fear and intimidation – baseline plus cumulative	Step change	Cumulative magnitude of impact
19	Small	Small	0	Negligible
21	Small	Small	0	Negligible
22	Small	Small	0	Negligible

8.11.5.4 Based upon the above, there is a doubling of HGV movements along link 19, which the IEMA guidelines suggests as a tentative threshold for judging the significance of an impact upon non-motorised user amenity. However, a more detailed analysis of fear and intimidation along 19 determines that the magnitude of impact would be negligible (and also for links 21 and 22).

8.11.5.5 In recognition of this, the cumulative impacts are predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impacts will affect the receptor directly. The magnitude is therefore, considered to be **negligible** (links 21 and 22) **to low** (link 19).

Sensitivity of the receptor

8.11.5.6 Link 19, the B5381 Roman Road / Glascoed Road, has few surrounding dwellings along its length and generators of pedestrian (and non-motorised user) demand are particularly focused towards the eastern extent of link 19. There are few locations where there are footways or any non-motorised user facilities and the non-motorised user demand is limited.

8.11.5.7 Link 19 is deemed to be of negligible vulnerability, high recoverability, and negligible value. The sensitivity of the receptor is therefore considered to be **negligible**.

8.11.5.8 The two links through St Asaph business park (link 21 and link 22) have commercial units along both sides of their lengths with a shared footway/cycleway on its western side, footway on its eastern side and dropped kerb crossings at locations of crossing desire lines. From a non-motorised user perspective, there are few surrounding areas that would generate high levels of demand along the links whilst some demand is also created from those travelling to / from bus stops. Overall, non-motorised user demand is low.

8.11.5.9 These two links (link 21 and link 22) are deemed to be of low vulnerability, high recoverability, and low value. The sensitivity of the receptor is therefore considered to be **low**.

Significance of the effect

8.11.5.10 Overall, the magnitude of the cumulative impact is deemed to be **negligible to low,** and the sensitivity of the receptor is considered to be **negligible to low**. The cumulative effect will, therefore, be of **negligible adverse** significance which is not significant in EIA terms.

8.11.6 The impact on severance caused by construction works or cumulative development traffic

Magnitude of impact

8.11.6.1 The change in total traffic flow as a result of the cumulative developments on the three links are all lower than the 30% that the IEMA guidelines sets out is required for a slight effect (the lowest category) to occur. Table 8.40 sets out that the maximum increase in total daily vehicle movements as a result of the cumulative developments on the three links would be 29% (on link 19).

8.11.6.2 The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be **negligible**.

Sensitivity of the receptor

8.11.6.3 Link 19, the B5381 Glascoed Road, has few surrounding dwellings / farms and these are generally spread far apart from one-another with a rural feel to them. This link is deemed to be of negligible vulnerability, high recoverability and negligible value. The sensitivity of the receptor is therefore considered to be **negligible**.

8.11.6.4 Links 21 and 22 form the estate road through St Asaph business park where there are a number of commercial units set back from both sides of the road with trees screening the majority of those on the western side. The commercial units are individual to one-another and are accessed from a number of access roads that form junctions onto the estate road. These two links are deemed to be of low vulnerability, high recoverability and low value. The sensitivity of the receptor is therefore considered to be **low**.

Significance of the effect

8.11.6.5 Overall, the magnitude of the cumulative impact is deemed to be **negligible** and the sensitivity of the receptor is considered to be **negligible to low**. The cumulative effect will, therefore, be of **negligible adverse** significance which is not significant in EIA terms.

8.11.7 The impact of cumulative development traffic on road safety

Magnitude of impact

8.11.7.1 Analysis of PIA data is set out in section 8.5.5 and Volume 7, Annex 8.3: Personal injury accident locations of the Environmental Statement and highlights any links within the traffic and transport study area with PIA rates higher than the national average and any clusters of injury accidents.

8.11.7.2 The analysis undertaken determined that there were no common contributory factors amongst the PIAs on highway links within the traffic and transport study area that had injury accident rates 25% higher than the national average and there were no clusters of injury accidents within the traffic and transport study area. The conclusion of this assessment was that there are no road safety issues within the traffic and transport study area.

8.11.7.3 The cumulative development vehicles would not result in significant increases in traffic or the composition of traffic and would not alter the injury accident rates by any noticeable amount.

8.11.7.4 The HGVs associated with the construction of the cumulative developments would all be routeing through the traffic and transport study area under strict traffic management

control via their respective CTMPs, and warning signage will be used where relevant (for example at access junctions) to alert other drivers of the respective construction traffic.

8.11.7.5 The cumulative impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **low**.

Sensitivity of the receptor

8.11.7.6 An analysis of road safety identified that there are no road safety issues within the traffic and transport study area.

8.11.7.7 In terms of road safety, the links throughout the traffic and transport study area are deemed to be of low vulnerability, highly recoverability and low to high value. The sensitivity of the receptor is therefore considered to be **negligible to low**.

Significance of the effect

8.11.7.8 Overall, the magnitude of the cumulative impact is deemed to be **low,** and the sensitivity of the receptor is considered to be **negligible to low**. The cumulative effect will, therefore, be of **negligible adverse** significance which is not significant in EIA terms.

8.12 Transboundary effects

8.12.1.1 A screening of transboundary impacts has been carried out and has identified that there was no potential for significant transboundary effects with regard to traffic and transport from the Mona Offshore Wind Project upon the interests of other states.

8.13 Inter-related effects

8.13.1.1 Inter-relationships are considered to be the impacts and associated effects of different aspects of the proposal on the same receptor. These are considered to be:

- Project lifetime effects: Assessment of the scope for effects that occur throughout more than one phase of the Mona Offshore Wind Project (construction, operation and maintenance, and decommissioning), to interact to potentially create a more significant effect on a receptor than if just assessed in isolation in these three phases (e.g., subsea noise effects from piling, operational turbines, vessels and decommissioning)
- Receptor led effects: Assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor. As an example, all effects on traffic and transport, such as construction dust and noise, increased traffic and visual change etc, may interact to produce a different, or greater effect on this receptor than when the effects are considered in isolation. Receptor-led effects may be short term, temporary or transient effects, or incorporate longer term effects.

8.13.1.2 A description of the likely interactive effects arising from the Mona Offshore Wind Project on traffic and transport is provided in Volume 3, Chapter 11: Inter-related effects – Onshore of the Environmental Statement.

8.14 Summary of Impacts, Mitigation Measures and Monitoring

8.14.1.1 Information on traffic and transport within the traffic and transport study area was collected through desktop reviews and site surveys.

8.14.1.2 Table 8.46 presents a summary of the potential impacts, measures adopted as part of the project and residual effects in respect to traffic and transport. The impacts assessed include:

- Driver delay (including temporary delays to public transport services)
- Severance
- Pedestrian delay (incorporating delay to all non-motorised users)
- Non-motorised user amenity and fear and intimidation
- Road safety
- AILs.

8.14.1.3 Overall, it is concluded that there will be no significant effects arising from the Mona Offshore Wind Project during the construction, operations and maintenance or decommissioning phases.

8.14.1.4 No potential transboundary impacts have been identified in regard to effects of the Mona Offshore Wind Project.

Table 8.46: Summary of Potential Environmental Effects, Mitigation and Monitoring

Description of impact	Phase[a] C	O	D	Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
The impact on driver delay (including temporary delays to public transport services) caused by construction works or construction traffic using the LRN and SRN	✓	×	×	See Table 8.18	C: negligible to low O: negligible D: negligible	C: negligible to high O: negligible D: negligible	Negligible to minor adverse	None	C: negligible to minor adverse O: negligible adverse D: negligible adverse	None
The impact on pedestrian (incorporating non-motorised users) delay caused by construction works or construction traffic using the LRN and SRN	✓	×	×	See Table 8.18	C: negligible O: negligible D: negligible	C: negligible to low O: negligible D: negligible	Negligible adverse	None	C: negligible adverse O: negligible adverse D: negligible adverse	None
The impact on non-motorised user amenity and fear and intimidation caused by construction works or construction traffic using the LRN and SRN	✓	×	×	See Table 8.18	C: negligible O: negligible D: negligible	C: negligible to low O: negligible D: negligible	Negligible adverse	None	C: negligible adverse O: negligible adverse D: negligible adverse	None
The impact on severance caused by construction works or construction traffic	✓	×	×	See Table 8.18	C: negligible O: negligible D: negligible	C: negligible to low O: negligible D: negligible	Negligible adverse	None	C: negligible adverse O: negligible adverse D: negligible adverse	None
The impact of construction traffic on road safety for users of the LRN, SRN and other transport receptors	✓	×	×	See Table 8.18	C: low O: negligible D: negligible	C: negligible to low O: negligible D: negligible	Negligible to minor adverse	None	C: minor adverse O: negligible adverse	None

Description of impact	Phase[a] C	O	D	Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
									D: negligible adverse	
The impact of AILs on the safety of users of the LRN, SRN and other transport receptors	✓	×	×	See Table 8.18	C: negligible O: negligible D: negligible	C: low O: negligible D: negligible	Negligible adverse	None	C: negligible adverse O: negligible adverse D: negligible adverse	None

Table 8.47: Summary of potential cumulative environmental effects, mitigation and monitoring.

[a] C=construction, O=operations and maintenance, D=decommissioning

Description of impact	Phase[a] C	O	D	Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
The impact on driver delay (including temporary delays to public transport services) caused by construction works or construction traffic using the LRN and SRN	✓	×	×	See Table 8.18	C: negligible O: negligible D: negligible	C: negligible O: negligible D: negligible	Negligible adverse	None	C: negligible adverse O: negligible adverse D: negligible adverse	None
The impact on pedestrian (incorporating non-motorised users) delay caused by construction works or construction traffic using the LRN and SRN	✓	×	×	See Table 8.18	C: negligible O: negligible D: negligible	C: negligible to low O: negligible D: negligible	Negligible adverse	None	C: negligible adverse O: negligible adverse D: negligible adverse	None
The impact on non-motorised user amenity and fear and intimidation	✓	×	×	See Table 8.18	C: negligible to low	C: negligible to low	Negligible adverse	None	C: negligible adverse	None

Description of impact	Phase[a]			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
caused by construction works or construction traffic using the LRN and SRN					O: negligible D: negligible	O: negligible D: negligible			O: negligible adverse D: negligible adverse	
The impact on severance caused by construction works or construction traffic	✓	×	×	See Table 8.18	C: negligible O: negligible D: negligible	C: negligible to low O: negligible D: negligible	Negligible adverse	None	C: negligible adverse O: negligible adverse D: negligible adverse	None
The impact of construction traffic on road safety for users of the LRN, SRN and other transport receptors	✓	×	×	See Table 8.18	C: low O: negligible D: negligible	C: negligible to low O: negligible D: negligible	Negligible adverse	None	C: negligible adverse O: negligible adverse D: negligible adverse	None
The impact of AILs on the safety of users of the LRN, SRN and other transport receptors	✓	×	×	See Table 8.18	C: negligible O: negligible D: negligible	C: negligible O: negligible D: negligible	Negligible adverse	None	C: negligible adverse O: negligible adverse D: negligible adverse	None

8.15 References

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