MERCURY RENEWABLES (CARROWLEAGH) LIMITED

FIRLOUGH WIND FARM, CO. MAYO AND HYDROGEN PLANT, CO. SLIGO

SECOND RESPONSE TO THIRD PARTY SUBMISSIONS AND OBSERVATIONS PLANNING APPLICATION REFERENCE ABP-317560-23

MARCH 2024

Mercury Renewables (Carrowleagh) Ltd.,
Coolcronan House,
Coolcronan,
Foxford,
Co. Mayo,
Ireland.

Jennings O'Donovan & Partners Limited,
Consulting Engineers,
Finisklin Business Park,
Sligo.
Tel.: 071 9161416
Fax: 071 9161080
email: info@jodireland.com

JENNINGS O'DONOVAN & PARTNERS LIMITED
Project, Civil and Structural Consulting Engineers
FINISKLIN BUSINESS PARK,
SLIGO,
IRELAND.

Telephone (071) 9161416
Fax (071) 9161080

Email info@jodireland.com
Web Site www.jodireland.com

DOCUMENT APPROVAL

PROJECT	Firlough Wind Farm and Hydrogen Plant	
CLIENT / JOB NO	Mercury Renewables (Carrowleagh) Limited	6129
DOCUMENT TITLE	Second Response to Submissions Received	

	Prepared by	**Reviewed/Approved by**
Document Draft	Name Sarah Jones	Name David Kiely
Date February 2024	Signature	Signature

	Prepared by	**Reviewed/Approved by**
Document Final	Name Sarah Jones	Name David Kiely
Date March 2024	Signature	Signature

6129/403/1/SJ

FIRLOUGH WIND FARM AND HYDROGEN PLANT
RESPONSE TO SUBMISSIONS RECEIVED

CONTENTS

Appendix A; N59 / L66121 Priority Junction Design Report

1 INTRODUCTION AND BACKGROUND TO REPORT

1.1 INTRODUCTION

This document provides a response to the Third Party Submissions made by various parties on the response Jennings O'Donovan submitted (the Submissions Response Document) in response to the submissions received on the Strategic Infrastructure Development Application Reference ABP-317560-23 made to An Bord Pleanála by Mercury Renewables (Carrowleagh) Limited, for the construction of a wind farm and hydrogen plant and related works. This document addresses the submissions received individually. The responses on behalf of the Applicant are in blue while submission text is in black.

Some personal information, such as individual's health details, was included in these submissions, this has been blanked out where it has been deemed appropriate.

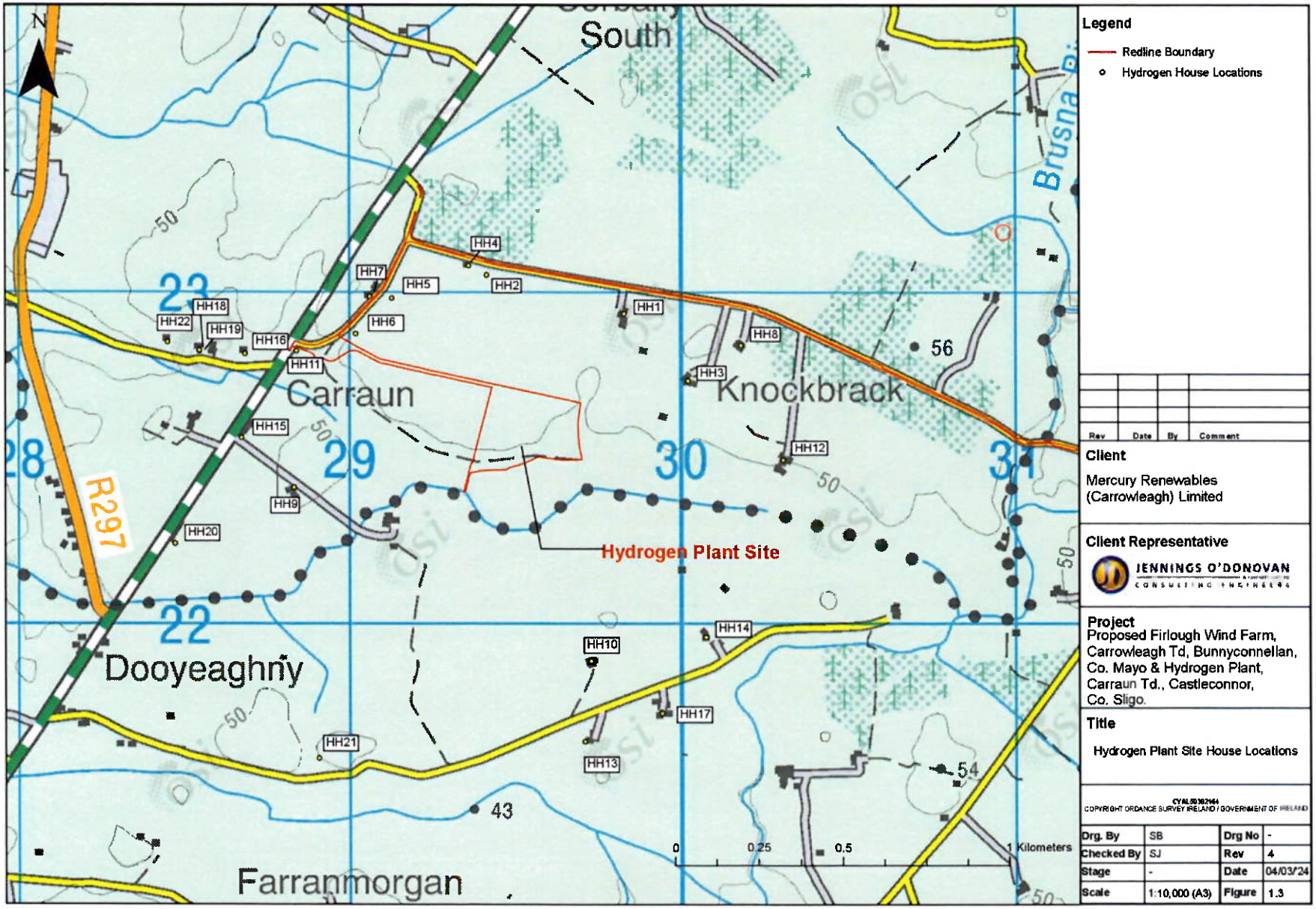
2 FORMAL SUBSTITUTION OF FIGURES

In the intervening period since the application was submitted, it has become apparent that a minor error in the location of two derelict and disused house locations was made in Figure 1.3; Hydrogen Plant Site House Locations and in Figure 11.9; Noise Contour Map for Hydrogen Plant.

House numbers HH10 and HH13 have been mapped in error approximately 500m west of their correct location. This does not affect the technical assessments. These are both derelict houses and the corrected locations are further from the Hydrogen Plant than the location assessed in Chapter 11 Noise. The noise impacts would therefore be expected to be slightly lower than those identified. The derelict house locations are both well outside the noise contours.

- HH10 was mapped as 600m to the southwest of the Hydrogen Plant, the correct location is 610m to the southeast of the Hydrogen Plant.
- HH13 was mapped 680m to the southwest of the Hydrogen Plant, the correct location is 830m to the southeast of the Hydrogen Plant.

For the avoidance of doubt Figure 1.3 and Figure 11.9 of the EIAR has been updated to include the corrected location of these two derelict houses.


N
South
Carraun
Knockbrack
Dooyeaghny
Farranmorgan
Hydrogen Plant Site
R297
HH1
HH2
HH3
HH4
HH5
HH6
HH7
HH8
HH9
HH10
HH11
HH12
HH13
HH14
HH15
HH16
HH17
HH18
HH19
HH20
HH21
HH22
22
23
28
29
30
31
43
54
56
50
0
0.25
0.5
1 Kilometers
Legend
Redline Boundary
Hydrogen House Locations
Rev
Date
By
Comment
Client
Mercury Renewables (Carrowleagh) Limited
Client Representative
JENNINGS O'DONOVAN
CONSULTING ENGINEERS
Project
Proposed Firlough Wind Farm, Carrowleagh Td, Bunnyconnellan, Co. Mayo & Hydrogen Plant, Carraun Td., Castleconnor, Co. Sligo.
Title
Hydrogen Plant Site House Locations
COPYRIGHT ORDANCE SURVEY IRELAND / GOVERNMENT OF IRELAND
Drg. By SB
Drg No -
Checked By SJ
Rev 4
Stage -
Date 04/03/24
Scale 1:10,000 (A3)
Figure 1.3

Legend

Contours
- 35 dB
- 40 dB
- 45 dB
- 50 dB
- 55 dB
- 60 dB
- 65 dB
- 70 dB
- Redline Boundary
- House Locations

Rev	Date	By	Comment

Client
Mercury Renewables (Carrowleagh) Limited

Client Representative
JENNINGS O'DONOVAN CONSULTING ENGINEERS

Project
Proposed Firlough Wind Farm, Carrowleagh Td, Bunnyconnellan, Co. Mayo & Hydrogen Plant, Carraun Td., Castleconnor, Co. Sligo.

Title
Noise contour map for Hydrogen Plant

Drg. By	SB	Drg No	-
Checked By	SJ	Rev	3
Stage	-	Date	06/03/24
Scale	1:10,000 (A3)	Figure	11.9

3 RESPONSE TO SUBMISSIONS

3.1 TRANSPORT INFRASTRUCTURE IRELAND (TII)

TII acknowledges receipt of referral of Additional Information submitted in relation to the above proposed Strategic Infrastructure Development Application on behalf of Mercury Renewable (Carrowleagh) Limited.

TII notes that the Report by Jennings O'Donovan and Partners Ltd. Consulting Engineers submitted with correspondence dated 24 November, 2023, included with the Additional Information Response, addresses observations provided by TII to An Bord Pleanála in the Authority's initial submission on this application of 30 August, 2023. Section 3.8 of the Report by Jennings O'Donovan refers.

TII's initial submission on the application addressed a number of issues, including;

- The need for a Design Report for the proposed re-alignment of the N56/L66121 in accordance with the requirements of TII Publication GN_GEO_03030.

TII notes the applicants response in this regard and it is noted that no Design Report appears to have been submitted nor approved for the proposed works as required by TII Publication GN_GEO_03030.

TII remains of the opinion that this matter should be resolved in advance of any decision on the application in the interests of road user safety and to ensure appropriate design and safety standards are applied to the proposed development and can be reflected in conditions of any decision to grant permission.

Response;
The Design Report required under NH-GEO-03030 for local improvement was scheduled to be submitted during the detailed design phase. This has now been completed and can be found in Appendix A; N59 / L66121 Priority Junction Design Report and has been uploaded to the TII portal.

- Any proposed works to the national road network to facilitate turbine component delivery to site shall comply with TII Publications and shall be subject to Road Safety Audit as appropriate.

TII notes and welcomes the applicants commitments outlined in Section 3.8 of the Additional Information response in this regard.

- Any operator who wants to transport a vehicle or load whose weight falls outside the limits allowed by the Road Traffic (Construction Equipment & Use of Vehicles) Regulations 2003, SI 5 of 2003, must obtain a permit for its movement from each Local Authority through whose jurisdiction the vehicle shall travel. TII considers that it is critical a full assessment by the applicant/developer of all structures on the national road network along the haul route should be undertaken, where relevant, and all road authorities along the haul routes should confirm their acceptance of proposals by the applicant.

TII acknowledges that the applicant has confirmed in Section 3.8 of the Additional Information response that a detailed structural assessment of the bridges and

structures on the road network which forms the construction haul route to site will be carried out prior to any works commencing on site.

In the interests of clarification, TII's initial submission advised that it was critical that a full assessment of all structures on the national road network along the haul route should be undertaken, not just along the construction haul route as referenced in the applicants response but in relation to the entire turbine component haul route to site.

It remains TII's position that a full assessment of all structures on the national road network along the turbine component haul route to site should be undertaken. In addition, as advised above, the applicant is aware that any operator who wants to transport a vehicle or load whose weight falls outside the limits allowed by the Road Traffic (Construction Equipment & Use of Vehicles) Regulations 2003, SI 5 of 2003, must obtain a permit for its movement from each Local Authority through whose jurisdiction the vehicle shall travel.

Response;
A detailed structural assessment of the bridges and structures on the road network which forms the construction haul route to site will be carried out prior to any works commencing on site. It is currently proposed that this will take place from the N59 to the site as the N59 has been used for turbine deliveries in recent years such as Oweninny I, Oweninny II, Sheskin and Killala wind farms. However, should the Board consider it necessary to complete a full survey of the route with a planning condition then this will be complied with.

While TII welcomes the clarifications provided in the Additional Information Response provided by Jennings O'Donovan and Partners Ltd. Consulting Engineers on behalf of Mercury Renewable (Carrowleagh) Limited, TII remains of the opinion that the above matters require resolution in the assessment of the subject application. Accordingly, the position of TII remains as set out in the Authority's initial submission of 30 August, 2023.

Response;
We hope that the above clarifications meet the requirements of the information requested.

3.2 DANNY AND SANDRA BEARDSHALL

My wife and I have spent our working lives building our home, family and life in this area. For the past 25 years of constantly working and raising 3 children, our financial decisions have been governed by the constraints of the monthly repayments of a huge mortgage. One of us is semi-retired with the other planning retirement in a few years, and we cannot let our lives and properties be affected by what we deem a premature, misplaced, hastily planned industrial development in our rural homeland to produce a very dangerous volatile chemical with such proximity to our home.

Response;
The queries raised here were addressed in the following sections of the Submissions Response Document;
Premature Development; Section 4.2.1
Zoning/rural area; Section 4.12.1.
'Dangerous Volatile Chemical'; Section 4.4.1.

Hastily Planned; This project has been in development for more than 2 years. The EIAR submitted with the planning application was prepared in accordance with the EIA Directive as amended by the 2014 EIA Directive, as well as the national implementing legislation, in particular, the Planning Acts and the Planning Regulations as amended. The EIAR included the conclusions of the competent and qualified experts as to the significance of any such environmental effects, to assist the competent authority to comply with Article 8a of the 2014 EIA Directive. The function of the EIAR is to provide information to allow the competent authority to reach a reasoned conclusion on the effects of a development and inform subsequent decisions, such as planning.

Proximity; HH18 is located approximately 1km from the Hydrogen Plant and 0.35km to the Site Entrance.

Communication

Mercury Renewables have stated that they went 'above and beyond' the terms of communicating with the locality, this is not the case. The one or two photocopied letters we received from Mercury Renewables were delivered by hand to our outside mailbox and they did not strike us as being very professionally done, at first we thought they were junk mail.

Response;
Individual Letters were sent out/hand delivered to the selected area together with the Mercury newsletters. These were of a high quality and professionally produced and were included in Appendix 1.3 Pre-Application Community Consultation (PACC) Report in the following Appendices;
May 2022 Newsletter; Appendix 5
September 2022 Newsletter; Appendix 6
November 2022 Newsletter; Appendix 7

No liaison officer or representative of Mercury Renewables had any meeting or introduction during these hand deliveries. We subsequently received a September 2022 Newsletter which was more professionally presented. None of this paper correspondence was of a standard one would expect from a company proposing such a vast project.

Response;
Newsletters were included in Appendix 1.3 Pre-Application Community Consultation (PACC) Report in the appendices as outlined above. These were of a high quality and professionally produced, as can be seen. The PACC also outlines the extensive public consultation that was undertaken for the Project.

On page 52 of their response document, it is stated that consultations were undertaken by community liaison officers. On page 43 it also stated a neighbourhood meeting with individual households in close proximity to the proposed hydrogen plant. It has in fact come to light that over 80% of some 25 of the closest households were never invited or consulted in anything.

Response;

Details of community consultations undertaken were included in Section 4.1 of the Submissions Response Document. There are 22 inhabited houses within 1km of the Hydrogen Plant Site. These 22 houses were included in all leaflet and newsletter drops from May 2022 onwards including those materials which invited the occupants or anybody interested in the project to the Public Information Days or to contact the community liaison officer to discuss any queries or concerns. These newsletters which show the invitation to the PID can be seen in the appendices of the PACC.

The PACC report in Appendix 1.3 of the EIAR states;
"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant where invited to an informal meeting. Two individuals attended the evening."

HH18 does not share a boundary with the Hydrogen Plant, it is located approximately 1km to the west, and was therefore not invited to this meeting.

> Also, leaflets regarding information and invites to the Furlough Windfarm online virtual information day were never distributed in Carraun therefore they were not delivered to our home. In fact, we knew nothing of the hydrogen site being proposed in Carraun until September 2022. Communication from Mercury Renewables to local households has been practically non-existent and it is an indication from the very start of their way of operating.

Response;
Details of community consultations undertaken were included in Section 4.1 of the Submissions Response Document. Initially the Hydrogen Plant was located within the Wind Farm Site, See Chapter 3 Alternatives Considered, Section 3.5.2. In February 2022, a letter drop along the local roads that hydrogen tube trailers would take to reach the national road network (N59) resulted in considerable feedback from local residents with concerns about the number of hydrogen tube trailers using these local roads during the operational phase of the Proposed Development. Carraun is located approximately 6km west of the Wind Farm Site, therefore the houses nearby would not have been included in the Newsletters, leaflets and online PID leaflets as they were outside of the consultation area. It was only in February 2022 that alternative locations were being considered, the Hydrogen Plant Site being one of the alternatives under consideration at that time. Therefore, the May 2022 newsletter (included in the PACC Appendix 5) was the first communication with the public in which the new proposed location was announced. This newsletter included details of the Public Information Days and contact details of the Community Liaison Officers and was hand delivered to HH18.

> Therefore an oral public, hearing must be arranged and is demanded by us.

Response;
An Oral Hearing has been organised by the Board.

> There was a meeting in 'Muddy Burns Pub' on 25/5/23. We were not advised of, or invited to this meeting despite our home (Hydrogen plant site location EIAR Fig 1 :3 - H18), being one of the closest to the proposed plant, we are baffled as to why this happened without our knowledge or invite.

Response;
Please see response above.

To date, my wife, family and I have never been consulted by any liaison officer, representative of Mercury Renewables, or had any other communication despite their claims. It must be noted that because one of us works from home, someone is always in our house to meet any visitor so we couldn't have missed any visit if their representative had called.

Response;
This submission states above that leaflets and newsletters were delivered to their address. These invited anyone interested in the Proposed Development to engage with the Project Team via phone, email and also contained details of the Public Information Days. It is an individual's right to choose not to attend these events or engage with communication materials.

Health & Safety.
We are fearful that hydrogen production and usage is in its infancy. There is currently no EU directive for its production. We are therefore concerned that this is leaving us and our community in a very vulnerable position.

Response;
Section 4.2.1 of the Submissions Response Document addresses queries regarding the Hydrogen Industry and the assertion that it is "new". Hydrogen has been produced and used for over a hundred years. Since the Application for the Proposed Development was submitted, Ireland's National Hydrogen Strategy was published on 12th July 2023. This is outlined in Section 2.1 of the Submissions Response Document.

We note that 'Jennings & O'Donovan' are Sligo based project, civil and structural consultants with experience in wind generated electricity, but we are concerned that they may not have enough necessary experience in the construction of facilities for the production of hydrogen gas. We are also very concerned that Mercury Renewables have never undertaken a project demanding the many different types of experience needed to deal with a volatile and dangerous chemical like hydrogen, the production, storage and transportation of which being so very close to our home.

Response;
The Project team, including hydrogen specialist team members, their experience and qualifications were outlined in Chapter 1; Introduction of the EIAR in Sections 1.9.1 and 1.9.2. A team from Black and Veatch[1] a company that specialises in hydrogen and is working with hydrogen globally including generation, distribution, storage and utilisation, advised in the aspects related to hydrogen. A statement of authority was given at the start of each technical chapter outlining the authors qualifications and experience.

Appendix 2.1 CEMP of the EIAR is the Construction and Environmental Management Plan. The principal objective of this CEMP is to avoid, minimise and control adverse environmental impacts associated with the Development, it outlines the construction methods, mitigation measures and responsibilities of the contractor.

[1] https://www.bv.com/solutions/hydrogen/?utm_medium=pr&utm_campaign=sustainability

Chapter 16 of the EIAR seeks to determine the measures that are in place, or need to be in place, to prevent or mitigate the likely significant adverse effects of major accidents and/or natural disasters on the environment during the production, storage and transportation of hydrogen.

> To date, Mercury have only been in ongoing discussions with the emergency fire services (Page 74 4.4:2), and no definite strategies, plans or emergency procedures have been agreed.

Response;
Consultations with the Fire Service are set out in Section 4.4.2 of the Submissions Response. Appendix 16.2 of the EIAR; Major Accident Prevention Policy included Section 7; Emergency Response. The CEMP in Appendix 2.1 of the EIAR also includes Management Plan 1; Emergency Response Plan.

> Also there has been no agreement on the funding and planning of the new equipment, training and manpower that would be essential to combat a hydrogen emergency situation. Surely this must be of paramount importance to all! As stated in our concerns, this has to be determined before ANY planning could even be considered.

Response;
Section 4.4.1 of the Submissions Response Document addresses queries related to precautions and safeguarding against fire and explosion.

Regarding Training, Section 3.1 of Appendix 16.2 of the EIAR; Major Accident Prevention Policy states;
"A training needs analysis report will be prepared to determine what training is required for which employees/operators at the Hydrogen Plant Site. This analysis will be used to produce a timeline of training of employees/operators to ensure that a competent and correctly trained team is operating the Hydrogen Plant. As part of the training needs analysis, a competency requirements plan will be produced to identify what competencies each employee/operator require. This will be informed by the safety critical activity identification described previously, with additional assessment with support of human factors experts where required."

Training and funding for the Fire Service is controlled by the relevant local authority and is outside the control of the Applicant.

> Infrastructure & Transport
> The methods of transportation are not clear as Mercury have only made assumptions on the carriage of 1200 KG of hydrogen. They have not given dimensions for the size or weight of these vehicles or taken into consideration the weight of the cylinders transporting the hydrogen. They have also not offered information regarding the scaled up much larger hydrogen powered vehicles which as yet don't exist, that will be needed in the future when the plant is increased to up scaled production.

Response;
Section 4.2.2 of the Submissions Response Document addressed Hydrogen Tanker Safety and Number of Movements. Tube trailers are currently used to transport a number of compressed gas products on Ireland's roads including natural gas, compressed air, nitrogen

and oxygen. The Specific model to be used will be selected at final design stage. All Tube trailers will comply with current road transport regulations including in size and gross weight – the S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

There is confusion in the proposal regarding the road L6612 and the road L66121 which is a different junction over half a kilometre away (See response document Pages 104-108). This is despite the fact that mercury state that the design of the junction of L66121 and the N59 has been carried out in accordance with TII specifications. It has not been explained why according to the EIAR, the road safety audit location for the Hydrogen plant site is Carrowleagh Bog, not Carraun. All this conjecture brings into doubt, and brings Mercury Renewables ability to question.

Response;
The road safety audit was undertaken at the correct location and based on the planning drawings submitted with the application. The audit was carried out at the N59/L66121 Junction, the road number shown on the drawings and in the report was taken from the sign at the junction.

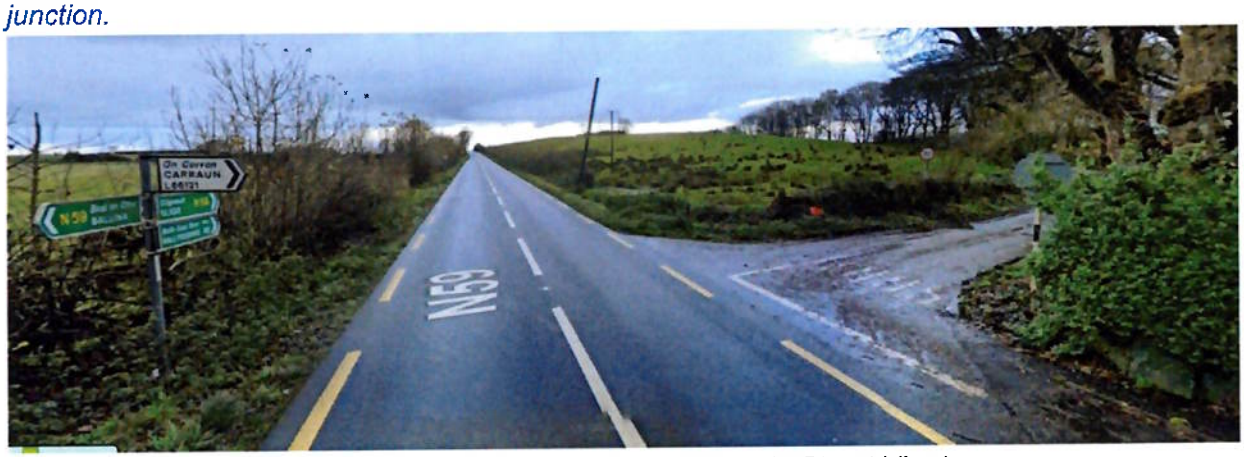


Figure 1 Junction of Hydrogen Plant Entrance. (Source Google Street View)

Concerns have been voiced by Sligo County Council regarding the safety and high traffic volume at this point. There can be therefore no road safety audit for these vehicles at these junctions. Estimates for the amount of truck movements is therefore pure conjecture.

Response;
Queries relating to traffic were addressed in Section 4.6 of the Submissions Response Document. The number of truck movements is well understood and has been fully assessed in the EIAR and clarified in Section 4.2.2 of the Submissions Response Document. The Road Safety Audit for the Hydrogen Plant access is in Appendix 15.3 of the EIAR.

Not much consideration or information has been given to the road L6611 on which our home is situated and which we and other residents in the area constantly use. The traffic count for Junction L66121 taken on 23/1/23 which is the most important junction, it being the main entrance and exit to the site, did not take into consideration the amount of traffic at junction L6611 which is just a few yards away.

We are very concerned regarding this as the possibility for vehicles on the N59 overtaking slow moving HGV manoeuvres at the junctions in question will cause the possibility of collision accidents to greatly increase. As we have stated, there have already been many accidents at the junction of L6611 with the N59.

Although we submitted photographic evidence of the proximity and inclines leading to and from, and the closeness of these two junctions, pointing out the obvious dangers of vehicles entering and exiting L6611, our concerns have not been addressed. It is obvious to us that large numbers of HGV's slowly turning out of a small side road pose a very dangerous situation.

Response;
The L6611 is located approximately 90m from the L66121 local road junction leading to the proposed hydrogen plant. The L66121 junction was analysed in isolation due to the restricted width of the L6611 single lane carriageway, proximity of the L6611 to the R297 and the low volume of traffic using the L66121 local road. During the morning peak hour traffic counts two vehicles entered the junction from the N59 and three vehicles exited the junction. During the evening peak hour four vehicles entered the junction from the N59 and no vehicles exited the junction onto the N59.

L6611 and R297 vehicles passing the L66121 junction are recorded in the traffic count data. No delays were observed on the N59 in the vicinity of the L66121 during the traffic count period which was carried out at the N59 / L66121 junction on Wednesday 25th January 2023. The traffic counts were carried out between the hours of 08:00 to 09:00 and 16:00 to 17:00. A traffic analysis of the N59/L66121 junction using TRL PICADY software was carried out using the traffic count data to check the capacity of the junction for the following scenarios:

- *2023 Existing Traffic flows*
- *2025 Projected traffic flows with hydrogen plant construction traffic.*
- *2026 Projected traffic flows with hydrogen plant operational traffic – Year of opening.*
- *2046 Projected traffic flows with hydrogen plant operational traffic – 20 Years after opening.*

The traffic analysis carried out for the N59 / L66121 junction shows that the junction will continue to operate within capacity for all scenarios including the 2046 scenario with the proposed Hydrogen Plant development fully operational. The results of the analysis show that the effect of traffic associated with the operation of the Hydrogen Plant on the existing public road network will be imperceptible due to the improved N59 / L66121 junction layout, traffic profile with development traffic distributed throughout the day, low volumes of traffic generated during operation of the development and vehicle turning movements with all development HGV traffic exiting the N59 / L66121 junction in an eastbound direction and approaching in a westbound direction on the N59. Full details of the traffic analysis for the N59 / L66121 junction are shown in Appendix 1.

During the construction of the Hydrogen Plant, HGV's will be prohibited from using the local road network which does not form part of the works and will not use the L6611 to access the site. During the construction stage of the project, traffic management will be in place at the N59 / L66121 junction in accordance with Chapter 8 of the Traffic Signs Manual to maintain the safe operation of the road network during the construction process.

During the operation of the Hydrogen Plant, operational HGV traffic will exit the N59 / L66121 junction in an eastbound direction towards Sligo and approach the junction in a westbound directional. Operational HGV traffic will not pass the L6611 junction or travel through the town of Ballina. It is proposed as part of the development to modify the existing N59 / L66121 junction to facilitate HGV traffic. The modifications will include statutory signs and roadmarkings, increased road width on the L66121 and increased junction radii to prevent conflict between vehicles at the junction and to prevent vehicles encroaching into opposing traffic streams when turning at the junction. The proposed modifications at the junction have been subject to a Stage 1 road safety audit carried out by a TII approved auditor, independent of the design team (see Appendix 15.3 of the EIAR). The recommendations of the audit team have been implemented into the final junction design.

Also to be addressed is the noise generated by the turning of these HGV's including the audible warnings that they emit. The vibration aspect generated by the many movements of trucks and the potential effects to the N59 sub structure and surface at this turning point is also of great concern.

This cannot accurately be determined especially when the proposed hydrogen powered larger HGV's are not even in existence! If larger HGV's are used, it is determined that they will carry up to three times the load of that of the smaller HGVs.

Response;
Queries regarding noise created by tube trailers were addressed in Section 4.11 of the Submissions Response Document. The noise impacts are well understood and these are assessed in Chapter 11 Noise Section 11.27.4.6. All Tube trailers will comply with current road transport regulations including in size and gross weight as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

If this is so, this would have a very detrimental effect on the ability of the N59 to handle such weights and volume of heavy goods traffic.

If no large hydrogen powered Lorries emerge, and smaller HGVs continue to be utilised, this will mean a large increase in the amount of movements per day. Therefore the transport figures put forward by Mercury Renewables must be treated as conjecture.

Response;
Section 4.2.2 of the Submissions Response Document addresses queries related to hydrogen tankers and the number of movements. Section 2.6.6.12 of Chapter 2; Project Description in the EIAR contains details of the tube trailers. All Tube trailers will comply with current road transport regulations as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended), including in size and gross weight.

Concern For Our Property

In our reply, we voiced our very justified concerns that such large amounts of water being removed from the water table and the effects it could, and will have to the surrounding area.

Response;

Queries regarding Water abstraction are addressed in Section 4.5.1 of the Submissions Response Document.

> We understand that although it is not possible to assess this, it is a totally relevant concern, and if sink holes and subsidence should occur causing irreparable damage due to the operation of the proposed hydrogen plant, who is going to be responsible?

Response;
Expert hydrologists provided the full hydrological assessment which was included in Chapter 9: Hydrology and Hydrogeology of the EIAR. Queries regarding sink holes are addressed in Section 4.5.1.4 of the Submissions Response Document.

> We also voiced grave concerns regarding Mercury Renewables proposals effects on the value of our property and the ability for us to obtain insurance cover.

Response;
Property Value was assessed in the EIAR in Chapter 4; Population and Human Health, Section 4.4.7. Residential amenity was addressed in Section 4.4.6 of the same chapter.

Meetings and discussions held by the Developer with insurance brokers regarding placement of private insurance on residences near the Hydrogen Plant, have indicated there is no evidence to suggest that the location of the Hydrogen Plant will impact the ability for local residents to obtain insurance at normal market rates. Furthermore, the Developer has spoken with residents near Ballina Beverages, an Upper Tier COMAH site (note the Hydrogen Plant will be designated a Lower Tier COMAH site) and the presence of the Ballina Beverages facility has not impacted those residents' ability to obtain home insurance at normal market rates.

> Also the effect on our ability to obtain planning permission in the future or sale of the property.

Response;
The Applicant cannot comment on the likely success of potential future planning applications or house sales. Planning Applications will be assessed by the relevant authority having regard to the relevant planning policy set out in the County Development Plan. Property Value was assessed in the EIAR in Chapter 4; Population and Human Health, Section 4.4.7.

> The proposal if sanctioned will turn our area from a rural one to an Industrial zone.

Response;
Queries regarding the zoning of the land are addressed in Section 4.12.1 of the Response to the Submissions Report. Land use change is assessed in Chapter 13 Material Assets in the EIAR.

> None of these questions were addressed in any respect in Mercury Renewables replies.

Response;
All queries which were deemed material planning considerations have already been addressed in the Submissions Response Document.

This fact combined with the total lack of consultation with residents closest to the plant indicate to us that Mercury Renewables have little regard for the locality, its people, families or their property, farms and lands.

Response;
Extensive public consultation has been carried out and is outlined in Section 4.1 of the Submissions Response Document, in the PACC in Appendix 1.3 and in Chapter 1 Introduction of the EIAR. The Applicant rejects the suggestion that they have "little regard for the locality, its people, families or their property, farms and lands".

Hydrogen Demand

On page 65 4.2.4, Mercury Renewables give the figures of Irelands demand for hydrogen as 2.000 tonnes per annum which is currently being supplied by BOC and produced by electrolysis methods within the country. Irelands demand for hydrogen is different from that of many other hydrogen demanding countries in the World. This is because Ireland does not have a major petrochemical sector, and its manufacturing industry is limited.

Response;
This is correct, and was outlined in Chapter 1 of the EIAR; Section 1.6; Need for the development, the section referenced above goes on to outline that there are two demand pathways – the existing uses and new uses;

"Initial demand pathways for green hydrogen in Ireland include switching the current supply of hydrogen to green hydrogen in an existing application. For example, green hydrogen is being used to decarbonise the steel industry, with a plant in Boden, northern Sweden producing green steel with 95% less CO_2 emissions[2]. The demand for hydrogen in Ireland is currently approximately 2,000 tonnes per year[3] which could be replaced with green hydrogen produced by the Proposed Development.

The second demand pathway involves using hydrogen in "new" applications where the potential exists but is not yet well-established. For example, in the transport industry."

Mercury have been contacted by several industrial users of fossil fuels who would like to investigate green hydrogen as a replacement for their current energy source.

We are concerned that Mercury Renewables have not given figures regarding the foreseeable demand for hydrogen both in the West of Ireland or Nationwide, and in a radio interview of 11/08/23 Mercury Renewables go on to say that currently the demand is not there, but they are "actively engaging with the 'Western Development Commission' to promote the use of hydrogen". Since this interview, we are interested to know if any progress has been made to substantiate increased demand for hydrogen? If this is not the case, then we would be very concerned about the need for more hydrogen production, especially in this area.

Response;

[2] H2 Green Steel. (202https://www.h2greensteel.com/about-us
[3] Energy Ireland. (2021). Developing Ireland's hydrogen potential. https://www.energyireland.ie/developing-irelands-hydrogen-potential/

Queries related to Hydrogen Demand were addressed in Section 4.2.4 of the Submissions Response Document. Since the radio interview, Ireland has released its National Hydrogen Strategy which provides further clarification on the demand pathways for hydrogen in Ireland. As outlined in Section 2.1 of the Submissions Response Document.

Also on Page 65 4.2.4 Mercury Renewables go on to say that there was a rollout of hydrogen powered busses in Ireland. In truth, this consisted of three busses which 'Dublin Bus' introduced into service three years ago in 2021 at a cost of 2.4 million €uro. These were electric hydrogen fuel cell busses, and it is our concern that after operating these busses for three years 'Dublin Bus' have since not expanded their hydrogen fleet and If they were a viable public transport option then why have they not done so and have Dublin Bus committed to purchasing more hydrogen fuel cell busses to substantiate increased hydrogen demand?

Response;
The Dublin hydrogen bus trials as well as Belfast hydrogen bus trials are ongoing. Ireland's National Hydrogen Strategy supports heavy transport as an initial demand pathway for green hydrogen in Ireland. Section 2.1 of the Submissions Response Document outlines this in more detail.

As stated in our opening paragraph, we are concerned that hydrogen Production is a premature industry especially in the volumes proposed. It is our concern that the market is not there for a vastly increased supply of hydrogen. If this is the case, where and how will the excess unwanted product be transported and stored? We asked this question, but it was not addressed.

Response;
Queries in relation to Hydrogen Demand in Ireland is addressed in Section 4.2.4 of the Submissions Response Document and in the EIAR Chapter 1 Introduction; Section 1.6; Need for the Development. As per Chapter 2; Project Description, the Hydrogen Plant will be scaled up to meet demand. This was also stated in the Submissions Response Document, Section 4.7.1.2. The Hydrogen Plant will be designed, constructed and operated in line with the requirements set out by COMAH Regulations, including 24/7 monitoring. The maximum onsite storage of hydrogen (approximately 40.128 tonnes) classifies the Hydrogen Plant as a 'Lower-tier' COMAH site as this is below 50 tonnes.

3.3 MICHAEL BROWNE

To Whom it may concern:
I do not feel that my concerns have been adequately addressed by the applicant.

My family owns land across the road from the L66121 junction bordering the N59. I can categorically state that we have not been invited to any meeting by Mercury Renewables to engage with the project.

Response;
This has been addressed in Section 4.1 of the Submissions Response Document. The Applicants records state that the May 2022 Newsletter and the September 2022 Newsletter, which included contact details and an invitation to the Public Information Days, were hand delivered to Michael Brown's Address.

I reject claims by the applicant on p52 re consultations, as I feel they are misleading. We were not invited to the meeting held in Muddy Burns on 25" May 2023 or any other meeting concerning the project.

Response;
The Pre-Application Community Consultation (PACC) Report included in Appendix 1.3 stated that;
"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant where invited to an informal meeting. Two individuals attended the evening."

However, all 22 houses in the vicinity of the Hydrogen Plant, including Michael Browne's address, were included in leaflet and newsletter drops including those which invited anyone interested to engage with the Project Team via phone or email and to attend the Public Information Days. It is an individual's right to choose not to attend these events or engage with communication materials.

In recent weeks the CEO of Mercury Renewables, arranged to meet me, through an associate of his. I never met or spoke with this man prior to this. The visit took place in my parent's house on 28th October 2023 and was very informal in nature. Unfortunately he did not allay any of my concerns re the project. Prior to this encounter, I was not contacted by phone, email or letter in the post by Mercury Renewables.

Response;
The meeting noted above was organised by the Hydrogen Plant Land Owner. The steps taken to engage the community in consultations are over and above those required by the Planning Regulations, the WEDG and the Arhus Convention. This has been addressed in Section 4.1 of the Submissions Response Document. The newsletters were delivered to this address, these included details on the Project and how to engage with the Project team.

P157 of the response document only refers to livestock near windfarms. My submission queried safety concerns in relation to our livestock near the hydrogen plant but I cannot find any answer to my query.

Response;
Section 4.5.1 Water Abstraction and Section 4.5.3 Water Discharge of the Submissions Response Document addressed queries in relation to the hydrogen plant, water environment and soils in terms of impacts to livestock. Section 4.11 addressed impacts relating to noise and livestock. Section 4.13.5 addressed concerns specifically relating to livestock and wind farms.

I am not satisfied that Traffic concerns at the L66121 junction have been clearly addressed. I could not locate a Road Safety Audit for the L66121/ N59 junction, but found one for junction L6612/ N59.

The TII approved the road safety audit team (Appendix B of RSA audit) re the L6612/ N59 Junction but I cannot find same for the L66121 junction. The Road Safety Audit Feedback Form is for the Hydrogen production facility at Carrowleagh Bog, and I could not find same for Carraun where the hydrogen plant is proposed to be built. (see appendix 15.3 of the EIAR).

Response;
The Road Safety Audit was undertaken at the correct location and based on the planning drawings submitted with the application. The audit was carried out at the N59/L66121 Junction, the road number shown on the drawings and in the report was taken from the sign at the junction. See Figure 1.

> On page 49 there is a reference to the TII having no record of a design report for the N59 junction with the L66121, however, Mercury go on to state that the design of the N59 L66121 junction has been carried out in accordance with TII specifications, however, I fail to locate this design report in the documents.

Response;
The Design Report required under NH-GEO-03030 for local improvement was scheduled to be submitted during the detailed design phase. This has now been completed and can be found in Appendix 1; N59 / L66121 Priority Junction Design Report.

> I cannot understand why, in the Traffic and Transport section of the response document, from p104- 106 the wrong junction is referenced. L 6612 is a totally different junction.

Response;
In Section 4.6.2 of the Submissions Response Document the L66121 has been written as L6612 as a typo, this section should read;

The proposed realigned junction between the N59 national secondary road and the L66121 local road at Carraun, Co. Sligo has been designed as a simple priority junction with priority for N59 through traffic on the N59 National Road. The junction is located in a 100 km/h speed limit zone.

> I am confused as to the size of truck that is to be used to transport the hydrogen off site. What size truck will transport hydrogen if the trucks with 1200kg are not the chosen type of truck, or indeed are not available for whatever reason?

Response;
Queries related to tube trailers were addressed in Section 4.2.2 of the Submissions Response Document. The green hydrogen will be transported from the Hydrogen Plant Site using tube trailers, the impact of this on the local road network is assessed in Chapter 15: Traffic and Transport. Tube trailers are currently used to transport a number of compressed gas products on Ireland's roads including natural gas, compressed air, nitrogen and oxygen. Tube Trailers are classed as Heavy Goods Vehicles. All Tube trailers will comply with current road transport regulations including in size and gross weight as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

> I have been trying to estimate the number of trucks carrying 384kg of hydrogen at 380 bar pressure and calculate that there could be 176 truck movements per day at the L66121/N58 junction. If my calculations are correct, this will seriously affect our farm work, as that junction is already a busy junction.

Response;

176 truck movements is not correct, queries over the number of traffic movements associated with the operational phase of the Development is clarified in Section 4.2.2 of the Submissions Response Document.

Larger trucks carrying three times the amount of gas and cylinders will be much heavier and could implications for the N59, has this been taken into account?

Response;
Section 2.6.6.12 of Chapter 2; Project Description in the EIAR contains details of the tube trailers. All Tube trailers will comply with current road transport regulations as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended), including in size and gross weight.

These figures are also based on the working assumption that the hydrogen plant can only store this amount of gas, it does not however account for the possibility of larger quantities of hydrogen gas being produced on site and removed rather than being stored on site. Should this scenario arise, won't there will be far more truck movements?

Response;
Queries relating to traffic were addressed in Section 4.6 of the Submissions Response Document, including the effects during the construction phase. Queries relating to the volume of hydrogen being produced are addressed in Section 4.2.3 of the Submissions Response Document.

I cannot find any indication of where these trucks will be going, or how long their estimated round trips will be, as there doesn't appear to be definite end users for the gas identified yet, or is it stated somewhere?

Response;
The green hydrogen will exit the Hydrogen Plant on to the National Road network. This has been assessed in the EIAR. From there it will travel to the end users of the green hydrogen. Over the operation phase of the Hydrogen Plant these end users and/or their locations will change. It is not feasible not warranted to define this under the EIA Directive.

I ask that the board considers holding an oral hearing for this case.

Response;
An Oral Hearing has been organised by the Board.

Michael Browne,

Patrick Browne.

3.4 <u>DEIRDRE AND JOHN BOURKE</u>

We refer to the aforementioned proposed project and our recent submission regarding same.

We stated our concern regarding possible structural damage to our home due to the L6612 being named as the construction haul route for the proposed project. We have experienced severe structural vibrations every time a heavy vehicle passed our house.

It is our experience that heavy loads carried on the L6612 can impact on the surrounding ground.
We were unable to locate a response from the applicant in relation to this.

Response;
Queries related to Noise and Vibration including that of the hydrogen transport vehicles and construction vehicles is addressed in Section 4.11 of the Submissions Response Document.

The following is taken from the planning application:

Ref: I5: Traffic and Transport *— Table 15.26 Summary of Peak Additional HGV/Abnormal Load Deliveries to site per road and Table 15.27 Summary of Peak Additional HGV/Abnormal Traffic movements on Roads. Page 67, paragraph 3 —for the construction haul route between L6612/L1102 junction, an additional 390 traffic movements per day will arise during this activity.*

Ref: Pages 57 & 58 — Traffic and Transport:

In brief, the construction phase (on construction haul route L6612) includes transportation of abnormal loads of rock/imported stone, steel, concrete and other construction materials and delivery of a large transformer (110kV/33 kV). Based on these, one could assume that vehicle generated ground borne vibrations may occur depending on the loads, the uneven road surface and the speed of the HGVs.

We further requested that the L6612 be independently surveyed for its suitability for these purposes and also for excavation for the grid connection cable.

Response;
Transportation of rock and imported stone and other construction materials will be by HGV, these are not considered abnormal loads. Abnormal Load Deliveries as referenced in Table 15.26 above refers to a load that exceeds the weight, height, width, or length limit(s) outlined in S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended). In terms of the Proposed Development this will include deliveries of turbine components, cranes and some substation equipment.

Section 15.5.1 of Chapter 15: Traffic and Transport assesses the impact of construction materials delivery vehicles on the local road network. Impacts to roads from the Grid Connection and Interconnector (ie the underground cabling) are assessed in Section 15.5.5 of Chapter 15; Traffic and Transport.

Works carried out on the public road network will be in accordance with TII and County Council specifications for the road classification and road design speed. Modifications to the public road network for the transportation of abnormal loads will be agreed with the relevant County Council / TII. The modification works will be subject to a detailed design, road opening licence and approved traffic management plan. Reinstatement details such as surfacing of the road network following the construction of the Project will be agreed with the relevant County Council / TII.

Queries related to Noise and Vibration including that of the hydrogen transport vehicles and construction vehicles is addressed in Section 4.11 of the Submissions Response Document.

Ref: Traffic and Transport: Table 15.2 Consultation Responses — page 8

Mayo County Council, letter dated 3rd August 2021 — Report from Alan Di Lucia, S.E.P. Planning Section: Page 9

3. The proposal to construct the Grid Connection along the local road network is not acceptable as it has the potential to undermine the structural capacity of the roads concerned. A private wayleave should be secured.

Response;
The Wind Energy Guidelines 2019[4] states that underground cabling for grid connections is preferred compared to overhead lines. It states that;
"Where undergrounding is being pursued, proposals should demonstrate that environmental impacts including the following are ***minimised****:*

- *Habitat loss as a result of removal of field boundaries and hedgerows (right of way preparation) followed by topsoil stripping (to ensure machinery does not destroy soil structure and drainage properties);*
- *Short to medium term impacts on the landscape where, for example, hedgerows are encountered;*
- *Impacts on underground archaeology;*
- *Impacts on soil structure and drainage;*
- *Impacts on surface waters as a result of sedimentation."*

Being located within the road corridor minimises potential impacts on all of the above, therefore by design, the project has, where possible, located underground cabling in existing roads. The Grid Connection will become an asset of EirGrid once construction is complete. For ease of access for maintenance, EirGrid prefers underground cabling to be located in the public road.

We requested information about plans being implemented for passengers using Local Link (a door to door mini bus service), Bus Eireann and the extra safety measures in place to protect other road users i.e. children and adults on bicycles, pedestrians, farmers and their animals and horse riding.

Response;
Section 4.6.3 of the Submissions Response Document addresses queries regarding Local Link, public bus networks and vulnerable road users. It references that a Traffic Management Plan (TMP) has been developed (see Management Plan 7 attached to the CEMP in the EIAR).

4.6.3 Impact on other vehicles

All access points(domestic, business, farm) will be considered when finalising the proposed road closures and diversions. Additional measures such as local road widening, traffic shuttle systems and 'Stop-Go' systems will also be considered subject to the agreement with Sligo County Council and Moyo County Council. Road closures

[4] https://www.gov.ie/en/publication/9d0f66-draft-revised-wind-energy-development-guidelines-december-2019/

will be scheduled in consultation with local residents and the Contractor shall endeavor to avoid times of high agricultural activity .i.e. silage cutting.

Has a weight analysis been done on Knockbrack Bridge as it is on the L6612 construction haul route for HGVs carrying abnormal loads of construction materials, rock/imported stone, concrete and steel?

Response;
Transportation of rock and imported stone and other construction materials will be by HGV, these are not considered abnormal loads. All construction haulage vehicles will comply with current road transport regulations; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

A detailed structural assessment of the bridges and structures on the road network which forms the construction haul route to site will be carried out prior to any works commencing on site.

It has been stated that this bridge is incapable of supporting the proposed 110kV connection.

Ref: 15 Traffic and Transport - 15.4.4 Grid Connection and Interconnector Page 56(top of page)

The Interconnector Route continues west through the crossroads, remaining within the L6612 local road for an additional 2470m. Along the L6612 local road, the interconnector route encounters a bridge over the Brusna River. The proposed traversal method of this bridge crossing is an HDD(Horizontal Directional Drilling) undercrossing (Reference drawing 05805-DR-258), due to the aforementioned bridge being incapable of supporting the proposed 110kV connection as it contains insufficient cover. The Interconnector Route then changes direction, heading southwest via the L66121 local road for the final section of the route within the public roadway c.355m in length.

Response;
*The bridge does not have the **space** to accommodate the underground cables. This is not in reference to the weight of the cables as outlined in the text used above;*
*"due to the aforementioned bridge being incapable of supporting the proposed 110kV connection as it **contains insufficient cover**", as noted in the extract used in the submission.*

Based on our concerns, we request an oral hearing.

Response;
An Oral Hearing has been organised by the Board.

Please acknowledge receipt of our submission on the observations received in relation to the application.

Deirdre & John Bourke

3.5 JOHN BOURKE

To whom it may concern

I, the undersigned wish to state that I own and farm land in Carra, Bonniconlon on L6612, which is named as the construction haul route for Firlough Wind Farm and Hydrogen Plant project. My family home is also on this proposed route and I was dismayed to read the following:

4.12.4 Consents

A number of observations raised concerns that the relevant Statutory consents were not in place for works required along the public road for Grid Connection, /interconnector and works to haul routes including for passing bays. All landowner consents for these works are in place.

It would be prudent that An Bord Pleanála seeks proof of the landowner consents as 70% of the land adjacent to the L6612 is not in control of the applicant.

Response
Queries relating to consents were addressed in Section 4.12.4 of the Submissions Response Document. To clarify, works in the public road will be undertaken by a statutory undertaker having the right or interest to provide services in connection with the Proposed Development, in accordance with Statutory Instrument No. 9 of 2021 of The Planning and Development Regulations 2001 (As Amended). Consent is not required from landowners adjacent to the public road. No further consents are required. All consents were submitted with the planning application.

I also wish to state that I have not been consulted nor have I given consent for proposed passing bays and road widening on my lands on L6612.

Response;
Queries regarding Public Consultations are outlined in Section 4.1 of the Submissions Response Document. Passing bays on lands other than those outlined in the Planning Application are not needed, therefore no additional consent is required. Proposed Passing Bays do not abut any property owned by John Bourke. All permissions required have been obtained.

I request an oral hearing on this proposed project.

Response;
An Oral Hearing has been organised by the Board.

Signed: John Bourke

3.6 RONAN CARRABINE

To Whom It May Concern:

I have read the Jennings O'Donovan Consulting engineers' response to third party submissions and observations, planning application, reference Re: ABP -317560-23

I note that on p 157, 4.13.5 Livestock that there is no reference to livestock on farms in the environs of the proposed hydrogen site. This issue was raised but is not answered, and our lands used for livestock are within risk zones illustrated in 16.3 of the EIAR.

In the Quantitative Risk Assessment 16.3 in the EIAR referred to by the applicant, farmlands used by me are in the inner zone.

Response;
The QRA was performed according to the HSA's Guidance on Technical Land Use Planning Advice[5] with particular focus on Section 3.4; Hydrogen Installations.

Queries in relation to Health and Safety were addressed in Section 4.4 of the Submissions Response Document. Section 4.5.1 Water Abstraction and Section 4.5.3 Water Discharge of the Submissions Response Document addressed queries in relation to the hydrogen plant, water environment and soils in terms of impacts to livestock. Section 4.11 addressed impacts relating to noise and livestock.

I note that there is no account of all of the workers working on farm lands at different seasonal times, who should have been considered when doing this assessment, as the purpose of such assessments should be to assess the possible impact on human life.

Response;
The QRA was performed according to the HSA's Guidance on Technical Land Use Planning Advice[6] with particular focus on Section 3.4; Hydrogen Installations.

On the legend of planning drawing 6129 PL 014 the blue line represents 'Lands under control of the applicant'. I can confirm that not all lands are not under the control of the application on this drawing.

Response;
*The lands **within** the blue line are under the control of the Applicant, this is standard for planning drawings as per Article 23 of the Planning and Development Regulations 2001. Land bordering the blue line is not under control of the Applicant. All required consents are in place for the Development. These were submitted with the planning application.*

The applicant has clearly stated on pages 40/152/153 of the response document that consents are in place for lands at the windfarm site. We have not given permission for land under our control on same. Therefore I do not understand how the applicant can claim control of lands there.

Response;
All consents are in place with the Landowners of the Wind Farm Site for the Proposed Development. Within the same landholding there are a number of turbary holders who have a right to harvest peat on their specific turbary plots whose consent is not required as the

[5] HSA. https://www.hsa.ie/eng/publications_and_forms/publications/chemical_and_hazardous_substances/guidance_on_technical_land_use_planning_advice.html
[6] HSA. https://www.hsa.ie/eng/publications_and_forms/publications/chemical_and_hazardous_substances/guidance_on_technical_land_use_planning_advice.html

Proposed Development does not encroach or affect their turbary rights. We have checked the Carrabine turbary plots and can confirm the Proposed Development does not affect their plots.

I live in HH20. I can verify that myself and my parents were not invited to any meetings organised by Mercury Renewables. We were not contacted re the project and received no correspondence. We were not invited to the Hydrogen Plant Neighbours meeting in Muddy Burns on 25th May 2023 referred to on p53 response document.

Response;
Queries regarding Public Consultations are outlined in Section 4.1 of the Submissions Response Document. The May 2022 and the September 2022 newsletters, which included contact details and invitations to the Public Information Days, and the November 2022 Newsletter. were hand delivered to Ronan Carrabine's parent's house, where he resides. The Applicant, John Duffy, also text Ronan Carrabine requesting a meeting on the 10th and 29th May 2022. John Duffy text Ronan Carrabine again on 2 June 2022 confirming hand delivery of the May 2022 newsletter.

The PACC report in Appendix 1.3 of the EIAR states;
On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant where invited to an informal meeting. Two individuals attended the evening.

HH20 does not share a boundary with the Hydrogen Plant. This house was included in leaflet and newsletter drops including those materials which invited the occupants or anybody interested in the project to the Public Information Days.

I am concerned that there no design report was submitted for the junction N59 / L66121. This was cited by the TII and referred to on p49 of the response document. The applicant stated that the design of the N59 L66121 has been carried out. However this not the case.

Response
The Design Report required under NH-GEO-03030 for local improvement was scheduled to be submitted during the detailed design phase. This has now been completed and can be found in Appendix A; N59 / L66121 Priority Junction Design Report.

The applicant has only specified vehicles, transporting hydrogen, in relation to the quantity of hydrogen on board. It is their working assumption that lorries used will carry 1200kg of hydrogen. There are no specifications of the weight of these lorries loaded with cylinders of hydrogen. There are no dimensions given for these lorries. There is no road safety audit for these vehicles on the L66121 or N59.

Traffic counts are based on this size vehicle only. These vehicles are not common and it cannot be assumed that they will be generally available and certified for use in Ireland/ Europe, before the hydrogen plant could be operational.

The working assumption is that the lorries holding 384kg will be used until such time as larger lorries will be available. In the case of these lorries 176 lorry movements will take

place when the site is in full operation from the L66121 to the N59. No specifications re weight, or dimensions have been estimated for these either.

Response;
176 lorry movements is incorrect. Section 4.2.2 of the Submissions Response Document addresses queries related to Hydrogen Tankers and the Number of Movements. Queries related to tube trailers were addressed in Section 4.2.2 of the Submissions Response Document. The green hydrogen will be transported from the Hydrogen Plant Site using tube trailers and the impact of this on the local road network is assessed in Chapter 15: Traffic and Transport. All tube trailers will comply with current road transport regulations; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended), including in size and gross weight. Tube trailers are currently used to transport a number of compressed gas products on Ireland's roads including natural gas, compressed air, nitrogen and oxygen.

I am concerned as this traffic will greatly impinge on my farm work.

Response;
Queries relating to traffic were addressed in Section 4.6 of the Submissions Response Document, including the effects during the construction phase. A Traffic Management Plan (TMP) has been developed (see Management Plan 7 attached to the CEMP in the EIAR). Prior to construction and once the Contractors have confirmed their suppliers, the TMP will be updated in consultation with Sligo County Council and Mayo County Council and An Garda Síochána as necessary. All access points (domestic, business, farm) will be considered when finalising the proposed road closures and diversions. Additional measures such as local road widening, traffic shuttle systems and 'Stop-Go' systems will also be considered subject to agreement with Sligo County Council and Mayo County Council. Road closures will be scheduled in consultation with local residents and the Contractor shall endeavour to avoid times of high agricultural activity e.g. silage cutting.

My concerns re devaluation of property and my worries about obtaining planning permission in the future were ignored by the applicant.

Response;
Property Value was assessed in the EIAR in Chapter 4; Population and Human Health, Section 4.4.7. Residential amenity was addressed in Section 4.4.6 of the same chapter. The Applicant cannot comment on the likely success of potential future planning applications. These will be assessed by the relevant authority having regard to the relevant planning policy set out in the County Development Plan.

I am still concerned that the abstraction of water in the immediate vicinity of farm lands at the proposed hydrogen site will have a serious effect on our land and livestock.

Response;
Queries regarding the abstraction of water are addressed in Section 4.5.1 of the Submissions Response Document.

I am concerned that large storage of water on the site could affect our land, wetting it excessively.

Response;

Queries regarding flooding risks are addressed in Section 4.5.7 of the Submissions Response Document. Water will be stored in underground storage tanks, as described in Section 2.6.6.4 of Chapter 2 Project Description in the EIAR. The impacts of these have been assessed throughout the EIAR.

I am worried that the applicant plans to use mains water and it is not clear whether talks with Irish Water were regarding water for hydrogen production or if the water discussed was for the Staff Welfare facilities.

Response;
Queries regarding the mains supply are addressed in Section 4.5.2 of the Submissions Response Document. Section 2.6.6.14 of Chapter 2 Project Description in the EIAR defines the source of water for staff welfare facilities;
"The raw water storage tanks will be used as the source of water for toilet facilities at the Hydrogen Plant Site. A potable water supply will be brought to the Hydrogen Plant Site via connection to the Uisce Éireann mains."

I respectfully request that An Bord Pleanála holds an oral hearing in relation to this planning application.

Response;
An Oral Hearing has been organised by the Board.

Please acknowledge receipt of this correspondence.

Ronan Carrabine.

3.7 ECO ADVOCACY C/O KIERAN CUMMINS

Dear Sir/Madam

Further to yours of the 12th of December last wherein you provided us with correspondence received on from the applicants and invited us to consider and provide observations. Accordingly, please find our observations and comments set out hereunder.

At the outset, we reiterate our belief that this application is **premature** pending satisfactory **guidelines** for utility scale hydrogen instillations. It is further considered that this premature pending a full **national led SEA assessment** of utility scale wind and hydrogen instillations together with the loss of finite agricultural land together with natural habitat.

Please note that there are **9 pages** in total to this submission inclusive of the cover page.

Response;
Queries in relation to Hydrogen Demand and in Ireland is addressed in Section 4.2.4 of the Submissions Response Document and in the EIAR Chapter 1 Introduction; Section 1.6; Need

for the Development. Queries relating to "Premature Development" are addressed in Section 4.2.1 of the Submissions Response. The Guidance on Technical Land Use Planning Advice[7] *contains Section 3.4; Hydrogen Installations – specifically providing guidance on utility scale hydrogen installations. Strategic Environmental Assessment (SEA) is addressed in Section 4.12.6 of the Submissions Response Document. Queries regarding land use change and the loss of agricultural land was addressed in Section 4.13.1 of the Submissions Response Document.*

1. We note that Coillte made submissions asserting that the minimum distance between turbines and adjoining properties should be less than two rotor blades. It is submitted that this is erroneous. We submit that the distance should be a minimum of 7 times tip height.

2. Curiously the applicants take issue with the Coillte suggestion and go into all sorts of arguments to refute this. We believe these arguments do not stand up to scrutiny and should be disregarded. We note that they also rely on ***'Wind Energy Ireland'*** to support their proposition. ***Wind Energy Ireland*** is the trade association of the wind lobby. Reliance on assertions form a lobby group of any kind would be foolhardy and we strongly discourage this.

Response;
This was addressed in Section 3.7 of the Submissions Response Document.

3. Significant submissions were made regarding the issue of sustainability. These have not be adequately dealt with or addressed at all. It remains the case that wind is an intermittent form of energy, which is not dispatchable and needs to be backed up.

Response;
Section 4.13.4 of the Submissions Response Document addresses the sustainability of the Project along with Section 3.3 of the Planning Statement submitted with the application.
Wind as an intermittent renewable energy is addressed in Section 4.1.1 of the *Submissions Response Document.*

4. **Ecology:** We made significant submissions re the issue of Ecology. We note the response, but they fail to satisfactorily address our concerns and appear to merely reiterate much of what was already stated in the EIAR.

Response;
A full ecological impact assessment was provided during the EIA process which had already provided responses to the queries raised. The purpose of the Submissions Response Document is to provide assistance in locating these details and additional clarity where there was reader confusion.

(4 continued) There are significant archaeological artifacts and tombs and we are also very concerned that archaeological issues need further evaluation.

[7] HSA. https://www.hsa.ie/eng/publications_and_forms/publications/chemical_and_hazardous_substances/guidance_on_technical_land_use_planning_advice.html

Response Section 4.8 of the Submissions Response Document addresses queries relating to archaeology along with Chapter 14 of the EIAR.

5. We again recommend that a **full cost/ benefit analysis** be conducted to establish value for money given the resources required taking into account the intermittent nature of solar energy. This should include comparisons with other forms of sustainable energy with particular reference to Deep-bore geothermal energy, which is fully dispatchable and not intermittent. Such an analysis should ignore completely any artificial grant incentives and focus purely on the real cost of the development together with an assessment of what can realistically be expected in terms of deliverable energy generation at these northerly latitudes. This should also factor in worst-case scenario climatic conditions (light levels) with extensive periods of cloud cover.

Response;
The Project is a private development and the financial details are commercially sensitive information which is not required to be made publicly available. This is not a publicly funded development. The Project will provide benefits to the wider economy, these are detailed in the Policy Statement submitted with the EIAR, Section 2.6.5;
"The north and west of Ireland has been downgraded to a "lagging region" by the European Commission after becoming significantly poorer relative to the European average over recent years. The region, which covers both County Sligo and County Mayo in which the Proposed Development is located, was downgraded from "more developed" status to a "transition region" and is the only NUTS 2 region in Ireland viewed as a "Lagging Region" by the European Parliament's Committee on Regional Development. The region's GDP per head of population has fallen from 82 per cent of the EU average between 2015 and 2017 to an estimated 71 per cent now.

The Proposed Development would represent a strategically significant investment in the locality of Mayo and Sligo and the wider northwest region. The Proposed Development will provide a multi-million euro benefit to both the Irish and local economies. The Development provides the opportunity to reinforce the existing local renewable energy industry knowledge and skills base, providing the stability and diversity to the rural economy that can stimulate further industry investment to take place. This will have a positive economic impact with several Irish firms commissioned to work on the design, environmental assessment and planning aspects of the Project."

Queries related to alternatives, including Deep Bore Geothermal energy, are addressed in Section 4.1.1 of the Submissions Response Document.

6. We note at a short paragraph on Rare Earth Metals at 4.2.5. This seems to be confined to the Hydrogen element of the proposal and apparently ignores the issue of rare earth metals re the proposed wind turbines. What about **neodymium** and **cobalt** for example? We were also unable to find any discourse on the resources required to give effect to the proposals; i.e. concrete, steel, hardcore, etc. This is particularly significant having regard to the wind turbine element of the application. The applicant goes into a some discourse on **Gallium.** That isn't even listed a rare earth metal; rather a chemical element. The applicants fail to address the issue of rare earth metals which will be used in the implementation of the proposals. We

are alarmed at the approach adopted by the applicant. This is in our opinion somewhat of a straw man type argument. Please note that submissions by the public / NGO's are usually made on an altruistic basis by people with little time or resources. It is not good enough that applicants should then seek to find fault with a submission and use one issue (in this instance; Gallium) so as to discuss this and avoid discussing the various other pertinent issues. This kind of attitude is a slap in the face to meaningful public participation.

7. There are 17 rare earth metals. These may be summarised as: Scandium [Sc], Yttrium [Y], Lanthanum [La], Cerium [Ce], Praseodymium [Pr], Neodymium [Nd], Promethium [Pin], Samarium [SmJ, Europium [Eu], Gadolinium [Gd], Terbium [Tb], Dysprosium [DyJ, Holmium [No], Erbium [Er], Thulium [Tm], Ytterbium [Yb1, Lutetium [Lu]. The applicant should be required to identify each and every rare earth metal which will be used in the planning proposals together with the quantity required. They should also provide full details on how each of these elements are sourced and mined together with the implications for humans in the vicinity.

8. The applicants should also be required to provide a full inventory of all resources required to implement their proposals. This should include quantities of Concrete, Steel, roofing materials, aggregate, hardcore, fossil fuels (diesel, petrol, kerosene, etc), etc. This is not an exhaustive list.

Response;
The Submission Response Document section on Gallium was in response to queries raised in relation to solar panels. The Project does not include solar panels.

"Rare earths" are a group of 17 chemically similar elements crucial to the manufacture of many hi-tech products. Uses include the components of many devices used daily in our modern society, such as: the screens of smart phones, computers, and flat panel televisions; the motors of computer drives; batteries of hybrid and electric cars; and new generation light bulbs. Magnets containing neodymium for example are also used in green technologies such as the manufacture of wind turbines and hybrid cars.

As these are found in so many applications it is impossible at this stage, and unreasonable to expect, these to be specified.

The separate Planning Statement submitted with the planning application outlines the many International, National and Regional/Local policies that support wind energy and hydrogen as a renewable energy source. These policies are subject to Strategic Environmental Impact Assessment and it is outside of the scope of the planning application and EIAR to justify the use of a technology, which is supported by these statutory policies.

Regarding; "We were also unable to find any discourse on the resources required to give effect to the proposals; i.e. concrete, steel, hardcore, etc.", this was addressed in Section 4.13.8 of the Submissions Response Document.

9. Given the attitude of the applicant, we are now obliged to provide information on sustainability.

10. **Developer Led:** the proposal is a developer led proposal. The effect of this proposal has already been to divide the local community between landowners benefiting from the revenue from turbine sites on the one hand and others on the other. This is inappropriate developer led rather that national and strategic based planning. Any future Irish wind energy proposal needs to be plan led and not developer led. This proposal is inappropriately developer led acting without any proper national and location selection strategy.

Response;
This was addressed in Section 4.1.1 of the Submissions Response Document.

11. **The TURBINES**: The manufacture of steel and other components to assemble a turbine (particularly on the scale proposed) must also be assessed as regards its impact on the environment vis a vis carbon footprint and environmental sustainability of natural and finite resources.

Response
Queries re the material volume requirement of the project are addressed in Section 4.13.8 of the Submissions Response Document. The Carbon Footprint of the turbine components is assessed in Chapter 13; Air and Climate of the EIAR. Sustainable Development is addressed in Section 4.13.4 of the Submissions Response Document.

Carbon footprint of wind energy: The manufacture of cement requires significant temperatures. The carbon footprint / ton is therefore very significant. It is submitted that the use of such a vast quantity of concrete would give rise to an unacceptably high carbon footprint. The reality is that construction and erection of wind turbines will give rise to significant and unsustainable resource consumption.

Response;
The Carbon Footprint of the wind farm is assessed in Chapter 13; Air and Climate of the EIAR. Queries from submissions, including the above are also addressed in Section 4.7.3 of the Submissions Response Document.

12. We were unable to easily find exact grade of aggregate, steel or nm of concrete in any of the works be it bases, culverts, manholes, etc. It would be essential that the applicants provide a table of figures for the amounts of aggregate required to construct the network of access roads.

Response;
Queries re the material volume requirement of the project are addressed in Section 4.13.8 of the Submissions Response Document. This included a break down of the volume of aggregate for access roads.

14. It is considered helpful to provide a short analysis of some of the components of wind turbines, which we will now outline.

15. **STEEL:** To create 1,000 Kg of pig iron, you start with 1,800 Kg of iron ore, 900 Kg of coking coal 450 Kg of limestone. The blast furnace consumes 4,500 Kg of air. The temperature at the core of the blast furnace reaches nearly 1,600 degrees C. The pig iron is then transferred to the basic oxygen furnace to make steel. 1,350 Kg of CO2 is emitted per 1,000 Kg pig iron produced. A further 1,460 Kg CO2 is emitted per 1,000 Kg of Steel produced so all up 2,810 Kg CO2 is emitted. 45 tons of rebar (steel) are required so that equals 126.45 tons of CO2 are emitted.

Response;
Queries regarding the material volume requirement of the project are addressed in Section 4.13.8 of the Submissions Response Document. The carbon losses of the Wind Farm is assessed in Chapter 13; Air and Climate of the EIAR, including from steel and queries including those related to steel are addressed in Section 4.7.3 of the Submissions Response Document.

16. **CONCRETE:** To create 1,000 Kg of Portland cement, calcium carbonate (60%), silicon (20%), aluminum (10%), iron (10%) and very small amounts of other ingredients are heated in a large kiln to over 1,500 degrees C to convert the raw materials into clinker. The clinker is then interground with other ingredients to produce the final cement product. When cement is mixed with water, sand and gravel forms the rock-like mass know as concrete. For the turbines currently being proposed, upwards of 200 lorry loads of readymix calculate are required to anchor each turbine (in addition to lots of reinforcing steel).

Response;
Queries re the material volume requirement of the project are addressed in Section 4.13.8 of the Submissions Response Document. The carbon losses of the Wind Farm is assessed in Chapter 13; Air and Climate of the EIAR, including from concrete and queries including those related to concrete are addressed in Section 4.7.3 of the Submissions Response Document.

17. **ROADS**: Infill for access roads: sourced from crushed rock derived from quarrying are also required.

Response;
Queries re the material volume requirement of the project are addressed in Section 4.13.8 of the Submissions Response Document. The carbon losses of the Wind Farm is assessed in Chapter 13; Air and Climate of the EIAR, including from aggregates for access tracks and queries, including those related to aggregates are addressed in Section 4.7.3 of the Submissions Response Document.

18. **RARE EARTH METALS**: Each and every wind turbine has a magnet made of a metal called neodymium. The mining and refining of ***neodymium*** extraordinarily dirty and toxic — involving repeated boiling in acid, with radioactive thorium as a waste product — 90% of it comes from — Baotou, China. Neodymium is a rare earth metal, which is generally sourced in China and which is causing. There are c. 4 tons of neodymium magnets in each turbine for example. China's Ministry of Industry and Information Technology estimated that the cleanup bill for southern Jiangxi Province could amount to 38 billion yuan, or around $5.5 billion. Only a fraction of that amount has so far been spent.

Response;
Please see earlier response within this submission in relation to rare earth metals to avoid repetition.

19. **The MAGNETS**: The turbines themselves come from a process, which cannot be considered sustainable. In fact the trail of destruction and environmental pollution, which is left behind, is shameful.

    a. To quote from the enclosed article on the issue 'Neodymium is commonly used as part of a Neodymium-Iron-Boron alloy (Nd2Fe14B) which, thanks to its tetragonal crystal structure, is used to make the most powerful magnets in the world... There's not one step of the rare earth mining process that is not disastrous for the environment. Ores are being extracted by pumping acid into the ground, and then they are processed using more acid and chemicals. The fact that the wind-turbine industry relies on neodymium, which even in legal factories has a catastrophic environmental impact... Finally they are dumped into tailing lakes that are often very poorly constructed and maintained. And throughout this process, large amounts of highly toxic acids, heavy metals and other chemicals are emitted into the air that people breathe, and leak into surface and ground water. Villagers rely on this for irrigation of their crops and for drinking water. 'Whenever we purchase products that contain rare earth metals, we are unknowingly taking part in massive environmental degradation and the destruction of communities."

    b. Curiously RTE's weekly 'World Report programe also alluded to the issues presented in Baoding, China on 31st May 2015; htto://www.rte.ie/radio1/world-reoort/ It was referred to as Chinas most polluted city.

    c. Aside from the manufacture of the magnets alluded to above and in the appended enclosure, World-Report alluded to the manufacture of Blades for wind turbines together with solar panels. Some statistics about Baoding were that the skies are constantly full of smog from pollution and thus far this year, they had only got 16 days smog free as of [31st May 2015]. The listener was informed that Blue skies are seldom seen. Fine particles (PM 2.5) are double that of recommended levels and the population have respiratory problems/ breathing difficulties and facemasks are frequently worn in an attempt to protect oneself. It is estimated that air pollution is responsible for 100,000 deaths each year. Because of Chinas Censorship, it is difficult to obtain detailed data. To make maters worse, at decommissioning stage, the blades are being chopped up and being land filled. See: https://www.bloomberg.com/news/features/2020-02-05/wind-turbine-blades-can-t-be-recycled-so-they-re-piling-up-in-landfills

Response;
Please see earlier response within this submission in relation to sustainability to avoid repetition. The scope of the EIA does not cover the impacts of manufacturing/magnet production. This is consistent with recent case law; An Taisce v. An Bord Pleanála.

20. We invite you to assess the following links to substantiate what we have outlined above: -

Rare-earth mining in China comes at a heavy cost for local villages
Pollution is poisoning the farms and villages of the region that processes the precious minerals
Cécile Bontron
Tue 7 Aug 2012 13.59 BST
https://www.theguardian.com/environment/2012/aug/07/china-rare-earth-village-pollution

Rare earth mining in China: the bleak social and environmental costs
China produces 85% of global supply of the 17 chemically similar elements crucial to smartphone, camera lens and magnet manufacture — and half that output is from the city of Baotou
Jonathan Kaiman in Baotou
Thu 20 Mar 2014 14.30 GMT
https://www.theguardian.com/sustainable-business/rare-earth-minine-china-social-environmental-costs

The dystopian lake filled by the world's tech lust
By Tim Maughan
2nd April 2015
https://www.bbc.com/future/article/20150402-the-worst-place-on-earth

China Wrestles with the Toxic Aftermath of Rare Earth Mining
China has been a major source of rare earth metals used in high-tech products, from smartphones to wind turbines. As cleanup of these mining sites begins, experts argue that global companies that have benefited from access to these metals should help foot the bill.
BY MICHAEL STANDAERT
JULY 2, 2019
https://e360.yale.edu/features/china-wrestles-with-the-toxic-aftermath-of-rare-earth-mining

Response;
The separate Planning Statement submitted with the planning application outlines the many International, National and Regional/Local policies that support wind energy as a renewable energy source. These policies are subject to Strategic Environmental Assessment and it is outside the scope of the planning application and EIAR to justify the use of a technology, such as wind which is supported by these statutory policies both in Ireland and internationally.

21.	**Neodymium is but one example of a rare earth metal. The applicants should be able to provide a full assessment of ALL rare earth metals used and provide a full and frank discourse. This is essential information if we are to properly assess this application.**

Response;
Please see earlier response within this submission in relation to rare earth metals to avoid repetition.

22. **Human Rights:** In addition to the issue of sustainability raised above, there are clearly significant Human Rights issues to consider here. It is therefore unconscionable that the practices alluded to in the referenced articles should be supported in any way.

Response;
Please see earlier response within this submission in relation to sustainability to avoid repetition. In relation to human rights queries outlined in the articles/text above, the scope of the EIA does not cover the impacts of manufacturing/mining on human rights. This is consistent with recent case law; An Taisce v. An Bord Pleanála.

23. **The FUEL:** The sheer volumes of concrete required together with access roads and hard standing areas, which in turn would require massive quantities of infilling to facilitate the construction of the proposed turbines is vast. It follows that the amount of diesel fuel necessary to fuel the truck to haul all this material on site would be enormous. This too must be factored into the carbon footprint equation together with the sustainability of consuming so much fossil fuel in the construction of the proposed wind turbines.

Response;
Air and Climate, including the use of fuels during construction, operation and decommissioning is assessed in the EIAR Chapter 10 Air and Climate.

24. **Where does the aggregate come from?**

a. Further to the above, sourcing such an enormous quantity of aggregate would pose enormous challenges. Aggregate is a major constituent of concrete. Aggregate will also be required to construct all the hard standing areas and access roads. It is submitted that this is squandering of national resources.

Response;
This was addressed in the Submissions Response Document in Section 4.13.8.

b. The sighting of turbines should be in a situation where naturally occurring bedrock can be utilized, obviating the need for the requirement of such vast amounts of concrete and aggregate.

Response;
The design of the turbine foundations follows standard practice and was provided by qualified engineers. These are needed to anchor the turbine safely. Appendix 8.1 of the EIAR includes results of the Site Investigations for the Wind Farm Site. It is not necessary to bear the turbine foundation on bedrock as subsoil with a suitable bearing capacity can also be utilised.

The development process adopted by the Applicant has represented a best practice approach to a renewable energy scheme design, minimising the potential impact through multiple design iterations and modifications to minimise the impact on the receiving environment and avoiding constraints identified on the site. This is explained in Chapter 3 Alternatives.

Bed rock at or near the surface makes up only a small percentage of the land cover in Ireland. Restricting wind energy developments to these areas would severely hamper or make it impossible to achieve statutory renewable energy targets needed in order to urgently address climate change and protect the worlds ecosystems and people from the effects of climate change.

The Interim Guidelines for Planning Authorities on Statutory Plans, Renewable Energy and Climate Change (July 2017) included a specific planning policy requirement (SPPR) for local authorities to: "Indicate how the implementation of the relevant development plan or local area plan over its effective period will contribute to realising overall national targets on renewable energy and climate change mitigation, and in particular wind energy production and the potential wind energy resource (in megawatts)" [2, p. 2]. This was an update to the Wind Energy Development Guidelines from 2006, which set a requirement to identify on development plan maps the key areas where "wind energy development will be acceptable in principle"

The Wind Farm is in an area designated as a preferred area of Wind in the Mayo County Development Plan.

Furthermore, in addition to aggregate, sand and gravel are also component constituents of concrete. Through our experience and understanding of the quarry industry, we know that supplies of sand and gravel are rapidly dwindling. It is therefore essential that such schemes be situate on naturally occurring bedrock!

Response
Chapter 13 of the EIAR Material Assets and other issues includes Section 13.8; Quarries. Turbines being cited on bedrock is addressed above.

25. **Sporadic nature of wind power:** terrestrial based wind power is historically very sporadic and erratic. To state the obvious, in periods of static airflow, no wind is produced. This causes all sorts of challenges for management of the grid in that it must be replaced by alternative sources of energy. Alternative Energy Sources are discussed separately in this submission, as are issues pertaining to the management of the grid.

Response;
This was addressed in Section 4.1.1 of the Submissions Response Document. The separate Planning Statement submitted with the planning application outlines the many International, National and Regional/Local policies that support wind energy as a renewable energy source. These policies are subject to Strategic Environmental Assessment and it is outside the scope of the planning application and EIAR to justify the use of a technology, such as wind which is supported by these statutory policies both in Ireland and internationally.

26. **Infrasound:** Moreover, there is significant evidence from outside of Ireland that Infrasound is an issue for people who live very close to wind turbines. Dr Mariana Alves-Pereira of Portugal has written and talked frequently on this issue. You may also find evidence from Bruce Rapley, Huub Bakker and Rachel Summers. Curiously we were unable to find any reference in the EIAR to 'Infrasound'.

Response;
Chapter 11; Noise and Vibration of the EIAR, Section 11.8 is titled; 'INFRASOUND AND LOW FREQUENCY NOISE AND VIBRATION.' This section includes peer reviewed research. An experienced and qualified Noise and Vibration Consultant assessed the impacts, including infrasound, of the project.

27. There have been many newspaper reports about the safety of industrial wind turbines and indeed many can be seen on the internet. We invite the planning authority to see for itself just how unsafe industrial wind turbines can be. The information may be assessed at: http://www.caithnesswindfarms.co.uk/fullaccidents.pdf

Response;
This was addressed in Section 4.1.1 of the Submissions Response Document. The separate Planning Statement submitted with the planning application outlines the many International, National and Regional/Local policies that support wind energy as a renewable energy source. These policies are subject to Strategic Environmental Assessment (SEA). It is outside the scope of the EIA process to justify the use of a technology, such as wind which is supported by these statutory policies both in Ireland and internationally.

28. **Spinning Reserve:**

a. It follows that alternative sources of energy must be constantly available to provide power when wind isn't blowing. This can be referred to as cycling up and cycling down. During periods of static air mass and nil generation of wind energy, power must be generated from other sources.

b. Currently the main energy source is at the Moneypoint station in County Clare. Is it not the case that this must be kept burning in order to take up the slack when there is no wind energy coming on stream? We understand that it and similar power plants cannot be turned off, as they take too long to power up (48 hours), which for obvious reasons would not be feasible when wind energy falls off. We further understand that this has been very problematic in Scotland where there are a large numbers of wind turbines.'

c. The Limits of Wind Power [by William Korchinski] states: - '**The analysis reported in this study indicates that 20% would be the extreme upper limit for wind penetration... Very high wind penetrations are not achievable in practice due to the increased need for power storage, the decrease in grid reliability, and the increased operating costs. Given these constraints, this study concludes that a more practical upper limit for wind penetration is 10%. At 10% wind penetration, the CO2 emissions reduction due to wind is approximately 45g CO2 equivalent/kWh, or about 9% of total.**' [Source: The Limits of Wind Power [by William Korchinski]

d. In 2012, Ireland was already at 15.3% from wind. This figure is almost certainly higher now with the advent of more energy streams (including wind) since then. 'The Department of Energy figures also show that in 2012 19.6 per cent of our

gross electricity production was by renewables. 15.3 per cent of this was wind, followed by 2.7 per cent by hydroelectricity.'

Response;
Hydrogen provides energy storage to address the variability of renewable energy and allows further penetration of renewable energy into Ireland's energy mix. The Project is in line with national targets to increase renewable energy generation, including wind and green hydrogen, as addressed in the Planning Statement which accompanied the planning application. Queries related to wind energy were also addressed in Section 4.1.1 of the Submissions Response Document.

29. **Efficiency of Wind Turbines**:

a. 'Not all the energy of blowing wind can be harvested, since conservation of mass requires that as much mass of air exits the turbine as enters it. Betz's law gives the maximal achievable extraction of wind power by a wind turbine as 59% of the total kinetic energy of the air flowing through the turbine' [Harvesting the Wind: The Physics of Wind Turbines Kira Grogg - 2005]

b. 'Further inefficiencies, such as rotor blade friction and drag, gearbox losses, generator and converter losses, reduce the power delivered by a wind turbine. Commercial utility- connected turbines deliver 75% to 80% of the Betz limit of power extractable from the wind, at rated operating speed.' [Tony Burton et at., (ed), Wind Energy Handbook, John Wiley and Sons 2001], See also http://en.wikipedia.org/wiki/Wind_turbine#Efficiency_

Response;
The Project is in line with national targets to increase renewable energy generation including wind and green hydrogen, as addressed in the Planning Statement which accompanied the planning application. This was also addressed in Section 4.1.1 of the Submissions Response Document. It is outside the scope of the EIA process to justify the use of a technology, such as wind which is supported by statutory policies both in Ireland and internationally.

30. **Grants/ Subsidies:**

a. We understand that significant grant incentives are available for the construction of wind based power units. We further understand that such grants are restricted to terrestrial based units and that these grants are no longer available for maritime-based units. This may well explain why the current proposal is a land-based proposal. This; notwithstanding the fact that there is a far more steady flow of wind at sea.

b. The evidence available suggests that the wind industry have lobbied extensively to retain this subsidy both in Ireland and in the UK, which is in our view misguided, and short-sighted in view of the many other more promising and sustainable energy sources. **Chasing grants/ subsidies makes for very poor planning law and should have no place in any society.**

Response;
The Project is in line with national targets to increase renewable energy generation, including those specific to onshore wind and as addressed in the Planning Statement which accompanied the planning application.

RoCoF

31. **RoCoF**: Rate of Change of Frequency (islanding detection method for decentralised generation units). Because wind fluctuates electricity generated changes regularly which can cause problems o the grid. This is difficult to manage on the grid. It follows that the more wind that is put on, the more difficult it is to manage. i.e. the more wind we get the more likely the grid will have problems in managing the fluctuating power intake. We have inserted some quotes taken from a document published in 2011 by the University of Manchester entitled 'Loss of Mains Protection':

    a. 'Loss of Mains (or islanding) occurs when part of the public utility network (incorporating generation) loses connection with the rest of the system
    b. If LOM is not detected, then the generator could remain connected, causing a safety hazard within the network.
    c. Automatic reconnection of the generator to the network may occur causing damage to the generator and the network
    d. Islanding is not permitted in most countries. The most challenging scenario is when the local load closely follows the generator output both in terms of active and reactive power.
    e. LOM performance requirements — stability
    f. LOM should be stable under remote faults cleared by the utility system.
    g. It is undesirable to issue a false trip as it leads to the unnecessary disconnection of the generator.'

Response;
Noted. The Project is in line with national targets to increase renewable energy generation, including those specific to onshore wind, as addressed in the Planning Statement which accompanied the planning application.

OTHER SOURCES OF ALTERNATIVE ENERGY

32. **Alternative Energy Sources:** Renewable Energy comes in many forms including:

    a. Solar Energy,
    b. Biomass,
    c. Biofuels,
    d. Tidal Energy,
    e. Wave Energy,
    f. Hydroelectric,
    g. Geothermal,
    h. Hydroelectricity, etc.

It is appropriate that we should give a brief analysis of each below.

Response;
As noted previously queries around alternative renewable energy sources are addressed in Section 4.1.1 of the Submissions Response, specifically on p58 and 59.

33. **Solar power:** Is the conversion of sunlight into electricity. This is somewhat dependent on technical advances in the conversion rates of the photovoltaic (PV) cells that convert sunlight into electricity. Moreover, battery power would be required during night hours or when there is poor sun during daylight hours. It is important to state that we only support solar on rooftops. The use of finite agricultural land for solar is an unacceptable use of finite resources.

Response;
There is no solar planned to be part of the Proposed Development. Solar was assessed as an alternative in Chapter 3; Alternatives in the EIAR.

34. **Biomass:** usually refers to plants, which are specifically grown as a crop for the purposes of energy generation. **Often available in the form of wood pellets that can be produced from crops of plants such as willow. Given the existing Moneypoint Power plant in County Clare, there is potential to convert this plant from burning coal (fossil fuel) to burning biomass.**

35. **Biofuels:** Biofuels have been proposed as an alternative by some commentators. Bioethanol is made by fermenting plant materials and biodiesel is made from vegetable oils, animal fats or recycled grease. Biofuels typically include Biodiesel and Ethanol. In 2008 biofuels provided a mere 1.8% of the world's transport fuel. Bioethanol production relies on the cultivation of large amounts of plant material. A major issue with biofuels is that arable land would have to be taken out of food production to produce biofuels. Given that the human population of the world is increasing at a rate never before seen, little of no land could be made available for production of biofuels. Moreover, there is a danger that more tropical rain forest would disappear to satisfy the demands for same.

36. **Tidal:** Tidal energy capture usually consists of the construction of barrage dam type structures is being examined as a means of converting tidal movements into energy. Turbines installed in the barrage wall generate power as water flows in and out of the estuary basin, bay, or river. There are downsides to this though, the most obvious one being that the structures in themselves are visually obtrusive. There are also ecosystem considerations as the flooding of mudflats within the estuary together with altered saltwater flow which changes the hydrology and salinity within. That said, they are not near as visually obtrusive as large land-based wind turbines.

37. **Wave:** Wave Energy refers to the capture of energy from the motion of surface waves of the ocean. This is still a developing science, which is still in experimental stage but looks promising.

38. **Hydroelectric:** Hydroelectric: the capture of energy from running water such as in a river is perhaps among the oldest of the alternative energy's as was seen in the

17-1800's when countless water mills were erected on river banks to power massive mechanical apparatus. In the 1900's this was developed into a far more commercial scale energy capture with the construction of massive dams. Examples being the famed Hoover Dam on the Colorado River in the USA, The Three Georges Dam on the Yangtze River in China, the Golden Dam situate on the Golden River, in Tasmania, Australia and Ardnacrusha power plant situate on the Shannon River in Ireland.

39. **Geothermal:** Geothermal: work on this form of energy generation is much more advanced that other alternatives. Energy capture ranges from installing a series of pipes in the upper layers of the earths crust typically about a meter deep in domestic type situations. On a commercial basis, exploitation of hot springs, which often occur on fault lines is usually indicative of thermal energy close to the surface.

40. **Deep Bore Geothermal:** This is essentially 'free' energy contained within the earth's crust. Briefly, it entails boring to depths of between 2 and 3 miles and harnessing energy from the natural heat contained within the earth's crust where temperatures of between 100°c and 200°c can be easily achieved. This is done by circulating water down and back up (rather like a heating system). A very small plant is all that is required on the surface to convert the energy into electricity. There are many examples around Paris, Austria, Germany, Iceland and so on. The Eden Project in Cornwall published plans for such a plant in October of 2019. See: https://www.dailymail.co.uk/sciencetech/article-7571129/Eden-Project-ahead-17m-geothermal-energy-revolution.html

41. Deep Geothermal in a local context: Off all the points listed above, Deep Geothermal is extremely promising and warrants further discussion having regard to the local context. Our research as shown this to be by far the most promising.

    a. The Caledonian fault line traverses the Irish and English landscape in a rough line from Limerick - Dundalk — Newcastle in the UK. Either side of this, there are two different rock formations on two different tectonic plates.
    b. The differences in rock fossils in Scotland and England are well documented. Thermal energy tends to be much closer to the surface on such fault lines.
    c. In Ireland a fault line stretching from Limerick to Louth [the Caledonian fault line] where this heat is much closer to the earth's surface than elsewhere.
    d. The irony with the current planning proposal is that alternative energy is virtually underneath the proposed sites.
    e. Moreover, as an energy source, it's far more stable and reliable than wind energy. This has been used as an energy source in Austria and other countries.
    f. We understand that legislation is currently being drafted to facilitate this energy source in an Irish context.
    g. Therefore, leaving aside all the other planning and related issues, it is submitted that the erection of turbines in the current context is rather ironic. It is unlikely that there would be the same challenging issues re RoCoF with the use of Deep Geothermal.

42. The ADVANATAGES of Deep Bore Geothermal over Wind are many and may be summarised as follows: -
    A. no visually obtrusive issues,
    B. no fluctuations in the availability of energy and dispatchable,
    C. no property devaluation,
    D. no health issues,
    E. no noise,
    F. no infrasound,
    G. no spinning reserve (backup) requirement,
    H. minimal wastage of finite natural resources such as sand and gravel, steel and so fourth.
    I. There are numerous suitable geological bedrock areas in Ireland.

Response;
Please note, the various alternative energy sources set out in points 32 to 42 are not proposed to be part of the Proposed Development.

As noted previously queries around alternative renewable energy sources are addressed in Section 4.1.1 of the Submissions Response, Deep Bore Geothermal, specifically on p58 and 59.

PLANNING ENFORCEMENT/ POLICING

43. Without prejudice to the main rationale advanced in this submission that the current proposal is contrary to numerous planning principles, we are obliged to point out that it has been our experience in a long course of dealings with the enforcement departments of numerous municipal authorities, that enforcement of the planning laws has been poor and lethargic.

Response;
The above does not specify any specific planning principles that the development is contrary to. The Policy Statement submitted with the application sets out how the Proposed Development is compliant with International, European, National and Local policy. It reviews policy for the Northern and Western region and local Mayo and Sligo County policies and finds the Proposed Development complies with key renewable energy, landscape and environmental policy objectives.

44. We regularly, encounter a plethora of conditions pertaining to a given planning permission, which are not enforced or followed up on. This continues to be the case even after specific concerns and issues have been raised. It follows that we would have similar concerns in the current context and other future developments.

Response;
Any Planning Conditions applied to the project will be complied with.

45. Moreover, the concept of self-policing, which is where operators are mandated to submit various results to planning authorities on a specified regular basis, has also proved to be extremely problematic. Our experience has been that compliance with such requirements has been poor. Therefore it would be remiss of us not to

express similar concerns for this and all other proposed developments of a significant or industrial nature.

Response;
Any Planning Conditions applied to the project will be complied with.

46. We have repeatedly asserted over the years that EIAR's, which are prepared directly by a developer/ applicant are in our opinion unreliable and self-serving statements in support of their employer. We have found this one to be particularly so in that respect and in our opinion to some extend glamorises an operation that is anything but glamorous. What EIAR's omit to state is also of concern. In this case for example we were unable to find any reference infrasound or the sustainability of finite resources. In summary we remind the statutory authorities of their duty of care to each individual, the wider community and to the environment.

Response;
Compliance with the EIA Directive is set out in Section 4.12.6 of the Submissions Response Document. As outlined above, Infrasound is addressed in Chapter 11; Noise and Vibration. The Sustainability of Finite Resources is addressed in Chapter 13; Material Assets and in the Planning Policy Statement as well as being addressed in the Material Volumes Requirement in Section 4.13.8 of the Submissions Response Document.

END

3.8 GRACE DEMPSEY

To Whom it may concern,

My mum has read through the documents for me that I received. I can't find any information to my objections concerning our road L1102.

I would appreciate a prompt response in relation to this.

Many thanks.

Kind regards,
Grace Dempsey

Response;
The L-1102 is part of the proposed Construction Haul Route, impacts are addressed in Chapter 15; Traffic and Transport in the EIAR. This includes assessment of the impacts of additional construction traffic on delays and inconvenience during the construction phase. Additional queries relating to Transportation routes, raised in submissions are addressed in Section 4.6 of the Submissions Response. The impacts on health are assessed in Chapter 4 Population and Human health and health and safety is addressed in Chapter 16 Major Accidents and Natural Disasters in the EIAR.

The below is Grace Dempsey's August 2023 Submission relating to the L1102;

To whom it may concern,

My name is Grace Dempsey and I am a wheelchair user, [redacted]

My biggest fear is that if there is a medical emergency that I will have trouble getting the help I need, the extra traffic on the road will cause delays and for me, my mum or any emergency services that are trying to reach me.
I was greatly concerned about this extra traffic on our road as I have day service; appointments at hospital and this extra traffic is going to become an inconvenience to me when I am going to the places I need to be, it would also delay other service users as they will be waiting in the traffic while I am being collected.

I am really concerned about the level of extra traffic on my road, which is a narrow country road, with many dangerous bends on it. I am fearful of delays as a consequence, could be life threatening to me if I need to be rushed to hospital.

Response;
The L-1102 is part of the proposed Construction Haul Route, impacts are addressed in Chapter 15; Traffic and Transport in the EIAR. This includes assessment of the impacts of additional construction traffic on delays and inconvenience during the construction phase.

Additional queries relating to Transportation routes, raised in submissions are addressed in Section 4.6 of the Submissions Response. The impacts on health are assessed in Chapter 4 Population and Human Health. Health and safety is addressed in Chapter 16 Major Accidents and Natural Disasters in the EIAR.

3.9 MARCELLE DEMPSEY

To Whom it may concern,

I have read through the documents I received. I can't find any information to my objections concerning our road L1102.
I would appreciate a prompt response in relation to this. Many thanks.
Kind regards,
Marcelle Dempsey

The below is from Marcelle Dempsey's August 2023 Submission relating to the L1102;

I first became aware of the proposed windfarm and hydrogen plant development proposed by Mercury Renewables early in 2022 from a friend of mine. At that point both Windfarm and hydrogen plant were to be located in the bog at Carrowleagh.

At that stage, it was proposed that all haul traffic, and trucks transporting hydrogen would be passing my house on the L1102. I was greatly concerned about this extra traffic on our road and envisaged regular delays as my daughter has required urgent medical attention on many occasions over the years.

However, when my concerns were raised with John Duffy CEO of Mercury Renewables, his response was that he would pass on the number of the driver to me! Neither my daughter nor I have had any communication since John Duffy was made aware of my daughter's individual circumstances and needs.

I wish to highlight the following in this submission:
• Mercury Renewables have not been in communication with me personally despite the fact that my daughter and I live on the main route for all trucks returning from their site at Carrowleagh.
• I am really concerned about the level of extra traffic on my road, which is a narrow country road, with many dangerous bends on it. I am fearful of delays as a consequence, which potentially could be life threatening for my daughter.

Response;
Chapter 3 Alternatives outlines that the Hydrogen Plant initially was located at the Wind Farm Site. It states;
"In February 2022, a letter drop along the local roads that hydrogen tube trailers would take to reach the national road network (N59) resulted in considerable feedback from local residents with concerns about the number of hydrogen tube trailers using these local roads during the operational phase of the Proposed Development."
Feedback, including that from the Dempseys, was taken on board and alternatives for the location were considered. The Hydrogen Plant Site was selected from the alternatives based on its proximity to the national road network and the positive results of a road assessment report, feedback from the HSA and the site being a safe distance from inhabited houses, with appropriate setback distances to sensitive receptors and avoidance of densely populated areas. This decision was communicated via the May 2022 newsletter sent to residents in the local area.

Operational hydrogen trucks will not be using the L1102 or passing Marcelle Dempseys home.

The L-1102 is part of the proposed Construction Haul Route, impacts are addressed in Chapter 15; Traffic and Transport in the EIAR. This includes assessment of the impacts of additional construction traffic on delays and inconvenience during the construction phase. These effects will only occur during the construction phase.

Additional queries relating to transportation routes, raised in submissions are addressed in Section 4.6 of the Submissions Response. The impacts on health are assessed in Chapter 4 Population and Human Health. Health and safety is addressed in Chapter 16 Major Accidents and Natural Disasters in the EIAR.

3.10 AILEEN NI DHUINNEACHAIR, BN MHIC GHABHAINN

A Chara,

My response in relation to ' Response to Third party submissions and ABP observations 317560-23' is attached to this email.

Best wishes

Aileen Ní Dhuinneachair Bn Mhic Gabhann, Carraun , Corballa , via Ballina , Co. Sligo.

18/1/24

I received ' Response to Third party submissions and observations on Bord Pleanála, and a letter written in English with it. These are our points in response to that document.

1. The Roads
   I am still concerned about junction L66121 N/59 and L6611 over-sized lorries that will be used going forward. If lorries carrying 384 Kg of hydrogen are going to be used, will that not result in a minimum 176 lorry journeys, each day, at that location? I use that junction every day.

   Has any appropriate study been done, in the case that over-sized lorries that carry 1200kg of hydrogen will be used, in relation to this additional weight being transported on the N59 everyday? A lot of this N59 is narrow in comparison with other national roads. I am concerned about increased volumes of very large lorries travelling on this road.

Response;
176 movements is not correct, queries over the number of traffic movements associated with the operational phase of the Development is clarified in Section 4.2.2 of the Submissions Response Document. A Traffic and Transport Impact Assessment was carried out and can be found in Chapter 15 of the EIAR. During the construction of the Hydrogen Plant, HGV's will be prohibited from using the local road network which does not form part of the works and will not use the L6611 to access the site. During the construction stage of the project, traffic management will be in place at the N59 / L66121 junction in accordance with Chapter 8 of the Traffic Signs Manual to maintain the safe operation of the road network during the construction process.

During the operation of the Hydrogen Plant, operational HGV traffic will exit the N59 / L66121 junction in an eastbound direction towards Sligo and approach the junction in a westbound directional. Operational HGV traffic will not pass the L6611 junction or travel through the town of Ballina. It is proposed as part of the development to modify the existing N59 / L66121 junction to facilitate HGV traffic. The modifications will include statutory signs and roadmarkings, increased road width on the L66121 and increased junction radii to prevent conflict between vehicles at the junction and to prevent vehicles encroaching into opposing traffic streams when turning at the junction. The proposed modifications at the junction have been subject to a Stage 1 road safety audit carried out by a TII approved auditor, independent of the design team. The recommendations of the audit team have been implemented into the final junction design.

The tube trailers are not 'oversized lorries', they are classed as Heavy Goods Vehicles. All tube trailers will comply with current road transport regulations including in size and gross weight; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

2. Water
   I am not happy with the statement in relation to the water that will be used by the applicant if/when the water supply from the aquifer is/will be insufficient.
   Number one, if there is a lack of water in the aquifer, what impact/effect will that have on the land and the rivers in the area?

Number two, if there is a lack of water shouldn't there be a 'hosepipe ban' on people, and priority be given to water for drinking, instead of using the scarce water in an industry making gas?

Response;
Queries in relation water abstraction were addressed in Section 4.5.1 of the Submissions Response Document.

There is no other industry in the area as this is not an industrial zone.

Response;
Queries regarding the zoning of the land are addressed in Section 4.12.1 of the Response to the Submissions Report.

3. MA031-023
   The applicant states: "77 ie children's burial ground is not obviously defined: I and though probably to be retained within the banks of the ringfort, there is a possibility of associated remains to lie outside and adjacent to same p 120."
   It has failed me to find this plan, with details about what the applicant will do in the case that a historical structure is discovered at this location. What would the implications be in such a scenario?
   Has provision been made in the overall project, in the case of such a scenario? Have such implications been considered in terms of the overall time the works will ultimately take?

   In my opinion, it would be better to undertake a detailed study at the outset, to confirm this. The same applies to the mound at SL022-026.

Response;
Queries regarding Cultural Heritage are assessed in Section 4.8 of the Submissions Response Document and in Chapter 14 of the EIAR. The Childrens Burial ground was specifically addressed in Section 4.8.3 and the Barrow Site SL022-026 in Section 4.8.2.

4. SL022-026
   'Possibility of encountering a sub-surface associated or contemporary archaeological remains in the vicinity of the barrow monument within the redline boundary p 120.

   It appears that this does not take into consideration that the house and sheds that are to be demolished (as a result of the project) are in fact between the barrow monument and the redline boundary. Though the mound is 14m from the redline boundary, it would appear that the house and sheds are closer to the mound SL022-026.

   It would appear the redline boundary takes nothing at all into consideration apart from the road and the new roundabout. The house and sheds are then mentioned near mound SL022-026.

Response;

The demolition of HH11 is not part of the current planning application and is therefore not inside the red line boundary. However, it is part of the Project – see Chapter 2; Project Description, and the impacts were assessed as in the EIA. Queries related to the Barrow Site SL022-026 were addressed in Section 4.8.2 of the Submissions Response Document.

5. Permission for lands
   As for the windfarm, it is not clear to me what lands are owned by the applicant. It is not clear to me which lands the applicant has permission in writing (and signed) for. I ask this question because of submissions from the owners, who have rights, on lands in Carrowleagh, and who have not agreed or signed permission with the applicant. It would appear that no agreement has been reached with these owners. I could not find a map in all the documents that clearly shows what lands are controlled by the applicant. Won't there be problems with land rights if this issue is not addressed beforehand?

Response;
Queries relating to consents were addressed in Section 4.12.4 of the Submissions Response Document. All areas required for the wind farm have consents in place and these were submitted with the planning application.

6. Communication
   We did not receive an invitation to Muddy Burns Pub on 25" May 2023 even though our house HH22 on Fig.1.3 we got no invitation to any other meeting either.

Response;
Queries regarding Public Consultations are outlined in Section 4.1 of the Submissions Response Document. The PACC report in Appendix 1.3 of the EIAR states;
"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant where invited to an informal meeting. Two individuals attended the evening."

HH22 does not share a boundary with the Hydrogen Plant, it is located approximately 1km to the west and was therefore not invited to this meeting. This house was included in leaflet and newsletter drops including those materials which invited the occupants or anybody interested in the project to the Public Information Days or to contact the Community Liaison Officers to discuss any queries or concerns. It is an individual's right to choose not to attend these events or engage with communication materials.

Aileen Ni Dhuinneachair, Bn Mhic Ghabhainn attended both Public Information Days. The Applicant emailed Aileen Ni Dhuinneachair, Bn Mhic Ghabhainn on 16 Sept 2022 inviting her to reply anytime with any concerns she may have. Mercury continued updating Aileen Ni Dhuinneachair, Bn Mhic Ghabhainn by email on 13 October 2022, 14 November 2022, 6 May 2023 and 13 July 2023.

7. Business through the Irish language.
   'An Bord Pleanála welcomes the use of the Irish language, and the organisation is fully committed to fulfilling its obligations and commitments in relation to official language equality under the Official Languages Act 2003, the Planning and

Development Acts and its Customer Action Plan and Language Scheme. We adopted our fourth Language Scheme under the Official Languages Act in 2015.' Irish is our language, a language recognized in Europe. There seems to be a delay in communication when dealing through Irish with An Bord Pleanála.

I wrote a letter to An Bord Pleanála on 14th December 2023 and I have still received no answer. Neither have I received any communication through Irish in relation to the answers from the applicant.

Response;
Communication, between Aileen Ni Dhuinneachair, Bn Mhic Ghabhainn and the Applicant, and between Aileen Ni Dhuinneachair, Bn Mhic Ghabhainn and the Project team at the PIDs and since has been conducted in English aside from the submissions from Mrs. [Donagher McGowan].

8. MA31-034 MA031-005
I remain concerned that turbine 6 will affect the sun's alignment with MA031-005 and turbine 11 with MA31-034.
Apparently, the applicant has said that there is not much evidence of solar alignment in this case.

'There has been no recorded indication from this survey that infers a deliberate astronomical alignment.' Page 118 & 119.

This statement refers to De Valera, R. and Ó Nualláin S. (1964) Survey of the Megalithic Tombs of Ireland Vol II County Mayo, Dublin Stationery Office.

I does not to say that there is no alignment there.

'De Valera, R. and Ó Nualláin. S. (1964) Survey of the Megalithic Tombs of Ireland Vol II County Mayo, Dublin Stationery Office.' is mentioned by the applicant on pages 118 and 119. We have a copy of this book and I have the greatest respect for the great work which has been done by De Valera and Ó Nualláin. They have made an important record of 101 historical locations in County Mayo and in other counties in other books from them. They have produced diagrams, accurate descriptions, maps and even pictures in their work. However, it cannot be said that the scope of this work included the carrying out of an investigation of solar alignment with these megalithic tombs.

Indeed, a lot of work has been done by scholars on this matter, but to accurately investigate solar alignment was not the aim of this book.

The applicant referred to Robb. K but this is an MA thesis which has not been published and as such I was not able to read it. Reference number 23 on page 119 taken from a book which refers to Cork. However, according to De Valera / Ó Nualláin there were differences in these features all over the country. A large number of the historical locations in County Mayo and in the northwest of Co. Galway they were oriented on the West/East axis and the opposite was the case in East of the country.

We must protect these tombs as it is from these tombs, we can learn about the people who lived here in the fourth millennium BC. We can learn about their political systems, death, cremation, and their lives generally etc.

Although wonderful studies have been carried out on locations such as Carrowmore, Carrowkeel and Keady, all of which are in the greater historical landscape of the wider area, I am not prepared to comment on MA31-034 and MA031-005 in the absence of a more thorough study of them in terms of their alignment with the sun. It would appear that there has yet to be a study made of the solar alignment of these tombs.

In my opinion, it is the solar alignment, as well as the possibility of the moon and the stars that breathe life into these megalithic tombs.

When you look at a musical instrument, there is only the material from which it is made, e.g. wood, or metal etc. The music endures through the skills of the musician. If those skills are not high quality, or of the musician is at some disadvantage, e.g. an uileann piper attempting to play music without a chair, the music produced will not be as good as could otherwise be achieved if the musician was sitting on a chair. In such a scenario the instrument's potential cannot be heard.

My grandfather was an outstanding musician until he lost a finger in an accident. He was never again satisfied with the music he was playing on the fiddle because something very important was missing: a finger.

It will be the same thing with these tombs. Without the light they are just stones. The rocks are interesting but they do not tell their story without being connected to the light.

In my opinion, there are answers hidden from us about the people who lived here, their lives, their politics, their leaders etc., in the fourth millennium BC in Ireland and in Europe.

Studies have not been carried out on all tombs such as these in the State, perhaps this is due to lack money to carry out the work, or even due to a lack archaeologists.
Due to a lack of evidence, and in the absence of proper studies of MA31-034 and MA31-005, we cannot be certain that these mounds are not important mounds in terms of solar alignment. I am not blaming the applicant in any way either in this regard because, generally speaking we know these studies are needed, especially now when we know that there is an alignment between MA31-034 and MA031-005.

The applicant does appear to agree with me on this point at least, that is, apart from the fact that the applicant is not sure that alignment was intended by the people who built these tombs e.g. - the summer solstice.

I have made a start on this work, even if the magic associated with these tombs and the light cannot be found on a map showing the alignment of the tomb. The magic can be seen when you are at the tomb, soaking in the environment, and examining the influence of the sun and examining the possible alignment of the moon and examining any connections in relation to alignment with the constellations, and finding answers about life in the fourth millennium BC.

Response;
This was addressed in Submissions Response Document Section 4.8.1; Solar Alignments and Megalithic tombs.

This section was provided by Kate Robb of John Cronin and Associates. Ms Robb holds B.A. and M.A. degrees in archaeology (University of Galway 1999/2001) and has fifteen years industry experience. She holds a post-graduate diploma in EIA/SEA Management (University College Dublin (UCD), 2005) and has extensive experience in preparing cultural heritage impact assessments for a range of large-scale projects (including renewables), for both private and public development.

The monument has been surveyed by the Archaeological Survey of Ireland and recorded as having an orientational axis aligned east-west, with the chamber gallery opening located at the eastern side. There has been no recorded indication from this survey that infers a deliberate solar astronomical alignment. The court tomb series as a whole in Ireland has a predominant site layout following a NE or E / SW or W axis. Court tomb MA031-034--- is typical of its series classification in this regard. It cannot be ascertained that court tomb MA031-034--- (or any other court tomb in the series) was deliberately aligned with the rising sun at spring equinox, simply because the gallery faces an easterly direction. There is no published academic reference, research or archaeological excavation to support that this phenomenon was an integral element to the function and use of court tomb monuments in Ireland.

The applicant was unable to reach tomb MA 31-005 because of the trees etc. that were there. I should point out that I was fortunate when I was trying to find it. It was not too difficult for me to find. I must say that it is clear that Coillte has great respect for these historical sites, because of the way there are no trees near the tombs. In fact, plants and undergrowth do not interfere when you are examining the tomb. They have left a large circle without plants. This can also be seen on Google Earth.

Response;
MA 31-005 is assessed in Chapter 14 Cultural Heritage. Appendix 14.1 includes Plate 14.19; "The wedge tomb located outside the Site boundary (RMP MA031-005---) was inaccessible during survey due to dense vegetation and young forestry plantation growth.
This can be seen in the photograph in Appendix 14.1, Plate 14.19.

The picture of MA031-005 was taken at approximately 05.57 on the morning of the summer solstice as the sun wasn't shining due to clouds and the weather. To confirm this, the photograph was taken with the photographer facing the sun. The light shining in such a way, it came through the tomb and the sun was behind the tomb at the time. The tomb (MA031-34, MA031-005) is easier to find than other tombs in counties Sligo and Mayo.

Response;
This was addressed in Section 4.8.1; 4.8.1 Solar Alignments and Megalithic tombs of the Submissions Response Document.

Regarding with MA031-34, it would be easy to construct a footpath from the road to the tomb, one that would be suitable for wheelchairs, because of the location that which is

reasonably flat. There aren't many other historical locations in the area where this could be done.

Response;
Thank you for this suggestion, enhancing the accessibility of local cultural heritage features is a wonderful idea. The Developer is in agreement and will undertake to provide a stone path for pedestrian use, suitable for wheelchairs to enable access to MA031-34. This can be positioned so that it avoids areas of peat so no peat removal is needed.
Please see indicative location of the proposed in Figure 2.

Figure 2; Proposed amenity path to MA031-34

I call on An Bord Pleanála to carry out assessments on MA31-034 and MA31-005 in terms of the link they have with solar alignment.

As for Carrowmore, Carrowkeel, Keady, Brú na Bóinne, the public would have no awareness of their magic were it not for archaeologists who devoted their lifetimes learning about these wonderful places and studying them. Work has been done over the years by people like Dr. James Caulfield, Martin Brennan, an tOllamh O'Kelly and other such people, and more work needs to be done on this subject.

Response;
This was addressed in Section 4.8.1; 4.8.1 Solar Alignments and Megalithic tombs of the Submissions Response Document.

9. I am requesting an oral hearing, if an Bord Pleanála agrees.

Response;
An Oral Hearing has been organised by the Board.

10. I would be very grateful, if an Bord Pleanála could acknowledge that this letter has been received by their office

11. I am asking An Bord Pleanála not to give the applicant permission for the project.

'There is a predicted (negative) long term reversible impact from the landscape setting associated with the monument ' page 118 referring to MA031-005 and MA31-34.
The lifetime of these turbines is about 40 years, and what's the point of ' reversible ' damage when there's a good chance, I won't be alive at that time. It will be too late for me then, to change this 'reversible impact'.

Response;
There is an urgent need for renewable energy in light of the climate crisis and biodiversity crisis and since the invasion of Ukraine by Russia and the related supply issues and cost implications for energy in Ireland. The wider National and European policy as outlined in the Planning Statement submitted with the EIAR reiterates the pressing need to accelerate the deployment of renewable energy projects such as the Firlough Wind Farm and Hydrogen Plant application. This project has been in development for more than 2 years with ample opportunity for 3rd parties to be involved in the consultations process. It is reasonable in the circumstances to grant permission for the proposed Firlough Wind Farm notwithstanding that some objections have been received.

The EIAR submitted with the planning application was prepared in accordance with the EIA Directive as amended by the 2014 EIA Directive, as well as the national implementing legislation, in particular, the Planning Acts and the Planning Regulations as amended. The EIAR included the conclusions of the competent and qualified experts as to the significance of any such environmental effects, to assist the competent authority to comply with Article 8a of the 2014 EIA Directive. The function of the EIAR is to provide information to allow the competent authority to reach a reasoned conclusion on the effects of a development and inform subsequent decisions, such as planning.

Yours respectfully,

Aileen Ní Dhuinneachair Bn Mhic Gabhann,
Carraun,
Corballa,
via Ballina,
Co. Sligo.

3.11 SUSAN DONEGAN

To whom it may concern,

I wish to bring some points of isolation/error to your kindest attention, Jennings O'Donovan consulting Engineers response to third party submissions and observations planning application Ref: ABP 317560-23.

I would again ask for clarity and confirmation on what risks the proposed Hydrogen Plant would have on my water supply? As mentioned in my original submission, my water is supplied by a private well. I am seeking clarity on this as [redacted]. Will well water supply be depleted? Water quality be effected?

Response;
This is addressed in Section 4.5.1 of the Submissions Response Document.

Also, I raised my deep concerns of devalue: of my property, my only asset [redacted]. The developer needs to address how our homes will be devalued, as clarified by local estate agent/auctioneer included in our submission. This has been ignored by the developer showing no regard for local residents in my opinion. Population and Human Health, 4.4.6 – Residential Amenity in Jennings O'Donovan, consulting engineers state:- "During the construction phase there is potential for limited impacts on the residential amenity".

Response;
Property Value was assessed in the EIAR in Chapter 4; Population and Human Health, Section 4.4.7. Residential amenity was addressed in Section 4.4.6 of the same chapter.

I am not content with the way this development has been operating so far. I am fearful as to my knowledge there is no 80MW Hydrogen Plant in operation.

Response;
According to data from the International Energy Agency, there are many operational hydrogen production plants in the world producing in excess of the anticipated 4,500 tonnes per annum and many more in construction or advanced stages of development. For example, Air Liquide commissioned a facility in the USA in 2022 that will produce 10,950 tonnes of liquid hydrogen per annum. Further afield, Oman has awarded the development rights to 5 mega-scale green hydrogen projects, each anticipated to produce 150,000 tonnes of hydrogen per annum.

I feel the project is premature and location is unsuitable.

Response;
Queries relating to "Premature Development" are addressed in Section 4.2.1 of the Submissions Response.
Queries regarding the location of the Hydrogen Plant are addressed throughout the Submissions Response Document. Health and Safety is addressed in Section 4.4.1 – specifically in relation to the Quantitative Risk Assessment, which is based on the Health and Safety Authority's Technical Land Use Planning Guidance which finds that the Hydrogen Plant is located in a suitable area. Zoning is addressed in Section 4.12.1 of the Submissions Response Document.

> Please take into consideration [redacted], I feel if this development is approved, I will be faced with no choice but to leave my home. As mentioned in my original submission, [redacted]. I live in a quiet rural location, by choice.

Response;
Chapter 4; Assesses Population and Human Health, residential amenity was addressed in Section 4.4.6 of this chapter and health impacts in Section 4.4.8.

> I did not choose to live in close proximity to a hydrogen plant for obvious negative reasons - Noise Pollution, Light Pollution, Excess Traffic, Dust, Compromised Air Quality, Disturbance of Crops, Vegetation, Risk to Human Health and Livestock.

Response;
The above queries have all been addressed in the Submissions Response Document in the following sections aside from "Disturbance of crops" which is addressed separately below;
Noise Pollution; Section 4.11
Light Pollution; Section 4.13.2
Excess Traffic; Section 4.6
Dust; Section 4.7.1.1
Compromised Air Quality; Section 4.7.1
Vegetation; Section 4.9
Risk to Human Health; Section 4.4.1 (and Chapter 4; Population and Human Health in the EIAR)
Livestock; Section 4.13.5.

Disturbance of Crops; None of the lands within the red line or in the vicinity are used for crop production. Chapter 13 Material Assets and Other Issues includes an assessment of agriculture in general in Section 13.4. The Submissions Response Document addresses queries relating to the abstraction of water in relation to agriculture in Section 4.5.1.

> I was not invited to Neighbours meeting, 25/5/23.

Response;
The PACC report in Appendix 1.3 of the EIAR states;
"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant where invited to an informal meeting. Two individuals attended the evening."

However, leaflet and newsletter drops included contact details which invited the occupants or anybody interested in the project to the Public Information Days or indeed to make contact to organise further meetings or ask any questions.

3.12 PATRICK DONEGAN

Dear Sir/Madam,

Issues of Concern/Lack of acknowledgment of my concerns:- Jennings O'Donovan, Consulting Engineers response to third party submissions and observations planning application ref: ABP 317560-23.

I took the time to explain the historical importance of this area on my submission.

- Spot height, (protected and documented) on National map.
- Ox Mountain, Nephin, Killala, Enniscrone, Neighbours gatherings to view those points. This has been ignored by developer.
- Bonfire and Foclóir is vital to us.

Response;

Queries relating to Landscape and Visual are addressed in Section 4.10 of the Submissions Response Document and Chapter 12; Landscape and Visual provides a full Landscape and Visual Impact Assessment in line with the EIA Directive, including any impacts to view points and mountain ranges.

Cultural Heritage is assessed in Chapter 14 of the EIAR. Foclóir can mean either dictionary or vocabulary. It is unclear what the relevance of this is to the Project.

- I explained how we drive (move) Cattle over and back "Leafy Lane" L66121 for generations. How will this proposed development upset and disturb my farm and practice that has occurred for generations?

Response;

The Development will not impact any rights to move cattle within the legal context of doing so. A Traffic Management Plan (TMP) has been developed (see Management Plan 7 attached to the CEMP in the EIAR). Prior to construction and once the Contractors have confirmed their suppliers, the TMP will be updated in consultation with Sligo County Council and Mayo County Council and An Garda Síochána as necessary. This can include accommodations for cattle movements if required.

My livelihood and heritage within this quiet rural residential area is unzoned to the best of my knowledge.

Response;

Queries regarding the zoning of the land are addressed in Section 4.12.1 of the Response to the Submissions Report.

- I will ask again will my Drovers rights be protected?

Response;

The Development will not impact any rights to move cattle within the legal context of doing so.

A Traffic Management Plan (TMP) has been developed (see Management Plan 7 attached to the CEMP in the EIAR). Prior to construction and once the Contractors have confirmed their suppliers, the TMP will be updated in consultation with Sligo County Council and Mayo County Council and An Garda Síochána as necessary. This can include accommodations for cattle movements if required.

- I want confirmation that my livestock will not be disturbed, unsettled or traumatized?

Response;
Section 4.5.1 Water Abstraction and Section 4.5.3 Water Discharge of the Submissions Response Document addressed queries in relation to the hydrogen plant, water environment and soils in terms of impacts to livestock. Section 4.11 addressed impacts relating to noise and livestock. Section 4.13.5 addressed queries relating to livestock and wind farms.

- I would also like to look for an Oral Hearing.

Response;
An Oral Hearing has been organised by the Board.

- The proposed Roundabout entrance/exit borders my land on L66121 "Leafy Lane" and also on main N59 (Ballina/Sligo Rd). It would appear, the applicant incorrectly states on Job No. 6129/drawing number 6129-PL-121, Fig 3.8 "Existing Vegetation and obstructions on Verge to be cleared and maintained for visibility splays".
- I can confirm I am the Land owner, at no point have I given consent to the Applicant. I am deeply concerned as this is the border of my land, safety of my Livestock and family is paramount.
- I have maintained that vegetation (within protecting wildlife) all my life, I paid to have it maintained as recent as 15/1/24.
- I want this false information/labelling withdrawn with immediate effect, this has been deeply distressing for me. Furthermore, my land borders both sides of L66121, (entrance/exit at roundabout Hyd. Plant and Knockbrack L6612 entrance/exit).
- "Under control by the Applicant" is on the legend regarding my Land! Again, this is incorrect, the Applicant is not in Control of my Land, nor was I consulted in relation to this information that is submitted about my Land. I take huge offence to this.

Response;
*The lands **within** the blue line are under the control of the Applicant, this is standard for planning drawings as per Article 23 of the Planning and Development Regulations 2001. Land bordering the blue line is not under control of the Applicant.*

With regard to vegetation trimming, the entrance to the N59 is existing, it is our understanding that the vegetation requires trimming in order to maintain the existing sight lines/visibility at this junction to ensure safe access and egress. The Proposed Development does not change this requirement.

- I own Land on both sides of Leafy Lane L66121, I am a busy farmer and I cannot afford for my access to my fields, farmyard and Droving Cattle to be effected of "controlled" by Applicant.
- This is deeply worrying and upsetting. I have farmed this Land since I was a child, my family have been here for generations. I am now a pensioner, I want to continue to enjoy and farm my Land peacefully, free from disturbance from Commercial/Industrial operations.

Response;
All access and rights of way will be maintained during the construction, operation and decommissioning phases. A Traffic Management Plan (TMP) has been developed (see Management Plan 7 attached to the CEMP in the EIAR). Prior to construction and once the Contractors have confirmed their suppliers, the TMP will be updated in consultation with Sligo County Council and Mayo County Council and An Garda Síochána as necessary. Cattle on the roads and communication with local farmers can be accommodated into the traffic management plan to ensure there are no disruptions.

Residential amenity was addressed in Section 4.4.6 of Chapter 4 Population and Human Health in the EIAR.

- As a Land owner on both sides of road L66121, Leafy Lane, I don't consent to my ditches/stone walls been jeopardized. I have worked hard to be subject to such careless consideration.

Response;
Queries relating to consents were addressed in Section 4.12.4 of the Submissions Response Document. To clarify, works in the public road will be undertaken by a statutory undertaker having the right or interest to provide services in connection with the Proposed Development, in accordance with Statutory Instrument No. 9 of 2021 in The Planning and Development Regulations 2001 (As Amended). The consent of the landowners either side of the public road is not required for works in the public road.

- I am deeply opposed to any underground cables passing my home, Lands.

Response;
Cables will be located in the public road. The impacts have been assessed through the EIAR as part of the project. Section 4.4.3 of the Submissions Response Document addresses queries regarding underground cables.

- I have not been consulted in relation to this proposal. To the best of my knowledge, there were meetings with other local farmers. I am the closest farmer to the proposed Hyd. Plant entrance/exit, why was I isolated?

Response;
Queries relating to public consultations were addressed in Section 4.1 of the Submissions Response Document. Extensive public consultation has been undertaken, the author has not been isolated. The Developer met Patrick Donegan with members of his family on several occasions. The Developer has email correspondence to corroborate this. The Developer, at various times has been

in discussion with Mr Donegan and family regarding potential purchases of land. Again, the Developer has copies of correspondence.

Materials including leaflets and newsletters were delivered to their home which invited the occupants or anybody interested in the project to the Public Information Days or to contact the Community Liaison Officers to discuss any queries or to organise meetings. Many people locally took this opportunity. It is an individual's right to choose not to attend these events or engage with communication materials.

Please take these sensitive matters into your kindest consideration, I also refer to initial Submission, my concerns still stand. I feel an Oral Hearting is required only fair, please.

Response;
An Oral Hearing has been organised by the Board.

Thank you.
P. Donegan

3.13 EDEL GALLAGHER
18/1/24

Further to the Response to third party submissions and observations from the applicant document I received before Christmas, I wish to add the following comments:

1. The applicant does not appear to have responded to my query in relation to cycling that I flagged in my submission.

As a Cycling Ireland Leisure Commission committee member, I highlighted the existing challenges that there are for cyclists on the N59. I also gave details of one of the many routes I take, with groups, that I bring cycling as a cycle leader.
I find this route safe, especially with novice cyclists who are trying to get back into the sport for health and social reasons.
I detailed the route often taken by me, which includes cycling on the L6612, crossing the L1102 near Carra, and eventually joining the L2604 travelling on in the direction of the entrance to the proposed windfarm site, continuing on the L2604 onward to Glenree and Lough Tait, returning by Lough Easkey.
I have selected part of this route on the L2604 because it is part of the EuroVelo route, which is signposted enroute. There are signs on the L2604 and even within a km of the proposed windfarm site entrance.
This EuroVelo is an internationally recognised route for cyclists which aims at avoiding roads with high volumes of traffic.
It follows most of the L2604.
It appears that the applicant only briefly referred to cyclists on the L6612 in the response document It appears that there is no mention of cyclists either on the L2604 in Chapter 15 Traffic and Transport 15.5.9 and 15.5.10 despite the L2604 being part of the international EuroVelo route from a short distance past Stokane N.S. and continuing past the windfarm site at Carrowleagh. This route will be seriously impacted by the turbine haul traffic, the windfarm haul traffic and other traffic to and from the windfarm.

I am shocked that the applicant appears to have no regard for cyclists and cyclists appear not to have been considered in relation to this application.

I understand that traffic counts took place on the L2604 around December 2021. Perhaps there were other counts at other times of the year but I was unable to locate this data in the documents. December is not a common month for leisure cycling due to the short days, inclement weather and people involved in seasonal events, so it would have been unlikely that cyclists were accounted for in their true figures at this time of year.

Response;
As the submission notes cycling is addressed in Section 4.6.3 of the Submissions Response Document. Chapter 15: Traffic and Transport assesses the impacts of the Proposed Development on the local road network, including other road users.

2. I was not invited to a meeting in Muddy Burns Pub on 25th May 2023 despite my house being referred to as HH21 on Figure 1.3 in the EIAR Hydrogen Plant Site House Locations.

I believe that circa 80% of owners of house on figure 1.3 of the EIAR were not invited to this meeting.

Response;
Queries regarding Public Consultations are outlined in Section 4.1 of the Submissions Response Document. The PACC report in Appendix 1.3 of the EIAR states;
"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant where invited to an informal meeting. Two individuals attended the evening."

HH21 does not share a boundary with the Hydrogen Plant and was therefore not invited to this meeting. This house was included in leaflet and newsletter drops including those materials which invited the occupants or anybody interested in the project to the Public Information Days or to contact the Community Liaison Officers to discuss any queries.

3. Other than computer generated wireframe montages I did not see any physical frames erected to illustrate the size of the plant buildings. Also on mercury.ie website hydrogen page, the promotional video appears to portray the hydrogen plant building at a much smaller scale than what it will potentially be.

Response;
Queries regarding the Hydrogen Plant buildings visual representation in the montages is addressed in Section 4.10 of the Submissions Response Document. The video on the Mercury website is not meant to be interpreted as to scale. The Planning Drawings submitted with the application show the scale.

4. My house and land is not far from the site. I had problems with dust being blown towards my house when the applicant was doing the test boreholes in July 2022 for water onsite. I have serious worries about the potential dust that the applicant

has referred to during the construction phase of the plant as I suffer from dust allergies.

Response;
Dust was addressed in Section 4.7 of the Submissions Response Document.

5. I am not satisfied with the applicant's response re: the way it is intended to mitigate against potential flooding of land.

Response;
Queries regarding flooding risks are addressed in Section 4.5.7 of the Submissions Response Document.

6. I worry about the loss of water from the aquifer as there were no comparative tests carried out on my land to indicate that there would be no impact from the large quantities of water being extracted to make hydrogen.

Response;
Queries in relation water abstraction were addressed in Section 4.5.1 of the Submissions Response Document

7. The applicant does not appear to have addressed my issues re: value of property being reduced, and also my fears that my family may not be able to obtain planning permission for sites on my land should there be any legislation re building in the environs of a hydrogen production plant.

Response;
Property Value was assessed in the EIAR in Chapter 4; Population and Human Health, Section 4.4.7. Residential amenity was addressed in Section 4.4.6 of the same chapter. The Applicant cannot comment on the likely success of potential future planning applications. These will be assessed by the relevant authority having regard to the relevant planning policy set out in the County Development Plan.

I request that there is an oral hearing re this case.

Response;
An Oral Hearing has been organised by the Board.

3.14 SHANE HALLINAN

I Bernard Hallinan and I Shane Hallinan own the farmhouse HH14 figure 11.9 and a substantial portion of our farmland borders the site of the proposed hydrogen plant with its proposed location approx. 70m from our boundary.

We acknowledge receipt of newsletters in May and September 2022 but nobody from Mercury Renewables took the time or effort to engage with us by phone, email or in person in relation to the serious potential impact it could have on our property.

Response;

Details of the consultations undertaken by Mercury is outlined in Section 4.1 of the Response to Submissions. The Newsletters included contact details and invited the occupants or anybody interested in the project to the Public Information Days or to contact the Community Liaison Officers to discuss any queries or concerns. Extensive public consultation was undertaken for the Project. Community Liaison Officers were assigned to the Project and made every attempt to contact people in the vicinity of the Proposed Development. An invitation to the neighbors meeting at the Muddy Burns was extended to the Hallinan family. However, they did not attend. It is an individual's right to choose not to engage with communication materials or attend consultation events.

> In the quantitative risk assessment appendix 16.3 of the EIAR there is no account taken for any member of our family or workers on our lands which is approx. 70m away from the proposed hydrogen plant.
>
> We have been excluded from the calculations of the potential hazardous zone predicted in the event of an explosion on site and our land is within the inner risk zone.

Response;
The QRA was performed according to the HSA's Guidance on Technical Land Use Planning Advice[8] with particular focus on Section 3.4; Hydrogen Installations.

> We are not satisfied that concerns have been fully addressed that were raised in our submissions, the well bores are 30m to 40m below sea level by their calculations and the River Moy estuary which is tidal up to Ballina town, is only 3.5km from their nearest well bore on their site not 7.5km, so there is a serious risk of sea water infiltrating these underground fresh water aquifers when fresh water is pumped out of wells 30m or 40m below sea and estuary levels.

Response;
Section 5.1.1 of the Submissions Response Document and Section 4 of the Groundwater Supply Assessment in Appendix 9.8, explains the Zone Of Contribution (ZOC) for the water abstractions at the Hydrogen Plant. This is shown below in Figure 3. The depth of the bore holes refers to meter above datum e.g. sea level, this does not imply that the location is in sea water at those depths. The Zone Of Contribution presented below is not considered directly or closely linked to sea water bodies in a hydrogeological context. The Zone Of Contribution is based on sustainable water balance / abstraction rate, and uses conservative data and built in safety factors.

[8] HSA. https://www.hsa.ie/eng/publications_and_forms/publications/chemical_and_hazardous_substances/guidance_on_technical_land_use_planning_advice.html

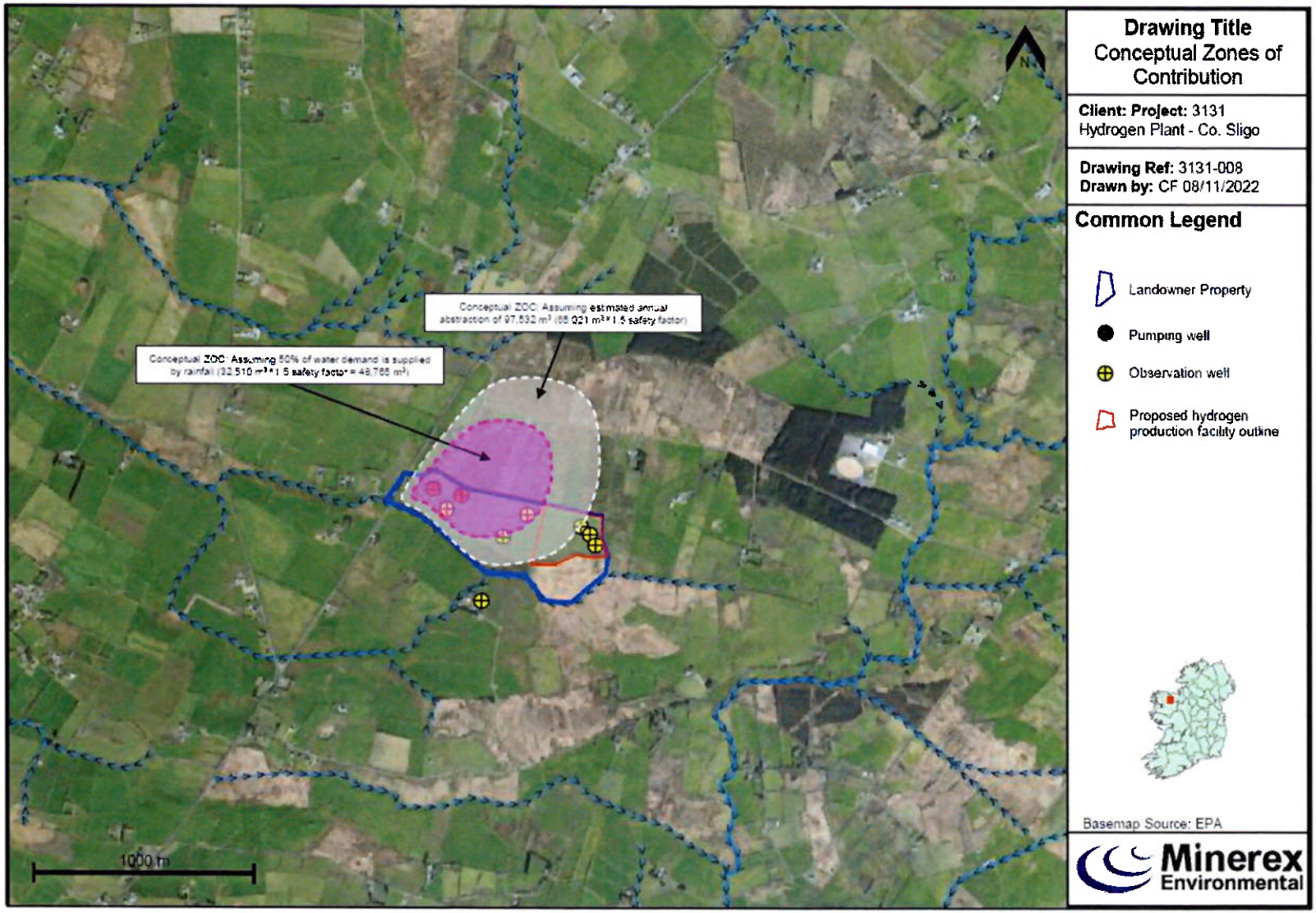


Figure 3: Zone of Contribution for the Hydrogen Plant.

We are not satisfied with the wastewater storage and treatment proposals onsite. I ask if Mercury Renewables got permission from Mayo & Sligo Co. Co. to dispose of thousands of cubic meters of contaminated water into their existing facilities which are already over capacity at their wastewater treatment facilities in Ballina and Enniscrone. Mercury Renewables say it's not practical to put in place a waste water pipeline to these facilities.

Response:
It is not proposed that waste water will be disposed of at county treatment facilities. The Hydrogen Plant has its own waste water treatment facility which, along with discharge is described in the EIAR Chapter 2; Project Description Section 2.6.6.6.

Our land in the vicinity of the waste water treatment area for the proposed hydrogen plant is waterlogged for up to 8 or 9 months of the year and there is up to 4.5m deep peat bog on our lands and the same where they propose to treat the waste water before discharging it into the boundary system.

There is absolutely zero capacity in this type of peat soil to retain any excess water from areas of contaminated roads, car parking areas, lorry bays and re-fuelling depos, as well as torrential rain which will eventually make its way to the stream as it is on the lower side of the site.

Response;
The constructed wetlands are described in the Project Description Chapter of the EIAR. Chapter 9; Hydrology and Hydrogeology along with the Flood Risk Assessment in Appendix 9.2 of the EIAR assess the impacts of the Project including the constructed wetlands and all surfaces at the Hydrogen Plant Site. Rainwater harvesting is also being used to contribute to the water input requirement of the electrolyser. Details of the drainage at the Hydrogen Plant is included in Section 2.6.19 of Chapter 2; Project Description in the EIAR which states;
"Storm water will be collected through a combined network of drains & piped network of gully trap, catch basin and manholes from uncontaminated areas. This system will pass through the oil separator as it will be collected from hard surfaces/roof areas onsite and be fed into the underground storage tanks."

This is also addressed in Section 4.5.6 of the Submissions Response Document.

Another concern we have is, are Mercury Renewables going to be allowed to excavate and dispose of thousands of tons of peat from these wetlands to facilitate this plant.

Response;
Appendix 2.2 of the EIAR; CEMP included Management Plan 4 – Peat and Spoil Management Plan. This describes how spoil, including peat will be managed at the Hydrogen Plant Site.

Could you please ascertain as to how Mercury Renewables compiled their house locations on figure 11.9. Our house is HH14, neighbours house is HH17 and there is 2 more unused houses just to the west of us by 100mtrs one of which is on our farm and we intend to renovate at a future date and houses HH10 and HH13 do not exist as there was never any dwellings in those locations. This leads me to seriously question how Mercury Renewables associates compiled their information in general, as they

have emphasised that they have liaised with people in the vicinity of the hydrogen plant, this is a glaring omission.

Response;
House maps were prepared using Ordinance Survey maps, arial photography, a house survey based on Eircodes and periodic and repeated planning searches for new developments with planning permission. Section 2 of this report substitutes 2 figures of the EIAR due to a minor error in the location of HH10 and HH13. The amended figure identifies these houses as the unused houses mentioned above.

- *The correct location of HH10 is 610m from the Hydrogen Plant (compared to 600m in Figure 1.3). It is located 350m to the west of HH14.*
- *The correct location of HH13 is 830m from the Hydrogen Plant (compared to 680m in Figure 1.3). It is located 450m to the southwest of HH14.*

These are both derelict and disused properties without Eircodes. The distance and location corrections do not significantly change the impacts addressed in the noise assessment in Chapter 11 or any other technical assessments.

HH10 is 10m further from the Hydrogen Plant.
HH13 is 150m further from the Hydrogen Plant.

These properties are outside any noise contours. The difference between the location assessed and the correct location is minimal, the correct locations are both further from the location assessed and therefore the noise impacts would be lower.

The Applicant cannot comment on any future potential planning applications. These will be assessed by the relevant authority having regard to the relevant planning policy set out in the County Development Plan.

We have serious concerns about our group water scheme which supplies our townland of Dooeighney and dozens of other townlands in the area, which is supplied from a main on the Ballina Sligo road and the water pressure in our Dooeighney is sporadic the best of times.

Mercury Renewables have stated that they intend to back up their well supplies with a connection from this main. Please clarify that Irish Water have given Mercury Renewables preliminary permission to connect a substantial connection (100mm or upwards} to this main. If Irish water grant this connection we will have little or no water pressure in our scheme and with the quantity of water they will be pumping from their wells will render our old wells useless as the water table will have dropped in the surrounding areas.

Response;
Section 4.5.2 and Section 4.5.1 of the Submissions Response Document addresses this query.

In the event of this project going ahead and any catastrophic event occurring who is Sligo Co.Co / An Bord Pleanála will deal with the aftermath?

Response;

Consultations with the Fire Service are set out in Section 4.4.2 of the Submissions Response. Appendix 16.2 of the EIAR; Major Accident Prevention Policy included Section 7; Emergency Response.

We request that there be an oral hearing and am shocked that the applicant perceives that an oral hearing is not necessary (P14) despite the fact that Sligo County Council has requested same.

Response;
An Oral Hearing has been organised by the Board.

Yours faithfully
Bernard Hallinan & Shane Hallinan

3.15 BERNARD HALLINAN

I Bernard Hallinan and I Shane Hallinan own the farmhouse HH14 figure 11.9 and a substantial portion of our farmland borders the site of the proposed hydrogen plant with its proposed location approx. 70m from our boundary.

We acknowledge receipt of newsletters in May and September 2022 but nobody from Mercury Renewables took the time or effort to engage with us by phone, email or in person in relation to the serious potential impact it could have on our property.

Response;
Details of the consultations undertaken by Mercury is outlined in Section 4.1 of the Response to Submissions. The Newsletters included contact details and invited the occupants or anybody interested in the project to the Public Information Days or to contact the Community Liaison Officers to discuss any queries or concerns. Extensive public consultation was undertaken for the Project. Community Liaison Officers were assigned to the Project and made every attempt to contact people in the vicinity of the Proposed Development. An invitation to the neighbors meeting at the Muddy Burns was extended to the Hallinan family. However, they did not attend. It is an individual's right to choose not to engage with communication materials or attend consultation events.

In the quantitative risk assessment appendix 16.3 of the EIAR there is no account taken for any member of our family or workers on our lands which is approx.70m away from the proposed hydrogen plant.

We have been excluded from the calculations of the potential hazardous zone predicted in the event of an explosion on site and our land is within the inner risk zone.

Response;
The QRA was performed according to the HSA's Guidance on Technical Land Use Planning Advice[9] with particular focus on Section 3.4; Hydrogen Installations.

[9] HSA. https://www.hsa.ie/eng/publications_and_forms/publications/chemical_and_hazardous_substances/guidance_on_technical_land_use_planning_advice.html

We are not satisfied that concerns have been fully addressed that were raised in our submissions, the well bores are 30m to 40m below sea level by their calculations and the River Moy estuary which is tidal up to Ballina town, is only 3.5km from their nearest well bore on their site not 7.5km, so there is a serious risk of sea water infiltrating these underground fresh water aquifers when fresh water is pumped out of wells 30m or 40m below sea and estuary levels.

Response;
Section 5.1.1 of the Submissions Response Document and Section 4 of the Groundwater Supply Assessment in Appendix 9.8, explains the Zone Of Contribution (ZOC) for the water abstractions at the Hydrogen Plant. This is shown in Figure 3 above. Although the depth of the bore holes refers to meter above datum e.g. sea level, this does not imply that the location is in sea water at those depths. The Zone Of Contribution presented above in Figure 3 is not considered directly or closely linked to sea water bodies in a hydrogeological context. The Zone Of Contribution is based on sustainable water balance / abstraction rate, and uses conservative data and built in safety factors.

We are not satisfied with the wastewater storage and treatment proposals onsite. I ask if Mercury Renewables got permission from Mayo & Sligo Co. Co. to dispose of thousands of cubic meters of contaminated water into their existing facilities which are already over capacity at their wastewater treatment facilities in Ballina and Enniscrone. Mercury Renewables say it's not practical to put in place a waste water pipeline to these facilities.

Response:
It is not proposed that waste water will be disposed of at county treatment facilities. The Hydrogen Plant has its own waste water treatment facility which, along with discharge is described in the EIAR Chapter 2; Project Description Section 2.6.6.6.

Our land in the vicinity of the waste water treatment area for the proposed hydrogen plant is waterlogged for up to 8 or 9 months of the year and there is up to 4.5m deep peat bog on our lands and the same where they propose to treat the waste water before discharging it into the boundary system.

There is absolutely zero capacity in this type of peat soil to retain any excess water from areas of contaminated roads, car parking areas, lorry bays and re-fuelling depos, as well as torrential rain which will eventually make its way to the stream as it is on the lower side of the site.

Response;
The constructed wetlands are described in the Project Description Chapter of the EIAR. Chapter 9; Hydrology and Hydrogeology along with the Flood Risk Assessment in Appendix 9.2 of the EIAR assess the impacts of the Project including the constructed wetlands and all surfaces at the Hydrogen Plant Site. Rainwater harvesting is also being used to contribute to the water input requirement of the electrolyser. Details of the drainage at the Hydrogen Plant is included in Section 2.6.19 of Chapter 2; Project Description in the EIAR which states;
"Storm water will be collected through a combined network of drains & piped network of gully trap, catch basin and manholes from uncontaminated areas. This system will pass through the

oil separator as it will be collected from hard surfaces/roof areas onsite and be fed into the underground storage tanks."

This is also addressed in Section 4.5.6 of the Submissions Response Document.

> Another concern we have is, are Mercury Renewables going to be allowed to excavate and dispose of thousands of tons of peat from these wetlands to facilitate this plant.

Response;
Appendix 2.2 of the EIAR; CEMP included Management Plan 4 – Peat and Spoil Management Plan. This describes how spoil, including peat will be managed at the Hydrogen Plant Site.

> Could you please ascertain as to how Mercury Renewables compiled their house locations on figure 11.9. Our house is HH14, neighbours house is HH17 and there is 2 more unused houses just to the west of us by 100mtrs one of which is on our farm and we intend to renovate at a future date and houses HH10 and HH13 do not exist as there was never any dwellings in those locations. This leads me to seriously question how Mercury Renewables associates compiled their information in general, as they have emphasised that they have liaised with people in the vicinity of the hydrogen plant, this is a glaring omission.

Response;
House maps were prepared using Ordinance Survey maps, arial photography, a house survey based on Eircodes and periodic and repeated planning searches for new developments with planning permission. Section 2 of this report substitutes 2 figures of the EIAR due to a minor error in the location of HH10 and HH13. The amended figure identifies these houses as the unused houses mentioned above.

- *The correct location of HH10 is 610m from the Hydrogen Plant (compared to 600m in Figure 1.3). It is located 350m to the west of HH14.*
- *The correct location of HH13 is 830m from the Hydrogen Plant (compared to 680m in Figure 1.3). It is located 450m to the southwest of HH14.*

These are both derelict and disused properties without Eircodes. The distance and location corrections do not significantly change the impacts addressed in the noise assessment in Chapter 11 or any other technical assessments.
HH10 is 10m further from the Hydrogen Plant.
HH13 is 150m further from the Hydrogen Plant.

These properties are outside any noise contours. The difference between the location assessed and the correct location is minimal, the correct locations are both further from the location assessed and therefore the noise impacts would be lower.

The Applicant cannot comment on any future potential planning applications. These will be assessed by the relevant authority having regard to the relevant planning policy set out in the County Development Plan.

> We have serious concerns about our group water scheme which supplies our townland of Dooeighney and dozens of other townlands in the area, which is supplied from a

main on the Ballina Sligo road and the water pressure in our Dooeighney is sporadic the best of times.

Mercury Renewables have stated that they intend to back up their well supplies with a connection from this main. Please clarify that Irish Water have given Mercury Renewables preliminary permission to connect a substantial connection (100mm or upwards} to this main. If Irish water grant this connection we will have little or no water pressure in our scheme and with the quantity of water they will be pumping from their wells will render our old wells useless as the water table will have dropped in the surrounding areas.

Response;
Section 4.5.2 and Section 4.5.1 of the Submissions Response Document addresses this query.

In the event of this project going ahead and any catastrophic event occurring who is Sligo Co.Co / An Bord Pleanála will deal with the aftermath?

Response;
Consultations with the Fire Service are set out in Section 4.4.2 of the Submissions Response. Appendix 16.2 of the EIAR; Major Accident Prevention Policy included Section 7; Emergency Response.

We request that there be an oral hearing and am shocked that the applicant perceives that an oral hearing is not necessary (P14) despite the fact that Sligo County Council has requested same.

Response;
An Oral Hearing has been organised by the Board.

Yours faithfully

Bernard Hallinan & Shane Hallinan

3.16 FRANCIS KAVANAGH

Dear sir/madam

I own and farm land on the proposed route along L6612. I wish to confirm that nothing has changed since my previous letter and I have not been contacted about my land being used for passing bays or for the road being widened

Regards
Francis Kavanagh

The previous submission received from Francis Kavanagh stated;

I am very concerned about my animal welfare, agricultural land and livelihood.

Response;

Section 4.5.1 Water Abstraction and Section 4.5.3 Water Discharge of the Submissions Response Document addressed queries in relation to the Hydrogen Plant, water environment and soils in terms of impacts to livestock. Section 4.11 addressed impacts relating to noise and livestock. Section 4.13.5 addressed queries relating to livestock and wind farms.

I am also concerned about the inconvenience that would be imposed on me for almost two years, if this proposed development goes ahead.

Response;
A Traffic and Transport Impact Assessment was carried out and can be found in Chapter 15 of the EIAR. Queries relating to traffic were addressed in Section 4.6 of the Submissions Response Document, including the effects during the construction phase.

I resent the way it has been stated in the plans that third party lands are required on this route when there has been no prior engagement with me at all. (Chapter 15, Traffic and Transport, 15.4.3. page 54)

Response;
Concerns regarding Public Consultations are outlined in Section 4.1 of the Submissions Response Document. The Developer has met and had detailed discussions with Francis Kavanagh regarding the Haul Routes for this project. All consents are in place for any land required for passing bays or road widening. No further land is required for passing bays or road widening. To clarify, no consents are required from Francis Kavanagh.

3.17 THERESA AND PADRAIC MORRELL

Re: ABP -317560-2324
Proposed windfarm development including 13 no. wind turbines in Bunnyconnellan, Co. Mayo and hydrogen plant in Castleconnor, Co. Sligo.

To Whom It May Concern:

Thank you for sending us the Jennings O'Donovan Consulting engineers' response to third party submissions and observations, planning application, reference Re: ABP - 317560-23

Our house is HH15 on Figure 1.3 of the EIAR. We were not invited to any meetings organised by Mercury Renewables. We received the May 2022 and September 2022 newsletters. We did not receive any other correspondence from Mercury Renewables. We were not invited to the Hydrogen Plant Neighbours meeting in Muddy Burns on 25th May 2023 referred to on p53 response document.

Response:
The Newsletters were sent by Mercury Renewables and included contact details and an invitation to attend the Public Information Days – these were meetings organised by the Developer. Details of the consultations undertaken were outlined in Section 4.1 of the Response to Submissions.

The PACC report in Appendix 1.3 of the EIAR states;

"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant were invited to an informal meeting. Two individuals attended the evening."

There was no profile erected for the Hydrogen Plant buildings, and the virtual wireframe montage does not clearly represent the proposed development or topography. The scale of the building on the video on mercuryrenewables.ie/hydrogen is very misleading.

Response;
Queries regarding the Hydrogen Plant buildings visual representation in the montages is addressed in Section 4.10 of the Submissions Response Document. The video on the mercury website is not meant to be interpreted as to scale. The Planning Drawings submitted with the application show the scale.

I am concerned that no design report was submitted for the junction N59 / L66121. This was cited by the TII and referred to on p49 of the response document. The applicant stated that the design of the N59 L66121 has been carried out. However this was not the case.

Response;
The Design Report required under NH-GEO-03030 for local improvement was scheduled to be submitted during the detailed design phase. This has now been completed and can be found in Appendix A; N59 / L66121 Priority Junction Design Report.

The applicant has only specified vehicles, transporting hydrogen, in relation to the quantity of hydrogen on board. It is their working assumption that lorries used will carry 1200kg of hydrogen. There are no specifications of the weight of these lorries loaded with cylinders of hydrogen. There are no dimensions given for these lorries.

Response;
Queries related to tube trailers and volumes were addressed in Section 4.2.2 of the Submissions Response Document. Tube trailers are currently used to transport a number of compressed gas products on Ireland's roads including natural gas, compressed air, nitrogen and oxygen. Tube Trailers are classed as Heavy Goods Vehicles. All tube trailers will comply with current road transport regulations including in size and gross weight as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

There is no road safety audit for these vehicles on the L66121 or N59.

Response;
This was addressed in Section 4.6.2 of the Submissions Response Document; The layout of the proposed junction is shown on Drawing No. 6129-PL-121 included in the planning application drawings. The proposed junction has been subject to a Stage 1 road safety audit carried out by an independent audit team approved by the TII. The road safety audit report is included in Appendix 15.3 of the EIAR.

Traffic counts are based on this size vehicle only.

Response;
Traffic count methodology is described in Chapter 15 Traffic and Transport in Section 15.3.5. these were not limited to large vehicles.

These vehicles are not common and it cannot be assumed that they will be generally available and certified for use in Ireland/Europe, before the hydrogen plant could be operational.

Response;
This was addressed in Section 4.2.2 of the Submissions Response Document.

The working assumption is that the lorries holding 384kg will be used until such time as larger lorries will be available. In the case of these lorries 176 lorry movements will take place when the site is in full operation from the L66121 to the N59.

Response;
176 movements is not correct, queries over the number of traffic movements associated with the operational phase of the Development is outlined in Section 4.2.2 of the Submissions Response.

No specifications re weight, or dimensions have been estimated for these either.

Response;
Queries related to tube trailers and volumes were addressed in Section 4.2.2 of the Submissions Response Document. Tube trailers are currently used to transport a number of compressed gas products on Ireland's roads including natural gas, compressed air, nitrogen and oxygen. Tube trailers are classed as Heavy Goods Vehicles. All tube trailers will comply with current road transport regulations including in size and gross weight as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

I am concerned as this traffic will make the N59 more dangerous for us exiting and entering our property from the N59

Response;
A Traffic and Transport Impact Assessment was carried out and can be found in Chapter 15 of the EIAR. Section 4.6 of the Submissions Response addresses the queries stated above in relation to the N59.

Concerns re devaluation of property were ignored by the applicant. There is no reference of this fact, when we query insurance in the future. Should any accident happen on site, it is an assumption that insurance prices may increase, or it may become impossible to get a quotation.

Response;
Property Value was assessed in the EIAR in Chapter 4; Population and Human Health, Section 4.4.7. Residential amenity was addressed in Section 4.4.6 of the same chapter.

Meetings and discussions held by the Developer with insurance brokers regarding placement of private insurance on residences near the Hydrogen Plant, have indicated there is no evidence to

suggest that the location of the Hydrogen Plant will impact the ability for local residents to obtain insurance at normal market rates. Furthermore, the Developer has spoken with residents near Ballina Beverages, an Upper Tier COMAH site (note the Hydrogen Plant will be designated a Lower Tier COMAH site) and the presence of the Ballina Beverages facility has not impacted those residents' ability to obtain home insurance at normal market rates.

We are still concerned that the abstraction of water as we are avid gardeners

Response;
Queries in relation water abstraction were addressed in Section 4.5.1 of the Submissions Response Document

We are concerned for the wildlife in the area as we feel there could be a potential water loss in the Brusna and Dooeighney rivers.

Response;
This was addressed in Section 4.5.1 of the Submissions Response Document.

Since the Dooeighney river passes close to our house, we are still not clear as to how the water storage or amounts of discharge will affect the groundwater in the area.

Response;
This was addressed in Section 4.5.1 and Section 4.5.3 of the Submissions Response Document.

I am worried that the applicant also plans to use mains water when short of water on site. In the event of a water shortage, all customers will be required to reduce usage so we cannot understand how Mercury Renewables could be allowed to use water for hydrogen when drinking water for the population potentially could be reduced.

Response;
This was addressed in Section 4.5.2 of the Submissions Response Document.

We use a telescope and enjoy viewing the night sky. We are concerned that there will be light pollution that will hinder this for us.

Response;
This was addressed in Section 4.13.2 of the Submissions Response Document.

Market for Hydrogen: See attached file.

Response;
Queries regarding the demand for hydrogen in Ireland were addressed in Section 4.2.4 of the Submissions Response Document.

Dust. The applicant has admitted that there will be dust during the construction phase. We have health issues and are very concerned about this.

Response;

This was addressed in section 4.7 of the Submissions Response Document.

Figure 1.3 in the EIAR shows Hydrogen plant site house locations. This is referred to in the Noise and Vibration chapter 11 of the EIAR. However, due to inaccuracies re houses Hh10 and HH13 detailed in this chapter, (which don't exist) I fear that other information in this chapter may also be incorrect.

Response;
House maps were prepared using Ordinance Survey maps, arial photography, a house survey based on Eircodes and periodic and repeated planning searches for new developments with planning permission. Section 2 of this report substitutes 2 Figures of the EIAR due to a minor error in the location of HH10 and HH13. The amended figure identifies these houses as the unused houses mentioned above.

- *The correct location of HH10 is 610m from the Hydrogen Plant (compared to 600m in Figure 1.3).*
- *The correct location of HH13 is 830m from the Hydrogen Plant (compared to 680m in Figure 1.3).*

These are both derelict and disused properties without Eircodes.

The distance and location corrections do not significantly change the impacts addressed in the noise assessment in Chapter 11 or any other technical assessments.

These properties are outside any noise contours. The difference between the location assessed and the correct location is minimal, the correct locations are both further from the location assessed and therefore the noise impacts would be lower.

Hydrogen Production/Demand: See attached file. Hydrogen Plant Operating Noise: See attached file. Finances/Funding: See attached file.

Response;
Queries regarding the demand for hydrogen in Ireland were addressed in Section 4.2.4 of the Submissions Response Document.

This area of Co. Sligo is not zoned for industry.

Response;
This was addressed in Section 4.12.1 of the Submissions Response Document.

We request that An Bord Pleanála holds an oral hearing in relation to this planning application.

Response;
An Oral Hearing has been organised by the Board.

Please acknowledge receipt of this correspondence.

P. and T. Morrell.

Hydrogen Production/Demand
P.65.66

Hydrogen has less energy per unit than Jet-A1 fuel.
The use of Hydrogen in commercial aviation is a long way off. Protocols processes and procedures have yet to be developed for this sector and safety is a huge issue. Maritime applications are also years away.

Just to be clear the timeline of 2024-20226 is to develop a road map to bring net zero dispatchable power solutions to market by 2030. It does not mean that there is a guaranteed market for the product even then.

Response;
This was addressed in Section 4.2.4 and in the Section on Ireland National Hydrogen Strategy in Section 2.1 of the Submissions Response Document.

If Eir Grid is unable to accept the Wind Farm output and the surplus energy is diverted to the Hydrogen Plant, what is the Applicant going to do with all his Hydrogen until that point? He cannot store more than a day's output so would have to remove it off site to a storage area which itself will have a capacity limitation. Either that or shut down the Wind Farm temporarily. This does not make business sense, so where the financial data is to justify the investment.
Statement implies that some of the time, some of the wind farm energy will be diverted to the EirGrid to satisfy demand. Other times, some of? Will be diverted to the hydrogen plant so that the Wind Farm is not idle. The Applicant does not advise how this very complex procedure is to be managed ie., The Hydrogen Plant will receive variable amounts of energy throughout the day and its various electrolysers will have to be shut down/started up as required. Is this technically feasible?

Response;
Queries in relation to Hydrogen Demand in Ireland is addressed in Section 4.2.4 of the Submissions Response Document and in the EIAR Chapter 1 Introduction; Section 1.6; Need for the Development. As per Chapter 2; Project Description, the Hydrogen Plant will be scaled up to meet demand. This was also stated in the Submissions Response Document, Section 4.7.1.2. The Hydrogen Plant will be designed, constructed and operated in line with the requirements set out by COMAH Regulations, including 24/7 monitoring. The maximum onsite storage of hydrogen (approximately 40.128 tonnes) classifies the Hydrogen Plant as a 'Lower-tier' COMAH site as this is below 50 tonnes.

The use of intermittent renewable energy to power hydrogen electrolysis is at the heart of the EU RED III definition of what constitutes green hydrogen. Hydrogen production facilities around the world are already in operation utilising renewable energy, verifying the technical feasibility of the proposal.

Item 12 Page 69 of Planning Statement

The Applicant seems to be advising that there is still a restriction in the EirGrid network? If so, there are no stated plans in the application to increase this capacity.

Response;
Plans to upgrade the national grid are beyond the control of the Applicant.

The Applicant advised that hydrogen fuel cells could be a potential market for his product. However, different applications demand different purities of hydrogen. The Applicant states the hydrogen produced will be 99.9% pure, this is a meaningless figure as different applications can tolerate differing types of, and differing levels of, impurities, all of which can have different consequences.

Response;
Queries related to hydrogen demand and uses are addressed in Section 4.2.4 of the Submissions Response Document and in Chapter 1; Introduction; Need for the Development in Section 1.6.

In Chapter 2 Table 2.4 the Applicant has made no reference to ISO 14687-2019. "Hydrogen fuel quality Product specification" which sets out impurity levels for different applications. E.g. boilers that burn hydrogen will generally tolerate higher concentrations of impurities than a road vehicle that uses a polymer electrolyte membrane fuel cell (PEMFC)

Response;
Table 2.4; Firlough Green Hydrogen Project Relevant Standards and Codes of Practice. Is not an exhaustive list and does not include all standards related to hydrogen.

The Applicant states that HGV's which will carry away the hydrogen tubes will be supplied and manned locally and expects the vehicles to use fuel cell technology fed from the output of Hydrogen Plant (when available- otherwise diesel HGV's will be used) Fuel-cell technology for HGN's is not mature. If Polymer electrolyte membrane fuel cell (PEMFC) technologies will be used they will require high-purity hydrogen, yet other anticipated markets such as industrial/domestic boilers or high-heat applications do not need such a high grade. The Applicant continuously quotes the mantra that Ireland has to produce more zero-emission products to meet Net Zero but this is not backed in the Application by the science of hydrogen production.,

Response;
Queries in relation to Hydrogen Demand and uses in Ireland is addressed in Section 4.2.4 of the Submissions Response Document and in the EIAR Chapter 1 Introduction; Section 1.6; Need for the Development. Ireland has released its National Hydrogen Strategy which provides further clarification on the demand pathways for hydrogen in Ireland. As outlined in Section 2.1 of the Submissions Response Document.

Finances/Funding

It has not been possible to find a funding statement in the Planning Statement or Environmental Impact Assessment. This is a concern, for the Applicant has not carried out, or is not willing to divulge, a complete analysis of costs and profitability.

There is no sensitivity analysis to determine the project's vulnerability to volatilities in for example:

1. Demand for hydrogen
2. Comparative costs of hydrogen generation compared to other sources
3. Feed-in tariffs to EirGrid
4. Material costs
5. Currency exchange rate fluctuations

There is no detail of capital recovery, renewal costs (e.g. electrolysers etc.) nor potential profit or loss assessment.

Response;
The Project is a private development and the financial details are commercially sensitive information which is not required to be made publicly available. This is not a publicly funded development, and a funding statement is not required.

The Applicant has spent a lot of money in submitting the original Planning Application in 2013 (without actually building anything !) and has spent even more money in the current Application.

Response;
As per Chapter 1; Introduction of the EIAR; Planning permission was granted on the 1st of August 2013 for the construction of 21 wind turbines under An Bord Pleanála Reference PL16.241592. Mercury is pursuing a re-permitting strategy following ***delays in securing a grid connection*** *to reflect recent advancements in wind turbine technology and the emergence of green hydrogen as a significant component in the decarbonisation of our economy. The Project is a private development and the financial information which is not required to be made publicly available.*

Chapter 1. Paragraph 1.10.5 also states — without a financial analysis:
Annual rates of between €650,000 — €780,000 payable to Mayo County Council over the Wind Farms 40 years of operation
Annual rates to Sligo County Council over the operational life of the Hydrogen Plant.
Are these costs included in the €200 million ?

Without a financial statement, we will never know, and that is why this project should never get the go-ahead. The Applicant has not provided any financial breakdown so clearly he is either incompetent or is hiding something.....

Response;
The Project is a private development and the financial details are commercially sensitive information which is not required to be made publicly available. This is not a publicly funded development and a funding statement is not required.

Community Benefit:

Chapter 1 paragraph 1.10.5 states "Establishing a community benefit fund of €500,000 per annum for the first 15 years of operation that will be administered by a management committee.
As identified in Section 2.3 the Applicant does not demonstrate how he could generate enough profit to be able to put €500,000 per annum into a community fund, local

communities or charities. Without a detailed financial analysis this could appear as an inducement, purely to undermine opposition to the Applicants proposals.

Response;
This figure is based on renewable energy generation projections and modelling.

Furthermore, in Chapter 2 paragraph 2.10 the Applicant 'clarifies' by stating: The project has the potential (our emphasis) to make more than €500,000 available per annum in the local area for community funding for RESS period, consistent with Government Policy.
However, the above figure is indicative only and will be dependent on the generation capacity of the wind farm which is influenced by a number of factors including:

1. Number and type of wind turbines permitted
2. Capacity and availability of energy production of the delivered turbines
3. Quantity of wind and wind conditions in any given year.
4. Timing of the electrolyser module phasing to full capacity as the hydrogen market grows

In other words, the windfall is not guaranteed, and the Applicant has introduced a new dependency — the full capacity of the Hydrogen plant. If capacity is not achieved the Applicant may not be liable to distribute funds. **Potential get-out clause**
The Applicant must be made to provide more concrete assurances that can be secured in any future permission

The absence of a detailed financial analysis would indicate that this is not a serious submission. Any investor worth the title would walk away from such a proposal as it stands.

Finally, the source of funding could be an issue, should the end result be the export of significant profits to unfriendly jurisdictions.

Response;
The Project is a private development and the financial details are commercially sensitive information which is not required to be made publicly available. This is not a publicly funded development and a funding statement is not required.

Hydrogen Plant Operating Noise

15.1 Chapter 11 paragraph 11.27.42 states: "The noise model accounts for the topography of the existing and proposed land in the vicinity of the site, where it is proposed that the Proposed Development will sit at a lower ground level in comparison to the existing land, where the raised land surrounding the site effectively acts as a barrier. "This is clearly untrue. Drawing 41035-1000- G1000 shows that the site has to be re-profiled, and that the whole of the south elevation is located on a 5m high slope. On the west elevation. The electrolyser plant has a low embankment in front of it, ranging from 3m at its highest point to ground level at the other end of the electrolyser building.

From there, a gradual slope descends some 5m below the plant's finished ground level. 15.2 A rough sketch is shown in Figure 3 below. This is not to scale. 15.3 Compared to the height of the electrolyser building, the low embankment (shown in green) will provide little noise attenuation, whereas the 5m slope (shown in brown) will only exacerbate the noise issue particularly to the south. 15.4 Chapter 11 Table 11.26 provides the output sound power level for site components and Figure 11.9 provides noise contours - presumably dBL Aeq ,24h because the plant will run continuously).

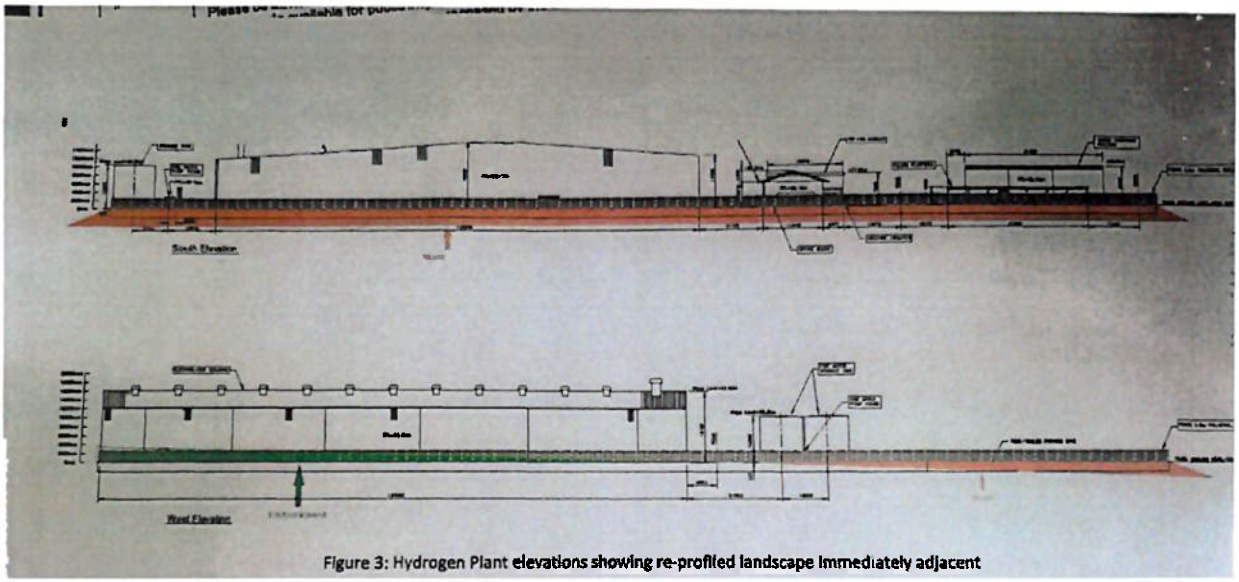


Figure 3: Hydrogen Plant elevations showing re-profiled landscape immediately adjacent

Response;
Note the above figure was part of the submission from Theresa and Padraic Morrell.

The Planning Drawings submitted with the application include the correct finished floor levels. These were used to inform the technical assessments.

The Applicant does not state how these contours have been modelled.

Response;
A Noise assessment was carried out and is detailed in Chapter 11; Noise and Vibration. This includes detailed explanation of the noise contour map and how the contours were modelled.

15.5 Mitigation measures are set out in Chapter 11.27.4.4 but are lacking in detail — see paragraphs below.

15.6 The metal-clad Electrolyser building will be fitted with insulation that — according to the Applicant -has a 'minimum RW 3 of 35dB. However, this is a building some 130m long and 110m deep and 16m high that will contain equipment with an output noise level of 83dBA.

Given that it has doors, there are vents in the roof, and given that this is a metal clad-building with resonance potential, how can the Applicant be sure that 3SdB attenuation will be achieved?

15.7 The noise contour for the Electrolyser building is shown as 40dB yet with perfect insulation and no resonance, this figure should be 83-35 = 48dBA !15.8

Response;
As per Table 11.23 of Chapter 11; Noise in the EIAR, – 83dB is an internal sound pressure level. The noise modelling assumes that 83 dB is the internal noise level which acts on all points of the internal building – this is a very conservative assessment. The sound insulation of the façade can be calculated, any vents or openings in the building are incorporated into the model as openings and considered in the predicted noise levels.

The internal sound pressure level is 83dB, the reduction from the façade is 35dB, this is relied upon to calculate the sound power level per square meter of the external building façade. This is the methodology relied upon in noise modelling.

The calculation as presented above in submission (83-35=48dB(A)), would not be applicable to show the external noise level as presented by the noise contour levels.

Fin-fan coolers produce 102dBA and the Applicant advises that they have an enclosure that attenuates by 12dB, giving a total of 90dB. Yet the highest noise contour shown on Figure 11.9 is 70dBA. The figure of 102dBA is similar to the noise output of a wind turbine yet if one studies Figure 11.2 (Wind Turbine Noise Contour Map) the noise contours are much more spread out with the best part of half a kilometer between the 45dB and 40dB contours. There appears to be an anomaly in the way these contour maps are modelled.

Response;
There are a lot of differences in how the models are set-up, depending on the standards you are seeking to comply with:

The source noise for wind turbines are at the hub height of the turbine, which means the attenuation is primarily due to distance and there are inherent conservatisms built into the noise calculations of wind turbine noise as required by the IoA GPG. In addition, the source of the noise i.e. the wind turbines, is spread out over a larger area and the contour levels from the turbines are set at a height of 4m (as required by the standards)

The fans are located much closer to the ground and much closer together, so in addition to the reduction due to the enclosure, the noise level is impacted by barrier and ground attenuation from the other structures in the model, with the contour lines set at a height of 1.5m from the ground.

As noted the highest contour line for the hydrogen model is 70dB, but for the wind farm it is on a scale that starts at 50dB.

15.9 Added to the Electrolyser building noise and the Fin fans, are the Compressors (60dBA =85dBA-25dB)., Transformer (88dBA), Water Treatment Pumps (85dBA) and Other Pumps, Fans etc. (85dBA). All this adds up to a considerable noise profile which Figure 11.9 does not fairly represent.

Response;

The noise assessment in Chapter 11 of the EIAR assumes all components are on all the time, with the number of units based on the site layout. This query was also addressed in Section 4.11 of the Submissions Response Document.

15.10 The palisade fence around the Plant is 2.4m high (compared to the electrolyser building at 16m) and is not an acoustic barrier therefore has little impact on noise emissions.

Response;
This is correct and a palisade fence was not relied upon to provide any sound reduction.

15.11 Consequently, Chapter 11 Table 11.26 Predicted Noise Level. Figures are not credible.

Response;
The noise assessment for the EIAR was completed by Brendan O'Reilly of Noise and Vibration Consultants Ltd and Shane Carr of Irwin Carr Ltd. Two highly qualified individuals who's statement of authority is included in Chapter 11 Section 11.1.1.

15.12 Chapter 11 Paragraph 11.27.4.6 states that "The level of ground vibration from the 3 (acoustic reduction figure) operation of the Hydrogen Plant is below human threshold of 0.2 mm/s for the operation of the plant including trucking from same". There are no calculations to back up this claim, nor stated mitigation measures such as anti-vibration (AV) mounts for equipment.

Response;
The paragraphs above the exert of text in the statement above explains exactly how this conclusion is reached. The full text is located in Chapter 11 Noise, Section 11.27.4.6.

Vibration is also dependent upon the construction of the concrete slabs and building.

There should be a formal system put in place as part of any permission stating exactly what the noise limits are, how they are monitored, how complaints are handled and what remedy/fines can be applied. It is a concern generally that there is so little proposed governance and over sight of this project during operational phase.

Response;
Queries regarding vibration at the Hydrogen Plant are addressed in Section 4.11 of the Submissions Response Document. This included how complaints are to be handled and reviewing noise during construction. Any Planning Conditions related to noise monitoring applied to the Project will be complied with.

3.18 BARTHOLOMEW AND JACKIE MORRISROE

18/1/24

Further to the Response to third party submissions and observations from the applicant document I received before Christmas, I wish to add the following comments:

1. We wish to confirm that we were not invited to a meeting in Muddy Burns Pub on 25th May 2023 despite our house being referred to as HH19 on Figure 1.3 in the EIAR Hydrogen Plant Site House Locations.
   We believe that circa 80% of owners of house on figure 1.3 of the EIAR were not invited to this meeting.

Response;
The PACC report in Appendix 1.3 of the EIAR states;
"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant where invited to an informal meeting. Two individuals attended the evening."

HH19 does not share a boundary with the Hydrogen Plant, it is located approximately 1km to the west, and was therefore not invited to this meeting. This house was included in leaflet and newsletter drops including those materials which invited the occupants or anybody interested in the project to the Public Information Days or to contact the Community Liaison Officers to discuss any queries or concerns. Details of community consultations undertaken were included in Section 4.1 of the Submissions Response Document.

We also note that our house is omitted from figure 11.9 despite houses being counted that don't exist.

Response;
The label for HH19 has been omitted in error on this figure. The house is visible on the figure and the location is far outside the cumulative noise contours. The label has been correctly added in the amended figure in Section 2 of this document. HH19 is included on Figure 1.3; Hydrogen Plant House Location Map. HH19 is assessed throughout Chapter 11; Noise.

2. We have concerns that there may be shortages of water or less pressure due to usage by the applicant in the event of water shortages.

Response;
Queries in relation water abstraction were addressed in Section 4.5.1 of the Submissions Response Document.

3. We are fearful that extra traffic at the staggered junction N59/ L66121/ L6611 will make our exit onto the N59 more dangerous. *Response;*

Response;
A Traffic and Transport Impact Assessment was carried out and can be found in Chapter 15 of the EIAR. Section 4.6 of the Submissions Response addresses the queries stated above in relation to the N59 and L66121. During the construction of the Hydrogen Plant, HGV's will be prohibited from using the local road network which does not form part of the works and will not use the L6611 to access the site. During the construction stage of the project, traffic management will be in place at the N59 / L66121 junction in accordance with Chapter 8 of the Traffic Signs Manual to maintain the safe operation of the road network during the construction process.

During the operation of the Hydrogen Plant, operational HGV traffic will exit the N59 / L66121 junction in an eastbound direction towards Sligo and approach the junction in a westbound directional. Operational HGV traffic will not pass the L6611 junction or travel through the town of Ballina. It is proposed as part of the development to modify the existing N59 / L66121 junction to facilitate HGV traffic. The modifications will include statutory signs and roadmarkings, increased road width on the L66121 and increased junction radii to prevent conflict between vehicles at the junction and to prevent vehicles encroaching into opposing traffic streams when turning at the junction. The proposed modifications at the junction have been subject to a Stage 1 road safety audit carried out by a TII approved auditor, independent of the design team. The recommendations of the audit team have been implemented into the final junction design.

Also it is not clear what size of trucks or how many will be used to transport the hydrogen from the proposed site.

Response;
Queries related to tube trailers were addressed in Section 4.2.2 of the Submissions Response Document, including further explanation regarding the volume of vehicles. The green hydrogen will be transported from the Hydrogen Plant Site using tube trailers, the impact of this on the local road network is assessed in Chapter 15: Traffic and Transport. Tube trailers are currently used to transport a number of compressed gas products on Ireland's roads including natural gas, compressed air, nitrogen and oxygen. Tube trailers are classed as Heavy Goods Vehicles. All tube trailers will comply with current road transport regulations including in size and gross weight – as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

I request that there is an oral hearing re: this case.

Response;
An Oral Hearing has been organised by the Board.

I request acknowledgement of receipt of this email.

Kind regards,
Batty and Jackie Morrisroe,
Elma Cottage,
Carraun,
Corballa,
Co. Sligo.

3.19 LEO MULROONEY

Dear Sir/Madam,
I would like to highlight some clarification of the following concerns that don't appear to be addressed adequately in Jennings O'Donovan, Consulting Engineers response to third party submissions and observations planning application Ref:-ABP 317560-23.

- There appears to be little to no reference on the Fresh Water Mussell and how they may be affected, the mortality of fish is mentioned, but I want the Fresh Water Mussels protected due to its rare/protected presence, Please specify?

Response;
Queries related to Freshwater Pearl Mussel were addressed in Section 4.9.2.5; Freshwater Pearl Mussels (Margaritifera margaritifera), in the Submissions Response Document.

- The Barrow appears to be 14m from Red Line boundary (SLO22-26 Barrow), I can not find any reference to the removal/demolition of the existing bungalow!

Response;
The demolition of HH11 is not part of the current planning application and is therefore not inside the red line boundary. However, it is part of the Project – see Chapter 2; Project Description and the impacts were assessed as in the EIA. Impacts to the barrow are addressed in Section 14.5.1 of Chapter 14 Cultural Heritage in the EIAR.

- I am concerned that the Bat Survey at Carraun was not as detailed as the one that was carried out in Kilbride, I feel this requires addressing to safeguard the bats that frequent the area/trees in Carraun please.

Response;
Queries relating to the bat survey at the Hydrogen Plant were addressed in Section 4.9.2.1 of the Submissions Response Document.

- Could you confirm Red Line Boundary, is HH11 Inside the Red Line Boundary or outside it? Appears to be outside boundary – map Noise-Contour for Hydrogen Plant Fig.11.9. Further clarity required please.

Response;
The demolition of HH11 is not part of the current planning application and is therefore not inside the red line boundary. However, it is part of the Project – see Chapter 2; Project Description and the impacts were assessed as in the EIA.

- An Oral Hearing would be most beneficial.

Response;
An Oral Hearing has been organised by the Board.

Leo Mulrooney 18/01/2024

3.20 LEONA MULROONEY AND OTHERS

We would like to highlight some of the short fallings within Jennings O'Donovan, Consulting Engineers response to third party submissions and observations planning application Ref ABP-317 560-23.

We again would like to request an Oral Hearing, in light of the many clarifications that are required.

Response;
An Oral Hearing has been organised by the Board.

We submitted our submission in good faith, outlining genuine concerns of why we are strongly opposed to the proposed development. Again, we feel deflated given the lack of clarity in the developers response with so many key issues been isolated. We feel many concerns have been ignored and side stepped.

Response;
Across 173 pages of detailed response the Submissions Response Document sought to address all queries which were deemed material planning considerations.

Incorrect Labelling of Junctions:
L6612 is an entirely different junction. 600m away. It is deeply concerning that this error may lead to huge confusion. Some experts may have inadvertently examined the wrong junction, throughout the preparation of the planning application. Evidence of this can be found on a TII document, a Sligo Co. Co. document (which was later corrected by council at a meeting 4 Sept 2023).

Also, the error was made in comments on a submission referred to by Mercury Renewables. This casts doubt in the level of research and proof reading that was carried out by developer.

Response;
The road safety audit was undertaken at the correct location and based on the planning drawings submitted with the application. The audit was carried out at the N59/L66121 Junction, the road number shown on the drawings and in the report was taken from the sign at the junction. See Plate 1 above.

In Section 4.6.2 of the Submissions Response Document the L66121 has been written as L6612 as a typo, this section should read;

The proposed realigned junction between the N59 national secondary road and the L66121 local road at Carraun, Co. Sligo has been designed as a simple priority junction with priority for N59 through traffic on the N59 National Road. The junction is located in a 100 km/h speed limit zone.

All technical assessments have assessed the correct location.

Lack of clarity in relation to the truck size that is to be used for hydrogen. Smaller trucks will involve more truck traffic movements. Information is very unclear and confusing as there is mention of larger trucks combined with different numbers of trucks as the project scales up to 80MW. Smaller trucks will increase HGV volume, larger trucks will have potential challenges in exiting and entering the N59 at Junction L66121.

Response;
Queries on the number of traffic movements associated with the operational phase of the Development is clarified in Section 4.2.2 of the Submissions Response Document. Queries related to tube trailers were addressed in Section 4.2.2 of the Submissions Response

Document. The green hydrogen will be transported from the Hydrogen Plant Site using tube trailers, the impact of this on the local road network is assessed in Chapter 15: Traffic and Transport. Tube trailers are currently used to transport a number of compressed gas products on Ireland's roads including natural gas, compressed air, nitrogen and oxygen. Tube trailers are classed as Heavy Goods Vehicles.

The length of HGVs that will transport hydrogen appears to be 15m, extracted from dimensioned drawings, but the Applicant does not specify/explain the fully laden weight of HGV or No. Axles?

Response;
Tube trailers are classed as HGVs. All tube trailers will comply with current road transport regulations including in size and gross weight as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

Planning Statement pg. 3 states "*The wind farm will have an installed capacity of 78MW. The Hydrogen Plant electrolyser will be scaled up to meet demand for green hydrogen in the Irish market to a maximum 80MW capacity. The 80 MW electrolyser will produce a maximum of 31,200kg of green hydrogen per day, consuming the full wind farm output*".

A maximum of 26 tube trailers is planned to take the hydrogen off site. Therefore each tube trailer takes just 1.2 tonnes of hydrogen. The Applicant does not explain why a fully laden HGV is required for an apparently small load? Further clarity is required.

Response;
The capacity of the hydrogen tube trailers is proposed to be 1,200 kg of hydrogen at 380 bar pressure. 1,200 kg is 1.2 tonnes and is a full tube trailer.

Non-technical summary Pg. 12 states "*The Seveso III Directive (Directive 2012/18/E11) and the Chemical Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015, which implements the Seveso directive, apply to the Hydrogen Plant. The Hydrogen Plant is expected to be designated a lower-tier COMAH site, with no more than 30 tonnes of hydrogen on site at any time".*

30 Tonnes is the equivalent of the maximum daily output of the Hydrogen Plant at full capacity so if there is any more than a day's delay in removing the hydrogen off site – for e.g. inclement weather or major road traffic incident on the network etc. operation will have to be cancelled until a resolution is resolved.

Response;
Section 2.6.6.2 of Chapter 2 Project Description of the EIAR states that;
"Should external factors limit the removal of hydrogen from the Hydrogen Plant Site for transportation, a shutdown system will stop production in order to stay within COMAH lower tier regulation volumes."

This is also stated in the Submissions Response Document, Section 4.2.3; volume of hydrogen.

The adjacent town of Ballina, to the south of the Hydrogen Plant, has only one bridge crossing over the River Moy in either direction, with restricted turning circles within the town, narrow streets and one-way systems make it difficult to access the N26 towards Foxford or the N59 towards Crossmolina. The Applicant does not acknowledge the difficulties of this route nor the impact on an already heavily trafficked town during the published hours of HGV transport, (0700 – 1900).

Response;
The operational phase traffic impacts are assessed in the EIAR in Chapter 15 Traffic and Transport in Section 15.5.14. During the operation of the Hydrogen plant, operational HGV traffic will exit the N59 / L66121 junction in an eastbound direction towards Sligo and approach the junction in a westbound direction. Operational HGV traffic will not travel through the town of Ballina.

Tube trailers are classed as HGVs. All tube trailers will comply with current road transport regulations including in size and gross weight as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

Swept Paths; Swept path analysis if the company is so experienced, why the need to include detail to Ballisodare and none from Dromore West?

Response;
This was addressed in Section 4.6.4 of the Submissions Response Document.

There is no continuous Hard Shoulder on N59

Response;
This was addressed in Section 4.6.2 of the Submissions Response Document.

Noise Pollution: A major concern hindering our Quality of Life. Noise from trucks is limited if quieter vehicles are used, but most of these trucks are not in mainstream production yet, again premature. We want specific clarity on the exact level of noise that is to be endured during construction and operation phases.

Response;
This was addressed in Section 4.11 of the Submissions Response Document.

Chapter 11 paragraph 11.3.2 "An Bord Pleanála Ref number PL16.241592 (Planning Register Reference Number: P11/495 states: "*Carrowleagh Site 2013 (now referred to as Firlough Wind Farm) Planning Permission was granted for this site by An Bord Pleanála for a 21 turbine Wind Farm where Condition 9 stated:*
"Noise levels emanating from the proposed development following commissioning when measured externally at a noise sensitive location shall not exceed the greater of 43 db(A) L90, or 5 db(A) above background levels. If the noise contains a discrete, continuous note (whine, hiss screech, hum etc.) of if there are distinct impulses in the noise (bangs, clicks, clatters or thumps), or if the noise is irregular enough in character to attract attention, a penalty of +5 db(A) shall be applied to the measured noise level and this increased level shall be used in assessing compliance with the specified levels.

All noise measurements shall be made in accordance with I.S.O. Recommendations R1996/1 and 2 "Acoustics Description and measurement of Environmental noise" Recent 2022 An Bord Pleanála permissions for Wind Farms have included "*an additional limit of 40 db(A) L90 10 min below wind speeds of 5 m/s*". This last sentence is unclear, but seems to imply that a 40 db(A) limit is imposed where wind speeds are less than 5 m/s, as opposed to 43 db(A) at other times.

Response
This is correct. There are other sites where the limit level conditioned by An Bord Pleanála (ABP) does require compliance with the lower 40dB limit at wind speeds below 5m/s. This is more restrictive than the Wind Energy Development Guidelines (WEDG). In relation to this site Table 11.14 shows the predicted levels at only H1 and H2 to be above 40dB at 4m/s wind speeds. These two properties have been included for completeness, but are derelict and would not be habitable.
The predicted noise levels in this assessment show the site to be compliant with the Wind Energy Development Guidelines and would be in compliance with any of the more stringent ABP decisions.

Analysis of Noise levels carried out from Wind turbines is extensive and Hydrogen Plant equipment in Chapter 11 and its Appendices. The EIAR Guidelines (Section 3 Page 30) advise that the applicant has to consider Noise, under sub-headings Daytime Noise and Night time Noise. Limits for Daytime and Night time noise energy should be provided since receptors (i.e. people) are more sensitive at night time.

Response;
The limit levels and time periods for daytime/nighttime are presented in Section 11.3.1 of Chapter 11; Noise in the EIAR. The lowest fixed limit is a 43dB nighttime noise limit. Table 11.14 shows all houses (with the exception of H1 and H2) have lower predicted noise levels than 43dB. Similarly Table 11.14 shows the cumulative noise levels to be lower than 43dB.
As this is the lowest noise limit level, compliance with the 43dB night-time limit must show compliance with the higher 45dB daytime limit.

Hydrogen Plant noise will also be affected indirectly as varying incoming power will impact the number of operational electrolysers, compressors etc.
Within this analysis, noise levels should be set perhaps in terms of Unacceptable Adverse Effect level (UAEL), Significant Observable Adverse Effect (SOAEL) and Lowest Observable Adverse Effect (LAOEL).

Response;
The terms identified above appear to have come from the World Health Guidelines for Community Noise (a 1999 document). As per Section 11.2.2 of the Noise Chapter in the EIAR, there have been guidelines produced by the EPA (in 2022) in relation to a specific methodology for describing the significance of effects of noise. This methodology has been followed with the results presented in Table 11.22 and 11.25. The Hydrogen Plant was assessed with all of the identified equipment operating at a maximum noise level. This ensured that the worst case scenario was considered. The Hydrogen Plant site was considered in line with the EPA Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4) (Jan 2016). NG4, which sets noise levels so as to ensure that the site will not result in a significant impact on the human environment. When the worst case

operation of the site is compared to the limit levels in NG4, it is shown to be compliant with the guideline levels and below the significance criteria.

In addition one would have expected a full analysis of the three-pronged measures of Avoidance, Mitigation and Compensation. Chapter 11 paragraph 11.15.3 'Operational Noise Mitigation' states: *"All turbines will have STE fitted as industrial standard to reduce noise emission levels. No other mitigation is considered necessary".* But Chapter 11 paragraph 11.6 states: "*In the unlikely event of a turbine exhibiting clearly tonal components at any receptor, the turbine would be turned down or stopped until such tonality is ameliorated*". Clearly some additional mitigation is required.

Response;
No additional mitigation is required. The design of the site will include STE as good practice and the site has been assessed with this technology in place.

Tonality is very rarely confirmed from operational turbines and it cannot be predicted at the planning stage. What Section 11.6 is identifying is that should it be confirmed, measures can be taken to address the tonality, not that it is required, but is available.

Constant monitoring of noise outputs must be carried out post construction, typically as part of a Noise Action Plan (NAP). There are no such proposals in this application, given its close proximity to family homes. (During Construction, noise sampling should be carried out to the criteria as set out in BS5228 – See Chapter 11 Paragraph 11.12.8).

Response;
BS5228 does not require noise monitoring to be carried out. In Annex G it states:
"The need for, and the frequency of, monitoring will be determined by the specific circumstances of the site."
The nearest houses to the Hydrogen Plant are between 294m and 640m – at this distance it would not be normal for ongoing monitoring to be required. If the planning authority deems it necessary, monitoring can be put in place to discharge any condition.

Post construction for example, if noise occasionally exceeds SOAEL, it may be necessary to shut down one or more turbines temporarily, if noise constantly exceeds SOAEL then compensation in the form of sound insultation, may be necessary.

Response;
The noise limits applicable to the wind turbine should be assessed against the Wind Energy Development Guidelines (WEDG) (the 2006 Guidelines) and the planning conditions. The normal range of regulatory enforcement action is available should they not be compliant with these limits.

Chapter 11 and its appendices do not provide this analysis in full. This analysis, and actions arising therefrom, are necessary because the Applicant - with the best will in the world - can only model the expected noise at this juncture. The actual noise levels at receptors both adjacent the Wind Farm and Hydrogen Plant will only become obvious after commencement of operations.

Response;

The methodologies for noise modelling and predictions are well established and accepted at the planning stage throughout Ireland. The predicted levels are based on a worst case scenario and considered in line with the appropriate guidance levels.

Levels of SOAEL etc. are typically EXTENAL noise levels. Paragraph 11.11.2 advises *"A 43db(A) L90, 10 min limit protects sleep at night".* The statement presumably refers to an external measurement (refer to Chapter 11 paragraph 11.3.1) and must make some assumptions in respect of building construction, façade orientation and glazing. The noise energy levels experienced by receptors indoors must also be assessed after construction to ensure that receptors are not disturbed, particularly at night as in summertime many receptors have to leave windows open, thereby eliminating most of the buildings noise attenuation. Chapter 11 paragraph 11.22.2 quotes the World Health Organization Limit for internal night-time noise as 30db(A) continuous background, and individual exceedances to be less than 45 db(A).

Response;
The 43dB LA90 limit in paragraph 11.11.2 of the Noise Chapter of the EIAR is consistent with the WHO reference in 11.22.2. The external level of 43dB LA90 is equivalent to a LAeq level of 45dB. The WHO documents allow for a 15dB reduction in noise through a partially opened window, so the 45dB LAeq externally equates to an internal level of 30dB through a partially opened window. The reduction when windows are closed would be significantly more.

Given that there was no Hydrogen Plant proposed as part of the granted planning permission, it has been assumed that the applicant will apply the limits above to the Hydrogen Plant as well as the Wind Farm.

Response;
The limits applicable to the Hydrogen plant are obtained from NG4. As wind turbine noise is specifically related to wind speed, the limit levels in the WEDG are different to NG4.

Hydrogen Plant Construction Noise: Chapter 11 paragraph 11.26 states that "*There are number of mitigation measures to be incorporated into the design of the Hydrogen Plant as specified in Section 11.25.4.4".* However there is no paragraph 11.25.4.4 but mitigation is set out in 11.27.4.4.

Response;
Reference to 11.25.4.4 is a typo in the Noise Chapter and the mitigation is found in 11.27.4.4 as identified above.

Chapter 11, Table 11.23 does not define where the 'construction activity' is to take place. The distance appears to be a measurement from the residence of the perimeter fence of the compound.

Table 11.2.3 does not include residence HH10 which is nearer the perimeter fence than HH14, by that measure. In addition, construction activities will be concentrated towards the west side of the site – main electrolyser building and water storage tanks. These will be nearer the N59 and consequently nearer residence HH15 (not included in the table) than HH12 or HH14.

Response;
Construction will take place within the Hydrogen Plant Site boundary. The predicted construction noise levels are based on the activity that gives the maximum noise levels which is cutting into the embankment west of the Hydrogen Plant Site and levelling the site. Construction of the plant infrastructure will occur over a longer period of time but at a significantly lower noise level.

The noise levels from construction at HH10 will be in the same order of levels predicted for HH9 in a range of 33-52dBA.

> Hydrogen Plant Operational Noise: A metal-clad electrolyser building will be fitted with insultation that – according to the Applicant – has a minimum RW 3 of 35db. However, this is a building some 130m long and 110m deep and 16m high that will contain equipment with an output noise level of 83db (A). Given that it has doors, there are vents in the roof, and given that this is a metal clad building with resonance potential, how can the applicant be sure that 35db attenuation will be achieved? Further clarity is required!
> The noise contour for the electrolyser building is shown as 40db yet with perfect insulation and no resonance, this figure should be 83-35 = 48db(A)!!

Response;
As per Table 11.23 – 83dB is an internal sound pressure level. The noise modelling assumes that 83 dB in the internal noise level which acts on all points of the internal building – this is a very conservative assessment. The sound insulation of the façade can be calculated, but any vents or openings in the building are incorporated into the model as openings and considered in the predicted noise levels.

The internal sound pressure level is 83dB, the reduction from the façade is 35dB, this is relied upon to calculate the sound power level per square meter of the external building façade. This is the methodology relied upon in noise modelling.

The calculation as presented above, (83-35=48dB(A)) would not be applicable to show the external noise level as presented by the noise contour levels.

> Noise assessments appear to be lacking in detail. No plans to monitor noise continuously during operations.

Response;
The noise assessment is carried out according to recommended guidelines using best practice with noise levels predicted within recommended guideline limits for the Hydrogen Plant and Wind Farm.

> Light Pollution: Our home HH5, newly built, F26CXK6, is 10m from Red Line Boundary. We farm the lands we own right up to Red Line Boundary. I would like to refer to our original submission and photos we included that show our young family, out enjoying nature walks, helping out on the farm, picking berries along Red Line Boundary and along our beautiful countryside "Leafy Lane". Industrial lighting, even low level lighting will be on a 24 h schedule, lighting will be visible from our kitchen window. We left town

and invested emotionally and financially in country rural life. The location is unsuitable and the unspoiled landscape, wildlife and quiet area needs to be protected.
4.13.2 – I would like to see the engagement that began with the Applicant and Mayo Dark Skies please? (4.13.2 Pg. 153).
How movement sensors will work correctly with CCTV and wildlife preservation?

Response;
HH5 is 10m from the interconnector. This is underground and will have no requirement for operational lighting. HH5 is over 300m from the Hydrogen Plant. Light Pollution was addressed in Section 4.13.2 of the Submissions Response Document. Engagement with the Mayo Dark Skies is ongoing.

Land Zoning:- I have proof from Frank Moylan, Senior Planner, Sligo Co. Co. via email, stating that land for proposed Hydrogen Plant is unzoned! Therefore it is not zoned industrial! I highlighted our concerns in original submission. We live in a quiet, rural, residential area that is unzoned, not zoned for Industrial/Commercial.

Response;
Queries regarding the zoning of the land are addressed in Section 4.12.1 of the Response to the Submissions Report.

I am deeply worried that a change of land usage will devalue our land, devalue property and may effect future planning permissions been granted for our family on sites in close proximity to proposed Hydrogen Plant. Again, I am seeking clarity/confirmation that this proposed development wont effect/devalue land/property?

How will home insurance be effected? We would be obliged to inform our Insurance Company of such a development/industrial plant imposing on us? As this is a quiet, agricultural area, we have deep, genuine concerns. Please find attached letter from experienced Auctioneer/Valuer Billy Heffron, Estate Agent/Ballina, Co. Mayo, in his experienced professional opinion land/property would be devalued! This is unfair and heart breaking to even imagine.

Response;
Property Value was assessed in the EIAR in Chapter 4; Population and Human Health, Section 4.4.7. Residential amenity was addressed in Section 4.4.6 of the same chapter. The Applicant cannot comment on any future potential planning applications. These will be assessed by the relevant authority having regard to the relevant planning policy set out in the County Development Plan.

Meetings and discussions held by the Developer with insurance brokers regarding placement of private insurance on residences near the Hydrogen Plant, have indicated there is no evidence to suggest that the location of the Hydrogen Plant will impact the ability for local residents to obtain insurance at normal market rates. Furthermore, the Developer has spoken with residents near Ballina Beverages, an Upper Tier COMAH site (note the Hydrogen Plant will be designated a Lower Tier COMAH site) and the presence of the Ballina Beverages facility has not impacted those residents' ability to obtain home insurance at normal market rates.

Creation of wetlands at proposed Hydrogen Plant site, it does not seem to include specific drawings/maps of Constructed Wetlands?

Response;
Appendix 9.7 Figure 5, Tile 39 shows graphics of the constructed wetlands. The constructed wetlands are shown in Figure 2.2 on the map of the layout of the Hydrogen Plant Site and in Drawing No. 410135-1000-G1000. The Constructed wetlands are described in Section 2.6.6.6 of Chapter 2 Project Description.

How would these wetlands effect our land, property and crops? What precautions and ongoing monitoring is proposed to take place?

Response;
The constructed wetlands form part of the Project Description – see above. This was used in each technical assessment of the Project to assess the impacts. Queries relating to monitoring are addressed in Section 4.5.3 of the Submissions Response Document. There are no crops in the vicinity of the constructed wetlands.

Risk Assessment: The quantitive Risk a\x only considers Humans in Houses. There is no regard of the HH houses using their land for work or recreational purposes. To this end, workers on farm HH adjacent to the Hydrogen Plant are not factored in the a\x. Family in HH not counted at all. There appears to be a false impression given that only one person could be effected in the event of an explosion. But one life is one too many. It is not okay to endanger any life with this project. We are seeking clarity on set back and blast range distances from our Home HH5? There appears to be little to no legislation in place in Ireland, in relation to Hydrogen Plants, again given its prematurity. Pg 18, paragraph three, states "*to account for the 90% occupancy indoors and 10% occupancy outdoors, the vulnerabilities for the Step Functions (indoor and outdoors) have been weighted by the occupancy factor to derive a single set of vulnerability levels. This enables presentation into an individual risk contour in Safeti*". Surely this does not indicate we spend 90% of time inside! We spend 6 – 8 outside during the day, more during summer, looking after Live Stock.

Response;
The QRA was performed according to the HSA's Guidance on Technical Land Use Planning Advice[10] with particular focus on Section 3.4; Hydrogen Installations. Queries in relation to Health and Safety were addressed in Section 4.4 of the Submissions Response Document. Legislation for hydrogen in Ireland was addressed in Section 4.2.1 of the Submissions Response Document. The assertation that there is "little to no legislation in place in Ireland" is incorrect.

Pg. 44, Paragraph two: "*There will therefore be no children close to the Hydrogen Plant Site*". Children pass the Hydrogen Plant site proposed entrance daily, walking, cycling, school collection, trekking ponies.

[10] HSA. https://www.hsa.ie/eng/publications_and_forms/publications/chemical_and_hazardous_substances/guidance_on_technical_land_use_planning_advice.html

Response;
The above extract is in relation to noise and is located in Section 4.11 of the Submissions Response Document. The entrance to the Hydrogen Plant Site off the public road is located 600m from the Hydrogen Plant.

Security Fencing: Pg 144 Paragraph 2; would destroy our landscape.

Response.
Security fencing is part of the Project Description in Chapter 2 of the EIAR. This was used to inform the Landscape and Visual Impact in Chapter 12 of the EIAR. The effect of the fencing has been assessed.

The risk of the extra traffic volume/frequency would hinder safety to our children and all road users.

Response;
Queries relating to traffic were addressed in Section 4.6 of the Submissions Response Document, including the effects on other road users and safety.

It appears the applicant has not addressed any impact of Hyd. Plant under low prevailing wind for residents.

Response;
During periods of low wind, less hydrogen will be produced. The parameters of assessment are set out in Section 1.9.5 of Chapter 1; Introduction of the EIAR. By assessing the maximum volume of hydrogen produced, any impacts of production of a smaller volume are captured.

The Noise Assessment in Chapter 11 of the EIAR took in to consideration low background noise in the assessment of the Hydrogen Plant, see Section 11.27.4.7.

Visual Impact: We were very concerned that there were no physical profiles erected for proposed Hydrogen Plant. The video on Mercury Renewables website portrays an image of a farm style shed building. It appears to be misleading to the public as the size/scale is misleading.

Response;
Queries regarding the Hydrogen Plant buildings visual representation in the montages is addressed in Section 4.10 of the Submissions Response Document. The video on the Mercury website is not meant to be interpreted as to scale. The Planning Drawings submitted with the application show the scale. The impact of the Hydrogen Plant on landscape and visual was assess in Chapter 12 of the EIAR.

The photo montages appear unprofessional given the scale of the project, images appear with the wing mirror of a car.

Response;
Queries regarding the photomontages were assessed in Section 4.10 of the Submissions Response Document. The Landscape and Visual Impact Assessment was provided by Macro Works, as per the Statement of Authority in Chapter 12;

"This Landscape and Visual Impact Assessment was prepared Richard Barker, Principal Landscape Architect at Macro Works Ltd, a specialist LVIA company with over 20 years of experience in the appraisal of effects from a variety of energy, infrastructure and commercial developments. Relevant experience includes LVIA work on over 140 on-shore wind farm proposals throughout Ireland, including six Strategic Infrastructure Development (SID) wind farms. Macro Works and its senior staff members are affiliated with the Irish Landscape Institute."

The photo montages of the Hydrogen Plant don't take into consideration the revised topography of the site. The Western Elevation of the current site is approx. 52m above ordnance datum (AOD) at the northern most end, falling to 44m at the southernmost end. The site is due to be re-profiled so that its 'ground' level is 49m AOD which means the southern end will sit on a bank some 5m higher than the present landscape.

Response;
The existing ground levels of the location of the Hydrogen Plant range from 50m AOD to 53.2m AOD. The finished floor level of the Hydrogen Plant is 50m AOD.
See Drawing Nos. 410135-1000-A4000, 410135-1000-A4006 and Figure 2.2 in the EIAR.

The photomontages do not appear to present a true image of the installation.

Response;
Queries regarding the Hydrogen Plant buildings visual representation in the montages is addressed in Section 4.10 of the Submissions Response Document.

Furthermore, the proposed Hydrogen Plant photomontage gains some screening, but it is not clear what form this will take, and if screening is compromised of trees, will they be mature trees as opposed to saplings and where will they be planted – at the top or bottom of the bank.

Response;
Queries regarding Landscape impacts, including screening are addressed in Section 4.10 of the Submissions Response Document. Appendix 12.2 of the EIAR includes a Landscape Mitigation Plan for the Hydrogen with full details of vegetative screening.

Elevation Drawings appear to fail to take into account the re-profiling of the Hydrogen Plant size.

Response;
Elevation drawings are correct. The existing ground levels of the location of the Hydrogen Plant range from 50m AOD to 53.2m AOD. The finished floor level of the Hydrogen Plant is 50m AOD. See Drawing Nos. 410135-1000-A4000, 410135-1000-A4006 and Figure 2.2 in the EIAR.

Water Concerns - We are deeply concerned about our water supply, pressure and quality.

Response;

Queries in relation water abstraction were addressed in Section 4.5.1 of the Submissions Response Document.

Applicant states they will rely on mains water as backup. This is a worry.

Response;
This was addressed in Section 4.5.2 of the Submissions Response Document.

Communication: I feel disheartened that it was myself that had to instigate the first point of contact with the developer.

Response;
Queries regarding Public Consultations are outlined in Section 4.1 of the Submissions Response Document.

I did not receive any newsletter, personal letter, notifications to inform us of development or drilling for water and disturbance that we endured! We were not informed that 546 hours of water well drilling was going to occur in very close proximity to our newly built home.
- No notification, no consideration, No signage. Please find photos in my original submission, showing close proximity. Our daughter a toddler at the time, crying and frightened with the excessive noise and ground vibrations.
It should have been a happy time, moving into our dream home, that we built and worked so hard for, instead it was railroaded with fear and disturbance. No regard was shown for local residents or livestock. It was deeply traumatic. I feel that is accurate to say traumatic, we endured sleepless nights due to worry of what would happen next. Drilling often started at 18.00 – 2200 at night, leaving us powerless, vulnerable and sleep deprived.

Response;
Site investigation works do not require prior notification of neighbours only the consent of the landowner. No site investigations works have taken place during night time hours and there is no plan to carry out construction during the night time period.

It appears no regard for Sligo Co. Co Authority as Mark Cummins, a/Senior Executive Engineer, Planning Enforcement and Building Control, Sligo Co. Co. served the developer an Enforcement Notice to have an illegal/unauthorized roadway removed, that they constructed through the land of proposed Hydrogen Plant location. We have proof of this via Email from Mark Cummins confirming the incident.

Response;
It is correct that an Enforcement Notice (dated 5th May 2022) was issued for a temporary access track that the Developer constructed to enable site investigations, the works were carried out under the basis that it was Exempted Development under the Planning and Development Regulations 2001 (as amended). The Enforcement Notice was complied with in a timely manner as confirmed by Sligo County Council.

Also we have proof that it appears the developer/Mercury Renewables had not yet submitted a Fire Safety Cert (FSC) in accordance with Section 11 of the Building

Control Regulations 1997 as amended. Confirmed via email 31/8/23, Kevin McGarvey, Senior Assistant Chief Fire Officer.

Response;
The process of obtaining Fire Safety Certification will be undertaken post consent as this is a separate licensing process.

- We were not invited to Stakeholders/Neighbours meeting 25th May 2023 that was held in our local pub! Attendees appear to have been hand picked!

Response
Details of community consultations undertaken were included in Section 4.1 of the Submissions Response Document. The PACC report in Appendix 1.3 of the EIAR states;
"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant where invited to an informal meeting. Two individuals attended the evening."

All houses were included in leaflet and newsletter drops including those materials which invited the occupants or anybody interested in the project to the Public Information Days or to contact the Community Liaison Officers to discuss any queries or concerns.

We would like to bring your attention to our original submission, nothing has changed. We are still opposed to the proposed development for many valid reasons. We want to protect and future proof Leafy Lane, our home and the beauty and nature that surrounds us. We followed rigorous Planning Regulations, we have never been opposed to any previous developments.

Response;
There is an urgent need for renewable energy in light of the climate crisis and biodiversity crisis to reduce green house gases and protect nature. Since the invasion of Ukraine by Russia and the related supply issues there have been cost implications for energy in Ireland. The wider National and European policy as outlined in the Planning Statement submitted with the EIAR reiterates the pressing need to accelerate the deployment of renewable energy projects such as the Firlough Wind Farm and Hydrogen Plant application. This project has been in development for more than 2 years with ample opportunity for 3rd parties to be involved in the consultations process. It is reasonable in the circumstances to grant permission for the proposed Firlough Wind Farm and Hydrogen Plant notwithstanding that some objections have been received.

The EIAR submitted with the planning application was prepared in accordance with the EIA Directive as amended by the 2014 EIA Directive, as well as the national implementing legislation, in particular, the Planning Acts and the Planning Regulations as amended. The EIAR included the conclusions of the competent and qualified experts as to the significance of any such environmental effects, to assist the competent authority to comply with Article 8a of the 2014 EIA Directive. The function of the EIAR is to provide information to allow the competent authority to reach a reasoned conclusion on the effects of a development and inform subsequent decisions, such as planning.

We feel the location is unsuitable and excessive traffic movements of HGVs and abnormal loads would be high risk to human health and safety.

Response;
Queries regarding the zoning of the land are addressed in Section 4.12.1 of the Submissions Response Document.

Traffic queries are addressed in Section 4.6 and Health and Safety in Section 4.4. The majority of the construction traffic is not abnormal loads, only the turbine component (eg Blade) delivery vehicles and some large substation equipment would be considered abnormal. The normal Operational Traffic will involve no abnormal loads.

I have worked on the front line in Emergency situations over 15 years and this proposed development sends alarm bells off! 7.4km to the nearest Fire Station, 55km to the nearest ED and Acute Hospital. Frequent gorse fires on the nearby bogs are all valid and important points/ risks to reject Project.

Response;
Chapter 16; Major Accidents and Natural Disasters in the EIAR addresses the above queries. Consultations with the Fire Service are set out in Section 4.4.2 of the Submissions Response. Appendix 16.2 of the EIAR; Major Accident Prevention Policy included Section 7; Emergency Response. The CEMP in Appendix 2.1 of the EIAR also includes Management Plan 1; Emergency Response Plan.

As stated in many submissions the realisation that this project is premature and market not established.

Response;
Queries relating to hydrogen demand and the hydrogen market are addressed in Section 4.2.4 of the Submissions Response Document. The queries relating to the "prematurity" of the project were addressed in Section 4.2.1 of the Submissions Response Document.

It appears there is no Funding Statement, therefore this project cannot be assessed in relation to its viability.

Response;
This is a private development and a funding statement is not required for this type of development.

Has the developer produced plans to deal with a fluctuating energy supply to the Hydrogen Plant?

In my opinion, there is a high risk of "Project Split" planning permission would give the applicant the right to build the wind farm and Hydrogen Plant, but he is under no legal obligation to build the Hydrogen Plant. Given the total absence of any quantitive analysis and the variable output from the Hydrogen Plant the developer could concentrate on feed-in tariffs to Eir Grid and not have the hassle of funding the building of a Hydrogen Plant that has little to gain except to use the prospect to increase the

chance of obtaining Planning Permission under the guise of helping to achieve Net Zero, this in only my opinion and outlook.

Response;
Wind energy will be used to supply renewable electricity to the electrolyser thus the project will produce green hydrogen. Wind energy fluctuates, this is well understood and described throughout the EIAR. Given the effort that has been put in to designing and assessing the hydrogen plant it seems unreasonable to assume this was done with the purpose of improving the green credentials of a wind farm. The inclusion of the proposed Hydrogen Plant in addition to the Wind Farm is discussed in Chapter 3 – Alternatives Considered.

- Can the Applicant point/highlight to a single other installation that uses Wind Farm output to power a Hydrogen Plant and the electricity Grid?

If not, this is a research and development project that carries significant technical and economic risks. It certainly appears to be a developers project!

Response;
Many examples of demonstration or pilot projects exist around the world where electricity from wind farms is used to power a hydrogen electrolyser. In Northern Ireland, the Long Mountain Wind Farm is currently operating by producing green hydrogen and also exports renewable electricity from the wind farm to the grid. In 2021, Lhyfe, a French green hydrogen developer commissioned its first wind to hydrogen project. In the same year, Porsche and Highly Innovative Fuels (HIF) commissioned their wind to hydrogen pilot project in Chile. These projects have helped to advance the global green hydrogen industry beyond demonstration projects where mega-scale projects are now beginning to be constructed such as NEOM's 4,000MW wind and solar to hydrogen installation which began construction in 2023 and when operational will produce 600 tonnes of green hydrogen per day. The average anticipated 12.5 tonnes per day from the Firlough Hydrogen project is appropriately sized to the installed capacity of the Wind Farm Site and will allow hydrogen electrolyser capacity to be scaled up as the demand for hydrogen evolves.

It is correct to state that the Developer, Mercury Renewables is developing the project.

Incorrect Information about/regarding our Lands in Public Domain: It would appear the applicant states Land Owner, Job No. 6129/ Drawing Number 6129-PL-121, that these are "*under control by the Applicant*" (Fig 3.8). This information is incorrect. We are the Land Owners of L66121 (Leafy Lane) and L6612 (Knockbrack Road) (my field is at junction of these roads).

We can confirm we have not been consulted by the applicant to this assumption, that we give control under no circumstances have we given any permission to applicant re – blue line (Legend) along our land, it will not be partaking in proposed development. This leaves us feeling worried, concerned as incorrect information has been circulated in the public domain.

We are seeking an urgent explanation from the applicant to address this matter. Also have it rectified / removed from document.

Response;
The L66121 and L6612 are public roads. Queries relating to consents were addressed in Section 4.12.4 of the Submissions Response Document. To clarify, works in the public road will be undertaken by a statutory undertaker having the right or interest to provide services in connection with the Proposed Development, in accordance with Statutory Instrument No. 9 of 2021 in The Planning and Development Regulations 2001 (As Amended). The consent of the landowners either side of the public road is not required for works in the public road. Proof of landowner consents to areas required for the Project adjacent to the public road were submitted with the planning application. The lands within the blue line are under the control of the Applicant, this is standard for planning drawings as per Article 23 of the Planning and Development Regulations 2001. Land bordering the blue line is not under control of the Applicant. No additional consent is required.

We have always maintained the vegetation of our land, we do not permit any tree cutting along our home or lands.
- We maintain the vegetation in keeping with wildlife, funded by our family.

Response;
No tree cutting outside of the red line is proposed. Maintaining vegetation in keeping with wildlife is excellent to hear. A Biodiversity Enhancement Plan was included in Appendix 5.4 to outline how the Project will benefit biodiversity in the vicinity.

- A proposed underground cable could be detrimental to the wild flowers along Leafy Lane (L66121).

Response;
The cabling is located within the public road corridor and will require no wildflower habitat destruction. The impacts of all underground cables was assessed in the EIAR.

- We own land both sides of the road, which is confirmed in my father's submission, Patrick Donegan. We do not give permission to any road widening or digging up the road to facilitate underground cabling.

Response;
The consent of the landowners either side of the public road is not required for works in the public road. Proof of landowner consents for works in areas adjacent to the public road were submitted with the planning application. Passing bays on lands other than those outlined in the Planning Application are not needed, therefore no additional consent is required.

Signed: Leona Mulrooney, S. Donegan, Ceola Donegan.
17/01/2024

3.21 NOEL AND LISA RUANE AND OTHERS

Re: ABP -317560-23
Proposed wind farm development including 13 no. wind turbines in Bunnyconnellan, Co. Mayo and hydrogen plant in Castleconnor, Co. Sligo.

To Whom It May Concern:

We received the Jennings O'Donovan Consulting engineers' response to third party submissions and observations, planning application, reference Re: ABP -317560-23 on 14th December 2023

In the Quantitative Risk Assessment 16.3 in the EIAR referred to by the applicant, our land is shown on the zone map within the lines. We, our children or any workers on our farm land do not appear to be counted in the QRA. We encourage our children to play outdoors for health reasons and we are often all out in this area involved in outdoor activities. It would appear that the QRA accounted for 90% occupancy indoors and only 10% occupancy outdoors. Is this a correct assumption. Would we need to be indoors to be safe in the event of an accident at the hydrogen plant?

Response;
The QRA was performed according to the HSA's Guidance on Technical Land Use Planning Advice[11] with particular focus on Section 3.4; Hydrogen Installations. Queries in relation to Health and Safety were addressed in Section 4.4 of the Submissions Response Document.

On the legend of planning drawing 6129 PL 014 there appears to be a blue line representing 'Lands under control of the applicant'. None of our land is under the control of the applicant, despite there appearing to be a blue line bordering our land on the drawing.

Response;
*The lands **within** the blue line are under the control of the Applicant, this is standard for planning drawings as per Article 23 of the Planning and Development Regulations 2001. Land bordering the blue line is not under control of the Applicant.*

It is possible that up to 70% of all lands adjacent to the L6612, and L66121 is not under the control of the applicant. The applicant states on p148 of the response document, that 'All landowner consents for these works are in place'. We reject this claim as we have not consented to any works on our land. We cannot find any supporting documents in the response from Mercury Renewables confirming the consents mentioned.

Response;
Queries relating to consents were addressed in Section 4.12.4 of the Submissions Response Document. To clarify, works in the public road will be undertaken by a statutory undertaker having the right or interest to provide services in connection with the Proposed Development, in accordance with Statutory Instrument No. 9 of 2021 in The Planning and Development Regulations 2001 (As Amended). The consent of the landowners either side of the public road is not required for works in the public road. Proof of landowner consents to areas adjacent to the public road were submitted with the planning application. Passing bays on lands other than those outlined in the Planning Application are not needed, therefore no additional consent is required. No passing bays abut the Ruane's folio.

[11] HSA. https://www.hsa.ie/eng/publications_and_forms/publications/chemical_and_hazardous_substances/guidance_on_technical_land_use_planning_advice.html

We live in HH2. We were not invited to any meetings organised by Mercury Renewables. We were not invited to the Hydrogen Plant Neighbours meeting in Muddy Burns on 25th May 2023 referred to on p53 response document despite our house being included on figure 1.3 of the EIAR as Hydrogen Plant Site House Location.

Response;
Queries regarding Public Consultations are outlined in Section 4.1 of the Submissions Response Document.
The PACC report in Appendix 1.3 of the EIAR states;
"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant where invited to an informal meeting. Two individuals attended the evening."

HH2 was included in leaflet and newsletter drops including those materials which invited the occupants or anybody interested in the project to the Public Information Days or to contact the Community Liaison Officers to discuss any queries or concerns. Noel and Lisa Ruane and family attended the second PID in Castleconnor.

We note that on p 49 of the response document that there appears to be no design report submitted for the junction N59/ L66121 referring to the TII submission. We cannot find any Safety Audit submitted by the applicant for L66121 /N59 junction. The applicant stated that the design of the N59 L66121 has been carried out. However we cannot find this.

Response;
The Design Report required under NH-GEO-03030 for local improvement was scheduled to be submitted during the detailed design phase. This has now been completed and can be found in Appendix 1; N59 / L66121 Priority Junction Design Report.

The layout of the proposed junction is shown on Drawing No. 6129-PL-121 included in the planning application drawings. The proposed junction has been subject to a Stage 1 road safety audit carried out by an independent audit team approved by the TII. The road safety audit report is included in Appendix 15.3 of the EIAR.

I note that on p 157 , 4.13.5 referring to livestock that there doesn't seem to be any reference to livestock on our farms in the environs of the proposed hydrogen site. This issue was raised but is not answered, and our land used for livestock is within risk zones illustrated in 16.3 of the EIAR.

Response;
Section 4.5.1 Water Abstraction and Section 4.5.3 Water Discharge of the Submissions Response Document addressed queries in relation to the hydrogen plant, water environment and soils in terms of impacts to livestock. Section 4.11 addressed impacts relating to noise and livestock. Section 4.13.5 referenced above was in response to queries relating to livestock and wind farms.

The QRA was performed according to the HSA's Guidance on Technical Land Use Planning Advice[12] with particular focus on Section 3.4; Hydrogen Installations. Queries in relation to Health and Safety were addressed in Section 4.4 of the Submissions Response Document.

The applicant only appears to have specified vehicles, transporting hydrogen, in relation to the quantity of hydrogen on board. It is their working assumption that lorries used will carry 1200kg of hydrogen. We could not find the specifications of the weight of these lorries loaded with cylinders of hydrogen in the documents. There don't seem to be any dimensions given for these lorries.

Response;
Queries related to tube trailers were addressed in Section 4.2.2 of the Submissions Response Document. The green hydrogen will be transported from the Hydrogen Plant Site using tube trailers, the impact of this on the local road network is assessed in Chapter 15: Traffic and Transport. Tube trailers are currently used to transport a number of compressed gas products on Ireland's roads including natural gas, compressed air, nitrogen and oxygen. The Specific model to be used will be selected at final design stage. All tube trailers will comply with current road transport regulations including in size and gross weight as per; S.I. 5 of 2003 Road Traffic Construction and Use of Vehicles Regulations (as amended).

Was there any road safety audit for these vehicles on the L66121 or N59.

Response;
The proposed junction has been subject to a Stage 1 road safety audit carried out by an independent audit team approved by the TII. The road safety audit report is included in Appendix 15.3 of the EIAR.

We could not find traffic movement counts for the vehicles that carry 384 kg of hydrogen. Traffic counts for truck movements appear to be based on the vehicle which carries 1200kg hydrogen only. The applicant has stated that these vehicles are not in common use and so how can it be assumed that they will be generally available and certified for use in Ireland / Europe, before the hydrogen plant becomes operational. The working assumption is that the lorries holding 384kg will be used until such time as larger lorries will be available. In the case of these lorries being used we estimate that 176 lorry movements will take place when the site is in full operation from the L66121 to the N59. We couldn't find specifications re weight of the trucks mentioned.

Response;
176 movements is not correct, queries over the number of traffic movements associated with the operational phase of the Development is clarified in Section 4.2.2 of the Submissions Response Document.

We are concerned that our road L6612 is the haul route to the wind farm from the N59 and the route for forestry removal trucks towards the N59. We can't find any reference to the concerns we raised re these extra trucks (390 per day passing our house during

[12] HSA. https://www.hsa.ie/eng/publications_and_forms/publications/chemical_and_hazardous_substances/guidance_on_technical_land_use_planning_advice.html

the construction phase) This amount of traffic on our road will have a serious impact on our children's activities and our family quality of life.

Response;
Queries relating to traffic were addressed in Section 4.6 of the Submissions Response Document, including the effects during the construction phase.

As set out in the Traffic Chapter of the EIAR, it is estimated that during civil construction, approximately 6,857 HGV loads will be delivered to the Proposed Development. Much of these deliveries will be over the 11-month period between months 2 to 12 (see Table 15.23 for Indicative Delivery Programme). This equates to approximately 296 loads per month or an average of 13 to 15 loads per day. The peak number of deliveries per day will occur during the concrete pour for Turbine Foundation construction. An estimated 140 concrete deliveries will be required per Turbine Foundation as the entire concrete pour has to be placed within 8-10 hours. Some other materials will also be delivered on such days, so a realistic estimation of peak deliveries is approximately 150 deliveries per day (for at least 14 separate days in the construction programme when the Turbine Foundations will be poured). On these concrete pour days, some 14-18 deliveries per hour will be required.

390 movements per day is a combination of HGV and LGV (staff cars and vans), this is the Peak traffic movements per day. This peak will not occur everyday during the construction phase, only during the turbine foundation pours as outlined above.

We are not satisfied that concerns re potential devaluation of property have been adequately addressed.

Response;
Property Value was assessed in the EIAR in Chapter 4; Population and Human Health, Section 4.4.7.

We are still concerned that the abstraction of water in the immediate vicinity of our farm lands near the proposed hydrogen site will have a serious effect on our land.

Response;
Queries in relation water abstraction were addressed in Section 4.5.1 of the Submissions Response Document.

We are concerned that large storage of water on the site could affect our land. We are worried that any escape of excess water, together with constructed wetlands could impact our lands.

Response;
Queries regarding flooding risks are addressed in Section 4.5.7 of the Submissions Response Document and in the Flood Risk Assessment for the Hydrogen Plant Site included in Appendix 9.2 of the planning application.

We are worried that the applicant plans to use mains water. This water should be prioritised for human use and it worries us that an industry using c181,000 litres / 43,000 gallons per day could consider using the mains water in such large quantities,

especially if their own supplies are low when they will be using this water. In such times it is a working assumption that Irish Water would impose a hosepipe ban on householders in times of water shortages.

Response;
This was addressed in Section 4.5.2 of the Submissions Response Document.

This area is not zoned as an industrial area.

Response;
Queries regarding the zoning of the land are addressed in Section 4.12.1 of the Response to the Submissions Report.

A submission highlighting errors in relation to Figure 1.3 of the EIAR points to non-existent houses. These houses were further referenced in Chapter 11 Noise and Vibration. We are concerned that this could raise doubts on other information contained in this chapter re noise and vibration levels. As we live 300m from the proposed hydrogen plant buildings and are adjacent to the red line boundary, noise is a serious concern for us.

Response;
House maps were prepared using Ordinance Survey maps, arial photography, a house survey based on Eircodes and periodic and repeated planning searches for developments with planning permission but not yet built.

Section 2 of this report outlines that two derelict and unused houses are in the incorrect location on this figure. This has been corrected and does not effect the noise assessment.

Queries regarding noise and vibration were addressed in Section 4.11 of the Submissions Response Document.

Due to our close proximity to the site it is reasonable to assume that light pollution from the plant could adversely affect our family.

Response;
Light Pollution was addressed in Section 4.13.2 of the Submissions Response Document.

Our children suffer from respiratory issues from time to time. The applicant acknowledges that there will be dust during the construction phase. There was excessive dust during the testing phase when there was drilling for boreholes for water on the proposed hydrogen site in July 2022. There was also dust at that time from the road built into the drilling locations. There was further dust as a result of the removal of the road.

Response;
Dust was addressed in Section 4.7 of the Submissions Response Document

We ask An Bord Pleanála to hold an oral hearing in relation to this planning application.

Response;
An Oral Hearing has been organised by the Board.

Please acknowledge receipt of this correspondence,

Noel and Lisa Ruane

3.22 JUDD RUANE

I am not at all satisfied with the response to my concerns this project could bring to the Brusna and Dooyeaghny Rivers which could do irreparable damage to spawning beds and fishlife on both Rivers. If a licence is granted it's not tomorrow these problems will arise but by the time it is discovered the damage will be done.
Sincerely, Judd Ruane.
Moy Estuary sea trout charters.

Response;
Queries in relation water abstraction were addressed in Section 4.5.1 of the Submissions Response Document, water discharge is addressed in Section 4.5.3. Queries regarding the ecology of the rivers mentioned above are addressed in Section 4.9 of the Submissions Response Document.

3.23 DAMIEN RUANE

Proposed wind farm development including 13 no. wind turbines Bunnyconnellan, Co. Mayo and hydrogen plant in Castleconnor, Co. Sligo.

I was not contacted by Mercury Renewables and was not invited to any meetings, or the meeting in Muddy Burn's on 25th May 2023. I am a landowner on the L6612. I wasn't invited to the neighbourhood meeting referred to on page 53 of the response document.

Response;
The PACC report in Appendix 1.3 of the EIAR states;
"On 25th May 2023 in the Muddy Burns Pub, Corbally, Co. Sligo, Mercury Renewables hosted a Neighbourhood Meeting. Five neighbouring households that share a boundary with the Hydrogen Plant where invited to an informal meeting. Two individuals attended the evening."

Details of community consultations undertaken were included in Section 4.1 of the Submissions Response Document

I do not feel that my concerns regarding the road closures on the L6612 during the construction phase have been addressed adequately and I am really worried that this will affect my farm work.

Response;
A Traffic and Transport Impact Assessment was carried out and can be found in Chapter 15 of the EIAR. Section 4.6 of the Submissions Response Document also addresses queries in relation to the L6612. All access points (domestic, business, farm) will be considered when finalising the proposed road closures and diversions. Additional measures such as local road widening, traffic shuttle systems and 'Stop-Go' systems will also be considered subject to agreement with Sligo County Council and Mayo County Council. Road closures will be

scheduled in consultation with local residents and the Contractor shall endeavour to avoid times of high agricultural activity e.g. silage cutting.

I have not relinquished any control of my land along the L6612 to Mercury Renewables and have not given any consent to the same.

Response
Queries relating to consents were addressed in Section 4.12.4 of the Submissions Response Document. Proof of landowner consents to areas adjacent to the public road were submitted with the planning application. Passing bays on lands other than those outlined in the Planning Application are not needed, therefore no additional consent is required. No passing bay abuts Danien Ruane's folio.

I am still concerned regarding the zones referred to in the QRA and I cannot find reference to any workers, or my children, who may be on my land which is close to the hydrogen site. I still worry that it is possible that there will be large quantities of hydrogen stored on site.

Response;
The QRA was performed according to the HSA's Guidance on Technical Land Use Planning Advice[13] with particular focus on Section 3.4; Hydrogen Installations. Queries in relation to Health and Safety were addressed in Section 4.4 of the Submissions Response Document.

I feel that my concerns re the Brusna and Dooeighney rivers have not been addressed to my satisfaction.

Response;
Queries in relation water abstraction were addressed in Section 4.5.1 of the Submissions Response Document, water discharge is addressed in Section 4.5.3. Queries regarding the ecology of the rivers mentioned above are addressed in Section 4.9 of the Submissions Response Document.

I am concerned that there doesn't appear to be a clear answer in relation to fears that property may be devalued as a result of the introduction of industry to a peaceful rural area.

Response;
Property Value was assessed in the EIAR in Chapter 4; Population and Human Health, Section 4.4.7. Residential amenity was addressed in Section 4.4.6 of the same chapter.

I was unable to locate a road safety audit for the L66121 junction in the application documents.

Response
This is located in Appendix 15.3 of the EIAR.

[13] HSA. https://www.hsa.ie/eng/publications_and_forms/publications/chemical_and_hazardous_substances/guidance_on_technical_land_use_planning_advice.html

I request that an oral hearing is carried out by An Bord Pleanála.

Response;
An Oral Hearing has been organised by the Board.

Please acknowledge receipt of this submission.

Damien Ruane.

4 CONCLUSION

The Proposed Development will contribute to supplying the demand for renewable energy, which in the context of the pressing climate emergency is an urgent Irish national priority that must be given significant weight considering the wealth of supporting national and international policy.

There is a pressing need for renewable energy in light of the climate crisis and since the invasion of Ukraine by Russia and the related supply issues and cost implications for energy in Ireland. The wider National and European policy as outlined in the Planning Statement submitted with the EIAR reiterates the pressing need to accelerate the deployment of renewable energy projects such as the Firlough Wind Farm and Hydrogen Plant application.

Having regard to the energy targets set out in The Climate Action Plan 2023, The Climate Action Act, local and regional planning policy and the National Hydrogen Strategy presented and assessed within this response, it is imperative that renewable energy developments which are acceptable in planning policy terms, such as the Proposed Development, are given consent.

The development process adopted by the Applicant has represented a best practice approach to a renewable energy scheme design, minimising the potential impact through multiple design iterations and modifications to minimise the impact on the receiving environment, and ensuring compliance with the suite of planning policies and objectives of the International, National and Regional Policies. The EIAR submitted with the planning application was prepared in accordance with the EIA Directive as amended by the 2014 EIA Directive, as well as the national implementing legislation, in particular, the Planning Acts and the Planning Regulations as amended. The function of the EIAR is to provide information to allow the competent authority to reach a reasoned conclusion on the effects of a development and inform subsequent decisions, such as planning. The EIAR also included the conclusions of the competent and qualified experts as to the significance of any such environmental effects, to assist the competent authority to comply with Article 8a of the 2014 EIA Directive.

Environmental Impacts have been considered within the EIAR and through the process of assessment, embedded mitigation, and additional proposed mitigation outlined in the EIAR, NIS, CEMP and Habitat Enhancement Plan it has been shown that the Proposed Development can be constructed and operated without significant effects arising, demonstrating the acceptability of the proposal.

Having regard to the objections raised, the Applicant respectfully submits that these objections were addressed in the planning application submission and again in the Response to Submissions Document.

Planning permission should be granted for this development for all the reasons set out above.

APPENDIX A:

N59 / L66121 Priority Junction Design Report

Mercury Renewables (Carrowleagh) Limited

Proposed Firlough Wind Farm, Carrowleagh, Bunnyconnellan, Co. Mayo & Proposed Hydrogen Plant, Carraun, Castleconner, Co. Sligo

N59 / L66121 Priority Junction Design Report

Rev. 1

February 2024

Jennings O'Donovan & Partners Ltd.,
Consulting Engineers, Finisklin Business Park, Sligo.
Tel.: 071 916 1416 Fax: 071 916 1080
e mail: info@jodireland.com
Web: www.jodireland.com

JENNINGS O'DONOVAN & PARTNERS LIMITED
Project, Civil and Structural Consulting Engineers,
FINISKLIN BUSINESS PARK,
SLIGO,
IRELAND.

Telephone (071) 9161416
Fax (071) 9161080

Email info@jodireland.com
Web Site www.jodireland.com

DOCUMENT APPROVAL

PROJECT	Proposed Firlough Wind Farm, Carrowleagh, Bunnyconnellan, Co.Mayo & Proposed Hydrogen Plant, Carraun, Castleconner, Co. Sligo	
CLIENT / JOB NO	Mercury Renewables (Carrowleagh) Limited	6129
DOCUMENT TITLE	N59 / L66121 Priority Junction Design Report	

	Prepared by	**Reviewed/Approved by**
Document **Rev 1**	Name John Doogan	Name David Kiely
Date 28th February 2024	Signature	Signature

Proposed Firlough Wind Farm, Carrowleagh, Bunnyconnellan, Co. Mayo & Proposed Hydrogen Plant, Carraun, Castleconner, Co. Sligo

CONTENTS

APPENDICES

FIRLOUGH WIND FARM & HYDROGEN PLANT

N59 / L66121 JUNCTION DESIGN REPORT

1 INTRODUCTION

1.1 Site Location

The proposed modifications to the existing N59/L66121 priority junction will involve realignment and widening of the existing L66121 local road, increased junction radii at the L66121 intersection with the N59 to accommodate the swept path of HGV vehicles and improved visibility splays for traffic exiting the junction. The modifications to the public road network are proposed as part of the planning application for a hydrogen plant which will access the public road network from a roundabout junction constructed on the L66121. The roundabout will be located on the L66121 at a distance of 80m from the N59 junction. The location of the proposed junction is shown in Figure 1. The red line boundary on Figure 1 shows the extent of lands within the control of the developer at the junction. The existing property adjacent to the junction has been acquired to realign the junction in order to improve turning movements and increase visibility at the junction.

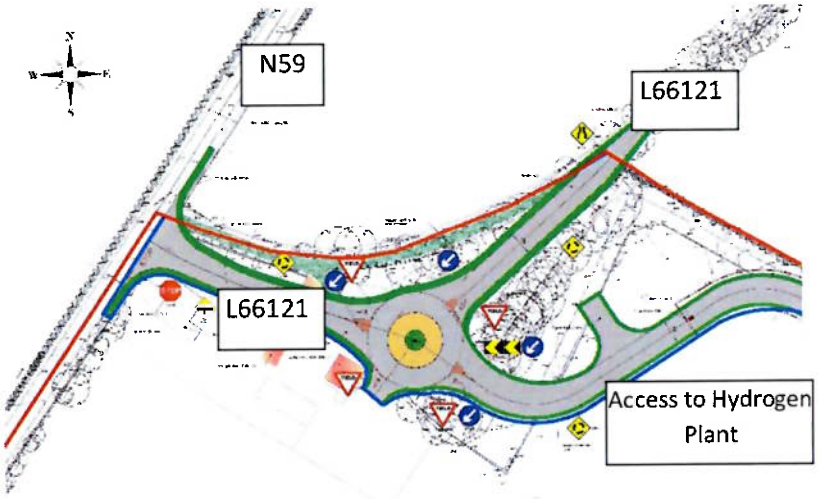


Figure 1 - Site Location Plan

1.2 Statement of Authority

This Design Report has been prepared by John Doogan of Jennings O'Donovan & Partners Limited, Finisklin Business Park, Sligo. Established in Sligo in 1950, Jennings O'Donovan

& Partners Limited is a clean tech company providing consulting engineering services in the areas of renewable energy, civil and structural engineering, road design, water supply, wastewater collection and treatment, environmental resource management and impact assessment and in the area of housing and commercial development.

2 COLLISION HISTORY

2.1 Collision History at the Proposed Junction

Specific safety data for N59 / L66121 junction is not currently available on the RSA Website

3 SAFETY OBJECTIVES

3.1 Safety Objectives For the Proposed Junction

The safety objectives of the scheme are as follows:

- Provide safe access at the L66121 junction with the N59.
- Provide additional road width on the L66121 to prevent vehicle conflicts at the N59 priority Junction
- Provide increased junction radii at the N59 priority junction to accommodate the turning movements of HGV vehicles.
- Design junction to prevent HGV's encroaching into the opposing traffic streams when turning at the junction.
- Improve pedestrian facilities by providing a pedestrian walkway on the relocated section of the L66121 to increase pedestrian safety at the junction.
- Provide directional signs, regulatory signs and roadmarkings at the priority junction and roundabout.
- Provide safe access to the proposed hydrogen plant and reduce conflicts between L66121 traffic and development traffic.

4 EXISTING CONDITIONS

4.1 Speed

The posted speed limit at this section of the N59 is 100km/hr. The posted speed limit on the L66121 is 80km/hr.

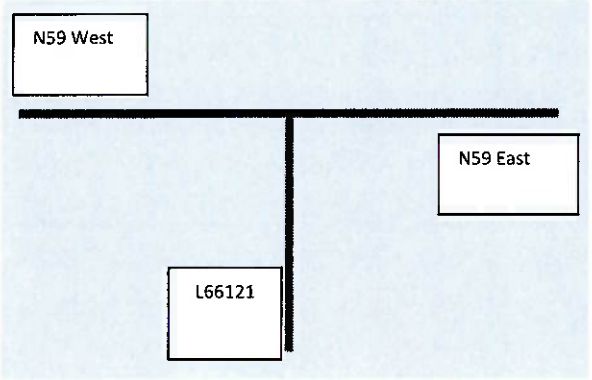
4.2 Traffic Volumes

A classified traffic survey was carried out at the N59 / L66121 junction on Wednesday 25th January 2023. The counts were carried out between the hours of 08:00 to 09:00 and 16:00 to 17:00. A traffic analysis of the N59/L66121 junction was carried out using the traffic counts to check the capacity of the junction for the following scenarios:

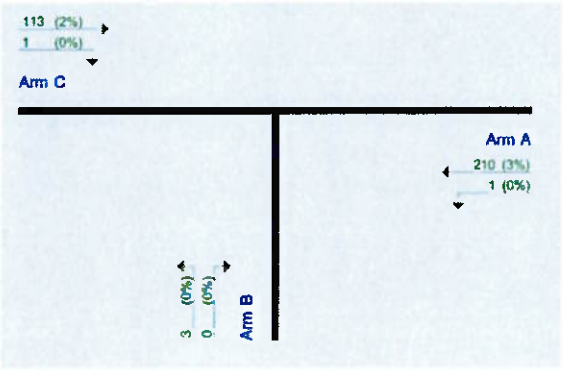
- 2023 Existing Traffic flows
- 2025 Projected traffic flows with hydrogen plant construction traffic.
- 2026 Projected traffic flows with hydrogen plant operational traffic – Year after opening.
- 2046 Projected traffic flows with hydrogen plant operational traffic – 20 Years after opening.

The TII Traffic counter at Rathglass, northeast of Corballa shows that the Annual Average Daily Traffic AADT on the N59 is 4,203 vehicles with 3.6% HGV. The AADT for the L66121 is 75 vehicles calculated from the classified traffic counts. The AADT on the N59 is projected to increase to 4435 in 2026 and 4950 vehicles in 2046. The traffic analysis carried out at the junction shows that the junction will continue within capacity in 2025 with hydrogen plant construction traffic, 2026 with proposed hydrogen plant operational and in 2046 with the proposed hydrogen plant development fully operational. A summary of the turning movements and traffic analysis at the N59/L66121 junction for the design scenarios are shown below. Full details of the traffic analysis are shown in **Appendix C**.

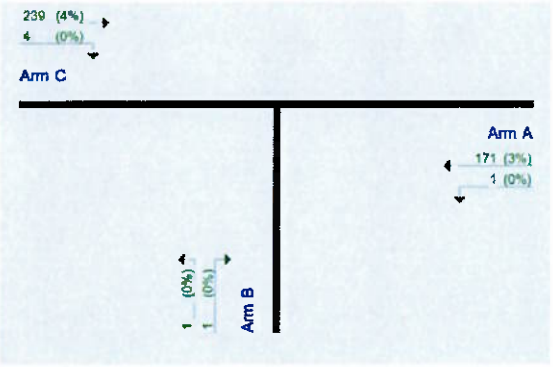
. Junction Layout & Turning Movement Diagram



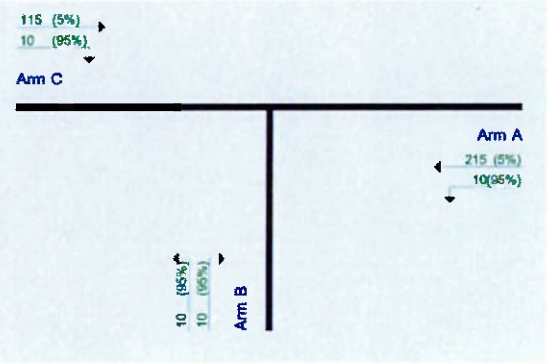
2023 Existing Traffic Flows - AM



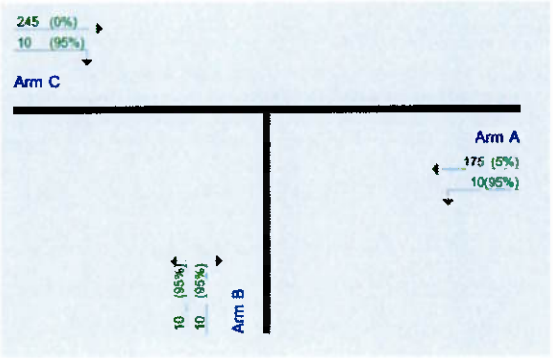
2023 Existing Traffic Flows - PM



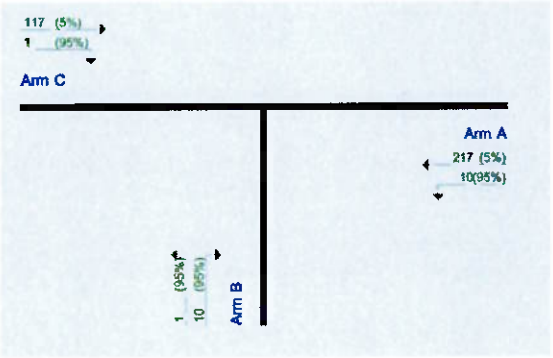
2025 Projected Traffic Flows with Development Construction Traffic - AM



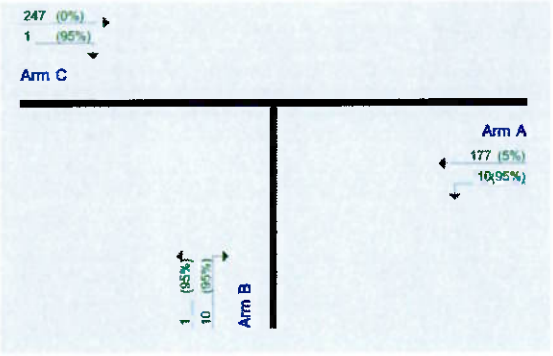
2025 Projected Traffic Flows with Development Construction Traffic - PM



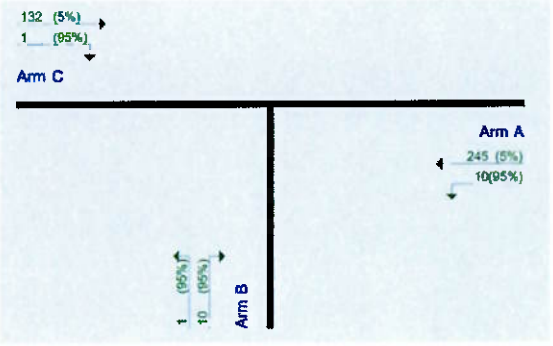
2026 Projected Traffic Flows with Development Operational Traffic – AM



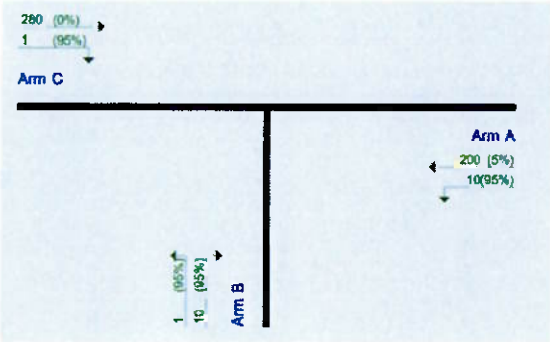
2026 Projected Traffic Flows with Development Operational Traffic - PM



2046 Projected Traffic Flows with Development Operational Traffic - AM



2046 Projected Traffic Flows with Development Operational Traffic - PM



Traffic Analysis Results for N59 / L66121 Junction

	AM									PM							
	Set ID	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity
2023 - Existing Traffic Flows																		
Stream B-AC	D1	0.0	~1	0.00	0.00	A	0.02	A	900 %	D2	0.0	~1	0.00	0.00	A	0.06	A	517 %
Stream C-AB		0.0	0.5	5.09	0.00	A			[]		0.0	0.5	4.70	0.01	A			[Stream C-AB]
2025 Forecast Traffic Growth with Development Construction Traffic																		
Stream B-AC	D3	0.1	0.9	14.42	0.04	B	1.07	A	286 %	D4	0.1	0.9	14.53	0.04	B	0.86	A	258 %
Stream C-AB		0.0	0.8	9.08	0.02	A			[Stream B-AC]		0.0	0.7	7.46	0.02	A			[Stream B-AC]
2026 Forecast Traffic Growth with Development Operational Traffic																		
Stream B-AC	D5	0.1	0.9	15.96	0.03	C	0.52	A	271 %	D6	0.1	0.9	16.33	0.03	C	0.43	A	232 %
Stream C-AB		0.0	0.8	8.97	0.00	A			[Stream B-AC]		0.0	0.7	7.36	0.00	A			[Stream B-AC]
2046 Forecast Traffic Growth with Development Operational Traffic																		
Stream B-AC	D7	0.1	0.9	16.32	0.03	C	0.48	A	234 %	D8	0.1	0.9	16.77	0.03	C	0.39	A	198 %
Stream C-AB		0.0	0.8	8.84	0.00	A			[Stream B-AC]		0.0	0.7	7.10	0.00	A			[Stream B-AC]

4.3 Horizontal Alignment

The N59 has a straight horizontal alignment in the vicinity of its junction with the L66121. The existing L66121 intersects the N59 at an angle of 90 degrees. The realigned L66121 will intersect the N59 at an angle of 90 degrees.

4.4 Vertical Alignment

The N59 has a linear gradient in the vicinity of the L66121 junction. The westbound approach to the junction (Sligo to Ballina) has a downhill gradient of 2% and the eastbound approach to the junction has an uphill gradient of 3.5%. The existing L66121 intersects the N59 at a +1% gradient. The realigned L66121 will have a dwell area with a gradient of +2.5 at its intersection with the N59.

4.5 Cross Section

The N59 is a 6.0m wide two lane carriageway with grass verges at its junction with the L6612. There is a tarmac surfaced parking area at the existing dwelling immediately to the west of the junction. The existing L66121 is a single carriageway with a 3.0m carriageway and grass verges. The realigned section of the L6612 will have a 7.0m wide carriageway with 2.0m grass verges.

4.6 Crossfall

The N59 has a balanced crossfall of 2% at its junction with the L66121 local road. The existing L66121 has a single crossfall of 1% at its junction with the N59. The realigned L66121 will have a balanced crossfall of 2.5% at the N59 junction.

4.7 Superelevation

Not Applicable due to the straight alignment of the N59 at the junction

4.8 Junction and Accesses

The N59 has a number of simple priority junctions in the vicinity of the L66121 junction. The L6612 is located 600m to the north east of the junction, the L6611 is located 90m to the south west of the junction and the R279 is located 1.0km to the south west. There are also a number of field and dwelling access points on this section of the N59. The L66121 has a number of field and dwelling access points near the N59 junction. Access to the proposed Hydrogen plant will be from a proposed new roundabout on the L66121. The roundabout will have an inscribed Circle diameter (ICD) of 28m details of the proposed roundabout are shown on the drawings in Appendix A.

4.9 Facilities for Vunerable Road Users

There are currently no dedicated facilities for pedestrians or cyclists on the N59 or L66121. The realigned section of the L66121 from the N59 to the tie in point on the existing L66121 will be landscaped and used a pedestrian footpath.

4.10 Visibility and Sightlines

Visibility splays of 215m are available at the existing N59/Ll66121 junction, however visibility to the west can be restricted by parked vehicles in front of the existing dwelling on the N59. Forward visibility is available at distances in excess of 215m on N59 approaches to the junction. The parking area in front of the dwelling will be removed and replaced by a grass verge as part of the proposed

development.to provide unrestricted visibility for vehicles exiting from the proposed N59/L66121 junction. Visibility splays will be available at a distance of 215m in both directions at the junction. Visibility details are shown in **Figure 2** and on the drawings in **Appendix A.**

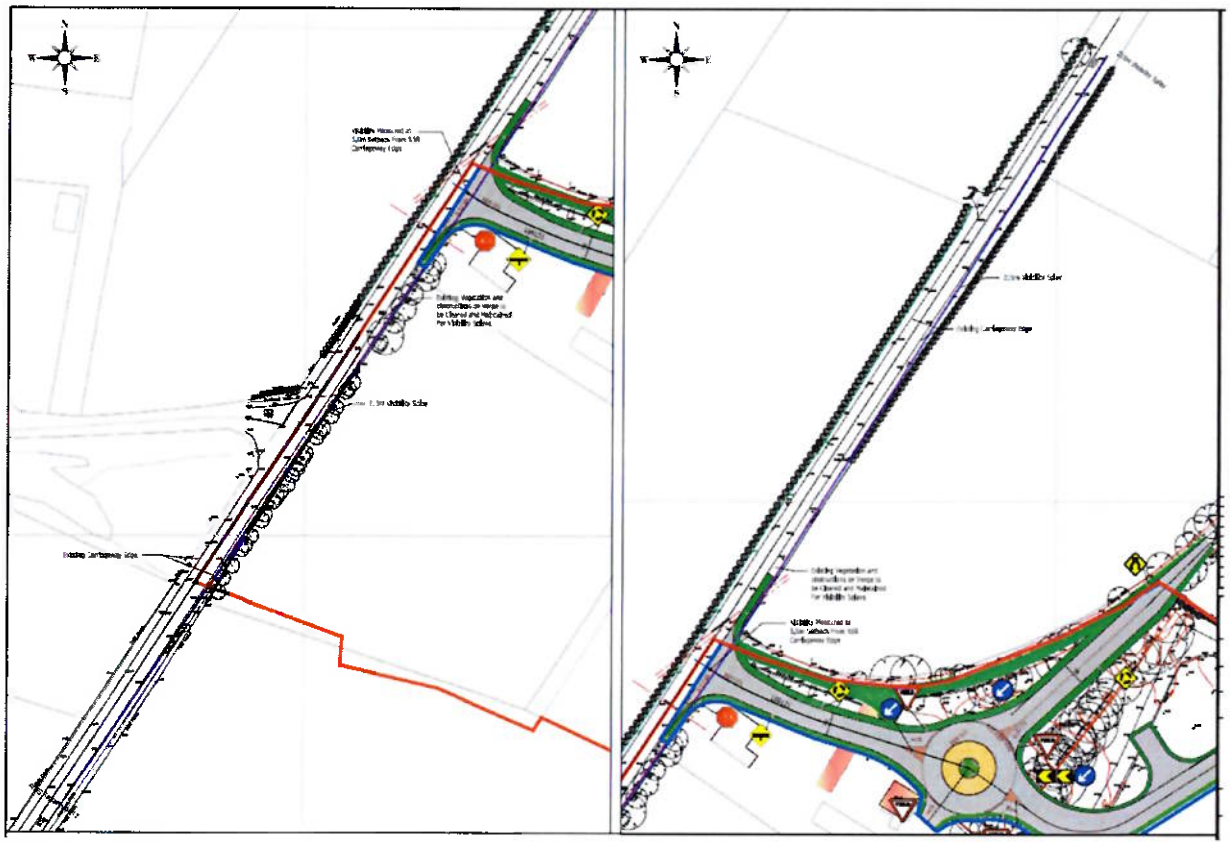


Figure 2 – Junction Visibility

5 ENVIRONMENTAL, ARCHAEOLOGICAL AND OTHER CONSTRAINTS

5.1 Appropriate Assessment

An Environmental Impact Assessment Report (EIAR) has been compiled for the project and submitted as part of the planning application.

5.2 Ecological Assessment

An Ecological Assessment for the project is contained within the EIAR submitted as part of the planning application.

5.3 Other Environmental Surveys

An Environmental Impact Assessment Report (EIAR) has been compiled for the project and submitted as part of the planning application.

5.4 Archilogical Constraints

Not Applicable.

6 PROPOSED DESIGN

6.1 General

The proposed modifications to the existing N59/L66121 priority junction will involve realignment and widening of the existing L66121 local road, increased junction radii at the L66121 intersection with the N59 to accommodate the swept path of HGV vehicles and improved visibility splays for traffic exiting the junction. The existing tarmac surfaced parking area at the side of the N59 to the west of the junction will be removed and replaced with a grass verge to provide uninterrupted visibility splays at the junction. The modifications to the public road network are proposed as part of the planning application for a hydrogen plant which will access the public road network from a new roundabout junction constructed on the L66121. The roundabout will be located on the L66121 at a distance of 80m from the N59 junction. The layout of the proposed junction is shown in **Figure 1** and in the drawings in **Appendix A**.

6.2 Land Acquisition

The existing dwelling adjacent to the L66121 is to be demolished and replaced under a separate planning application. The application red line boundary is shown on Figure 1 and on the drawings in **Appendix A**.

6.3 Horizontal alignment

The N59 has a straight horizontal alignment in the vicinity of its junction with the L66121. The N59 alignment will remain unchanged following modifications to the junction. The proposed realigned L66121 will intersect the N59 at an angle of 90 degrees.

6.4 Vertical alignment

The N59 has a linear gradient in the vicinity of the L66121 junction. The westbound approach to the junction (Sligo to Ballina) has a downhill gradient of 2% and the eastbound approach to the junction has an uphill gradient of 3.5%. The realigned L66121 will have a dwell area with a gradient of +2.5 at its intersection with the N59.

6.5 Cross Section

The N59 is a 6.0m wide two lane carriageway with grass verges at its junction with the L6612. The Cross section of the N59 will remain unchanged following the realignment of the N59 / L66121 junction. The realigned section of the L6612 will have a 7.0m wide carriageway with 2.0m grass verges.

6.6 Crossfall

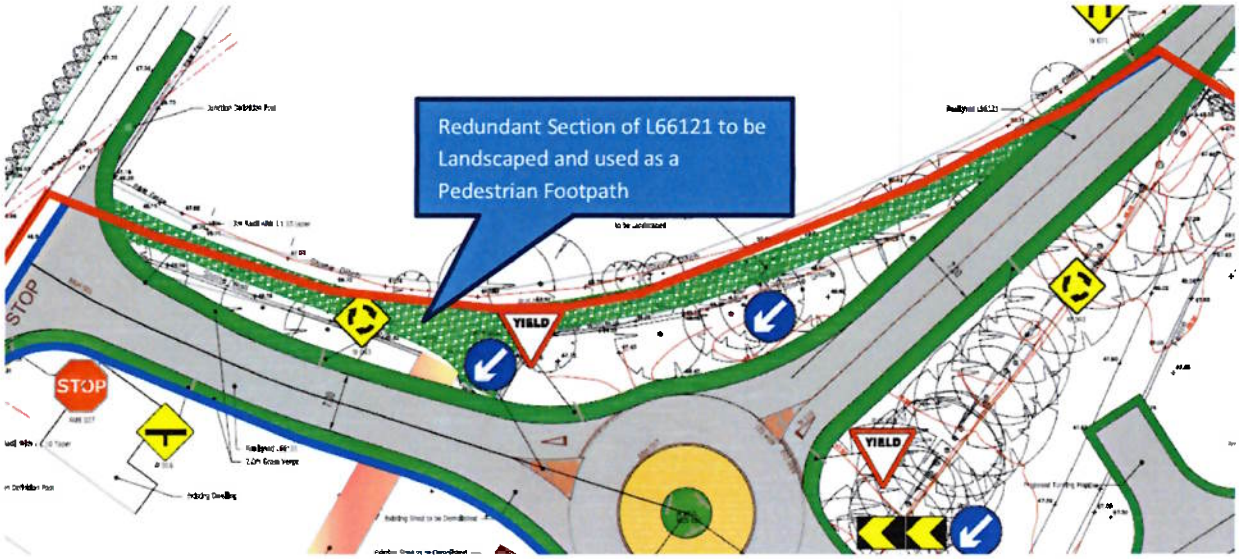
The existing 2.5% crossfall will remain unchanged following the realignment of the junction. The realigned section of the L66121 will have a balanced cross fall of 2.5%.

6.7 Superelevation

Not Applicable.

6.8 Facilities for Vunerable Road Users

There are currently no dedicated facilities for pedestrians or cyclists on the N59 or L66121 in the vicinity of the N59/L66121 junction. The redundant section of the realigned L66121 from the N59 junction to the tie in point on the existing L66121 will be landscaped and used a pedestrian footpath. Details of the proposed footpath are shown in **Figure 3** and on the drawings in **Appendix A.**



6.9 Junctions and Accesses

Access to the proposed Hydrogen plant will be from a proposed new roundabout on the L66121. The roundabout will have an inscribed Circle diameter (ICD) of 28m details of the proposed roundabout are shown on the drawings in Appendix A.

6.10 Visibility and Sightlines

Visibility for vehicles exiting from the L66121 will be available at a distance of 215m in both directions along the N59 at the junction. Forward visibility for drivers approaching the junction on the N59 is available in both direction at distances in excess of 215m. Visibility details are shown in **Figure 2** and on the drawings in **Appendix A.**

6.11 Drainage

Detailed drainage design will be carried out during the detailed design phase of the project.

6.12 Pavement

Surfacing to be provided on the N59 and L66121 in accordance with the TII standards using approved materials and skid resistance at the approach to the junction.

6.13 Safety Barrier Risk Assessment and Provision

Not Applicable.

6.14 Traffic signs and Road Markings

It is proposed to provide directional signs, regulatory signs and roadmarkings in accordance with the Traffic Signs Manual. Details of the signs and roadmarkings are shown on the drawings in **Appendix A.**

6.15 Accommodation Works

The existing dwelling at the N59 / L66121 junction is to be demolished and replaced under a separate planning application. The application red line boundary is shown on the drawings in **Appendix A.**

6.16 Lighting

Junction not lit by public lighting.

6.17 Departures From Standard

Not Applicable.

7 ROAD SAFETY AUDIT

A Stage 1 Road Safety Audit was carried out in June 2023. The final, signed report is provided in Appendix C. The recommendations of the audit have been accepted by the design team and incorporated into the design as shown on the drawings in Appendix A.

8 TOTAL SCHEME BUDGET

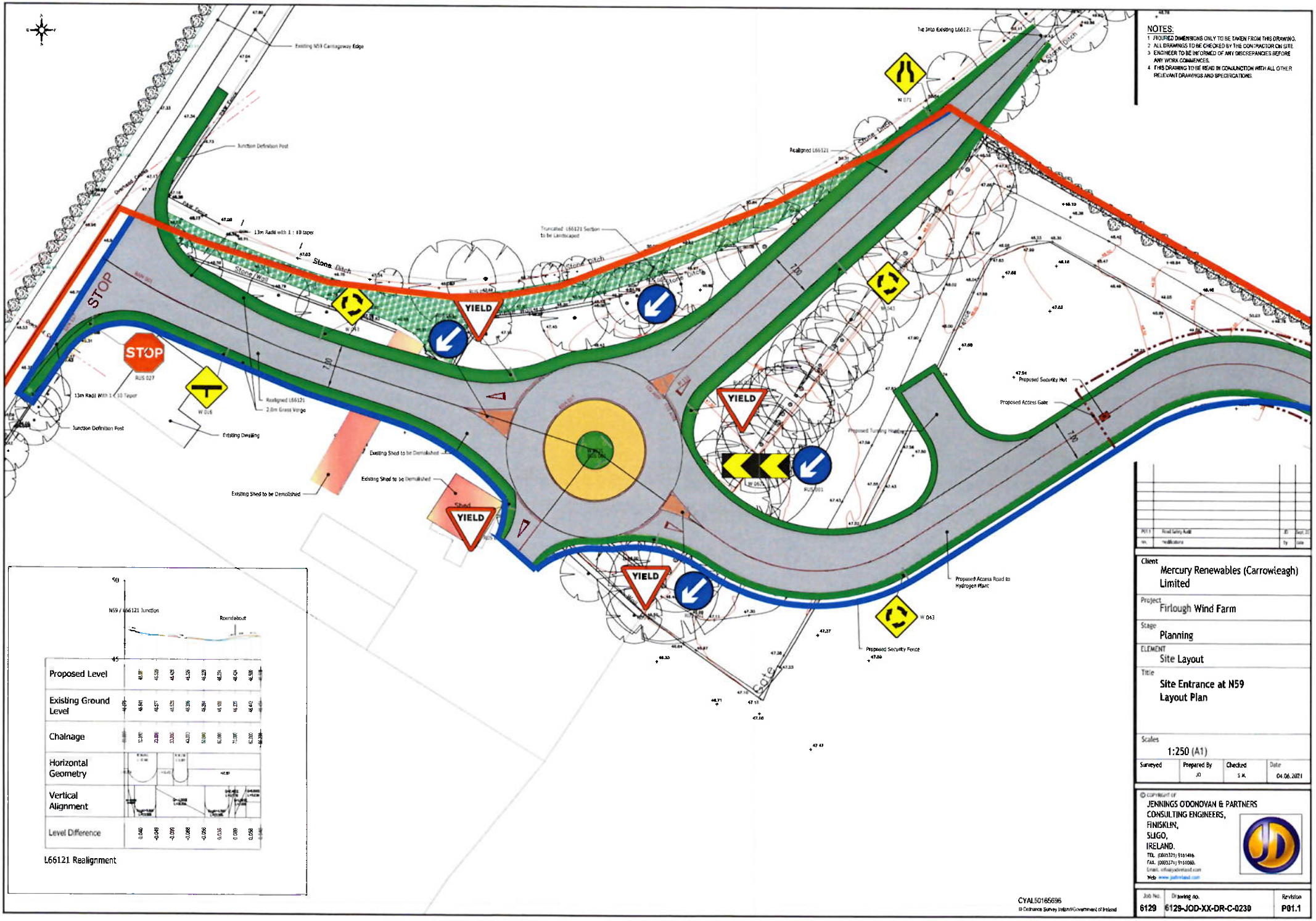
Not Applicable.

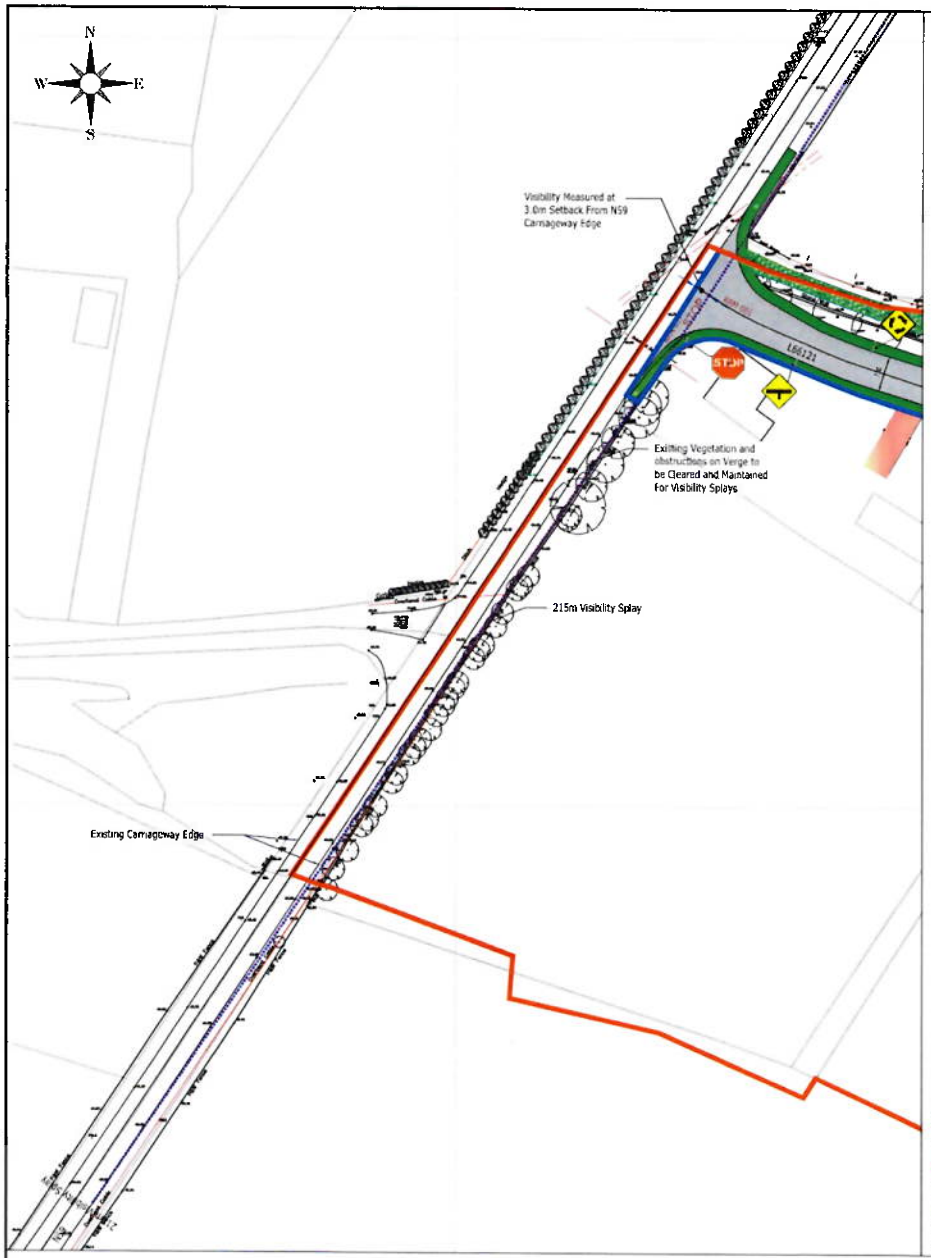
9 PROJECT APPRESAL BALANCE SHEET

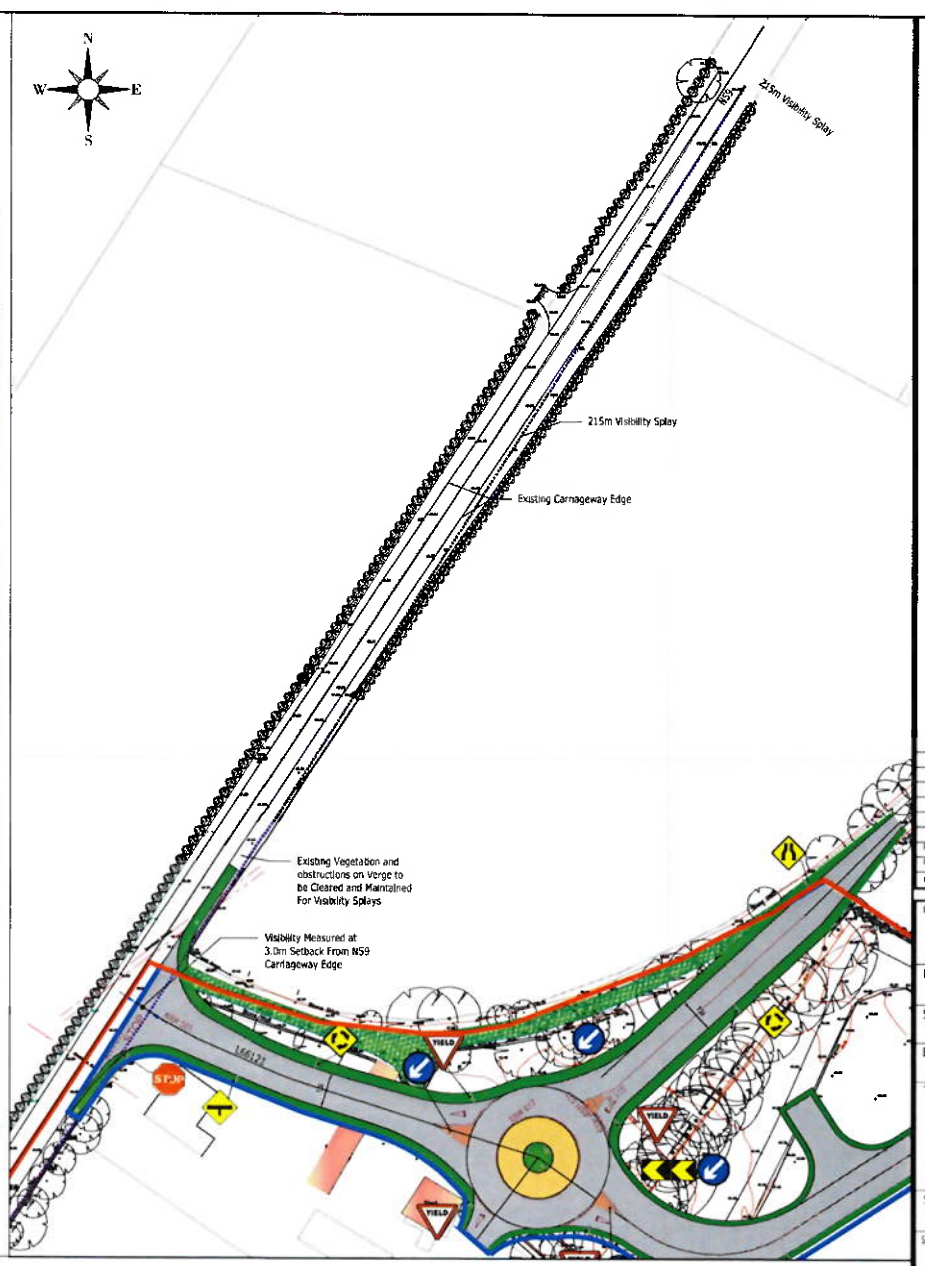
Not Applicable.

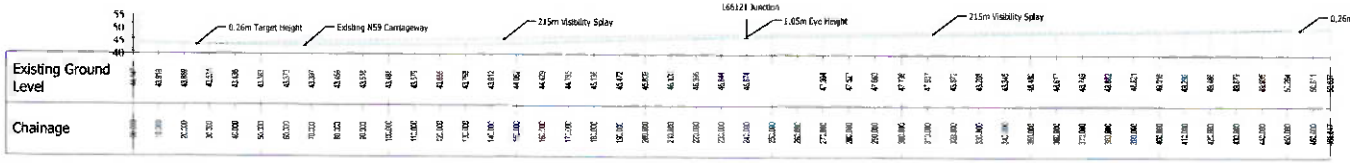
APPENDIX A

DRAWINGS


NOTES:
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE.
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES.
4. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
Tie Into Existing L66121
Existing N59 Carriageway Edge
Junction Definition Post
13m Radii with 1 : 10 taper
Realigned L66121
Truncated L66121 Section to be Landscaped
Stone Ditch
Stone Wall
STOP
YIELD
RUS 027
W 016
W 043
W 071
Realigned L66121
2.0m Grass Verge
Existing Dwelling
Existing Shed to be Demolished
Shed
Proposed Turning Heading
Proposed Security Hut
Proposed Access Gate
Proposed Access Road to Hydrogen Plant
Proposed Security Fence
Gate
Proposed Level
Existing Ground Level
Chainage
Horizontal Geometry
Vertical Alignment
Level Difference
N59 / L66121 Junction
Roundabout
L66121 Realignment
CYAL50165696
© Ordnance Survey Ireland/Government of Ireland
Client
Mercury Renewables (Carrowleagh) Limited
Project
Firlough Wind Farm
Stage
Planning
ELEMENT
Site Layout
Title
Site Entrance at N59
Layout Plan
Scales
1:250 (A1)
Surveyed
Prepared By
JO
Checked
S M.
Date
04.06.2021
© COPYRIGHT OF
JENNINGS O'DONOVAN & PARTNERS
CONSULTING ENGINEERS,
FINISKLIN,
SLIGO,
IRELAND.
TEL. (071) 9161416.
FAX. (071) 9161080.
Email. info@jodireland.com
Web www.jodireland.com
Job No.
6129
Drawing no.
6129-JOD-XX-DR-C-0230
Revision
P01.1







Visibility at N59 / L66121 Junction

NOTES:
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES.
4. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.

Legend
Visibility Splay

no.	modifications	by	date
P01.2	Section Added	JD	Feb 22
P01.1	Road Safety Audit	JD	Sept 22

Client: Mercury Renewables (Carrowleagh) Limited

Project: Firlough Wind Farm

Stage: Planning

ELEMENT: Site Layout

Title: **Site Entrance at N59 /L66121 Junction Visibility**

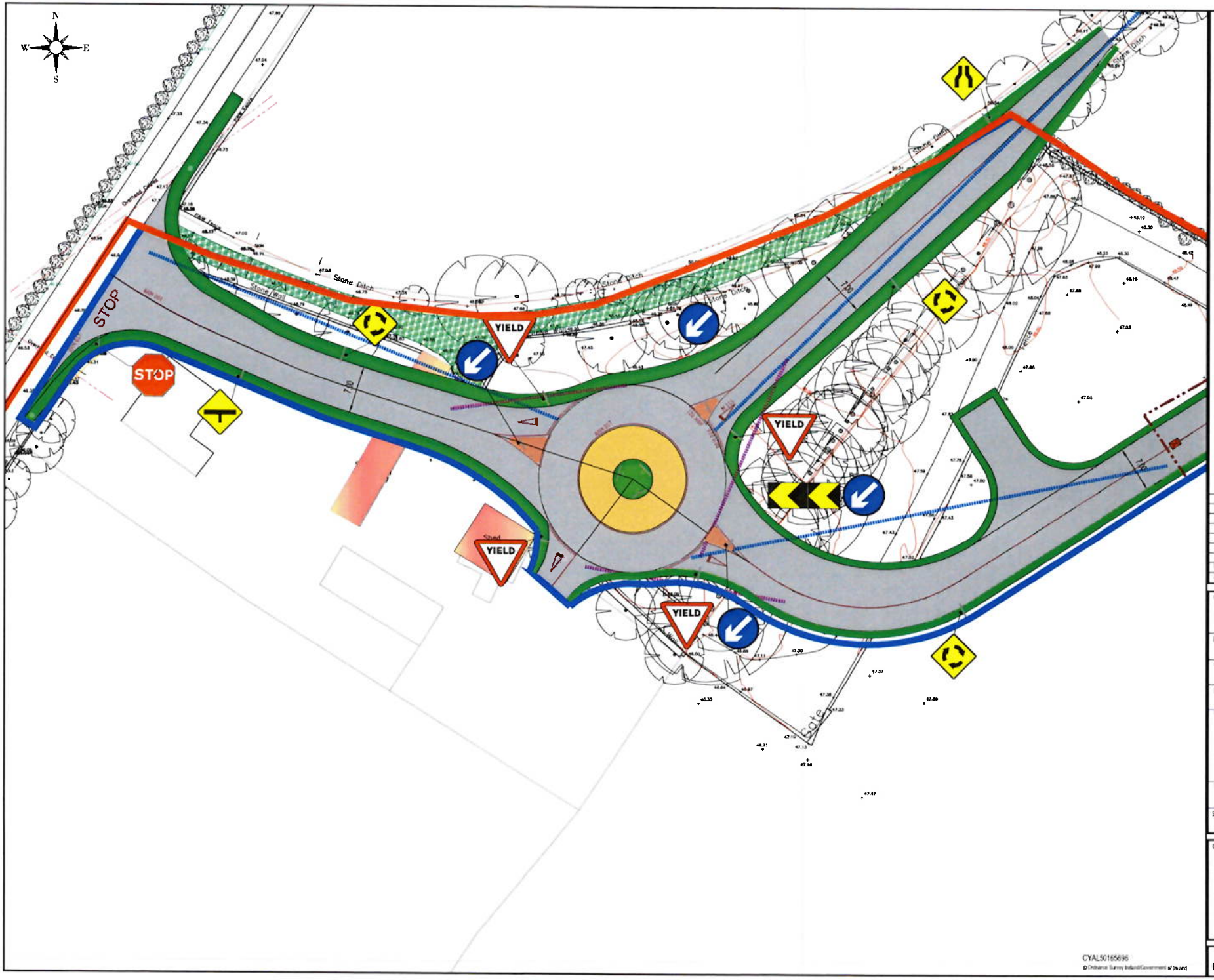
Scales: Plan 1:500 (A1), Section 1:1,000 (A1)

Surveyed	Prepared By	Checked	Date
	JD	S.M.	21.08.2022

JENNINGS O'DONOVAN & PARTNERS CONSULTING ENGINEERS,
FINISKLIN,
SLIGO,
IRELAND.
TEL. (0035371) 9161416.
FAX. (0035371) 9161000.
Email. info@jodireland.com
Web. www.jodireland.com

CYAL50165896

Job No.	Drawing no.	Revision
6129	6129-JOD-XX-DR-C-0231	P01.2



NOTES:

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE.
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES.
4. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.

Legend

- Forward Visibility
- Visibility to the Right

P01.1	Road Safety Audit	JD	Sept. 21
No.	Modifications	by	date

Client
Mercury Renewables (Carrowleagh) Limited

Project
Firlough Wind Farm

Stage
Planning

ELEMENT
Site Layout

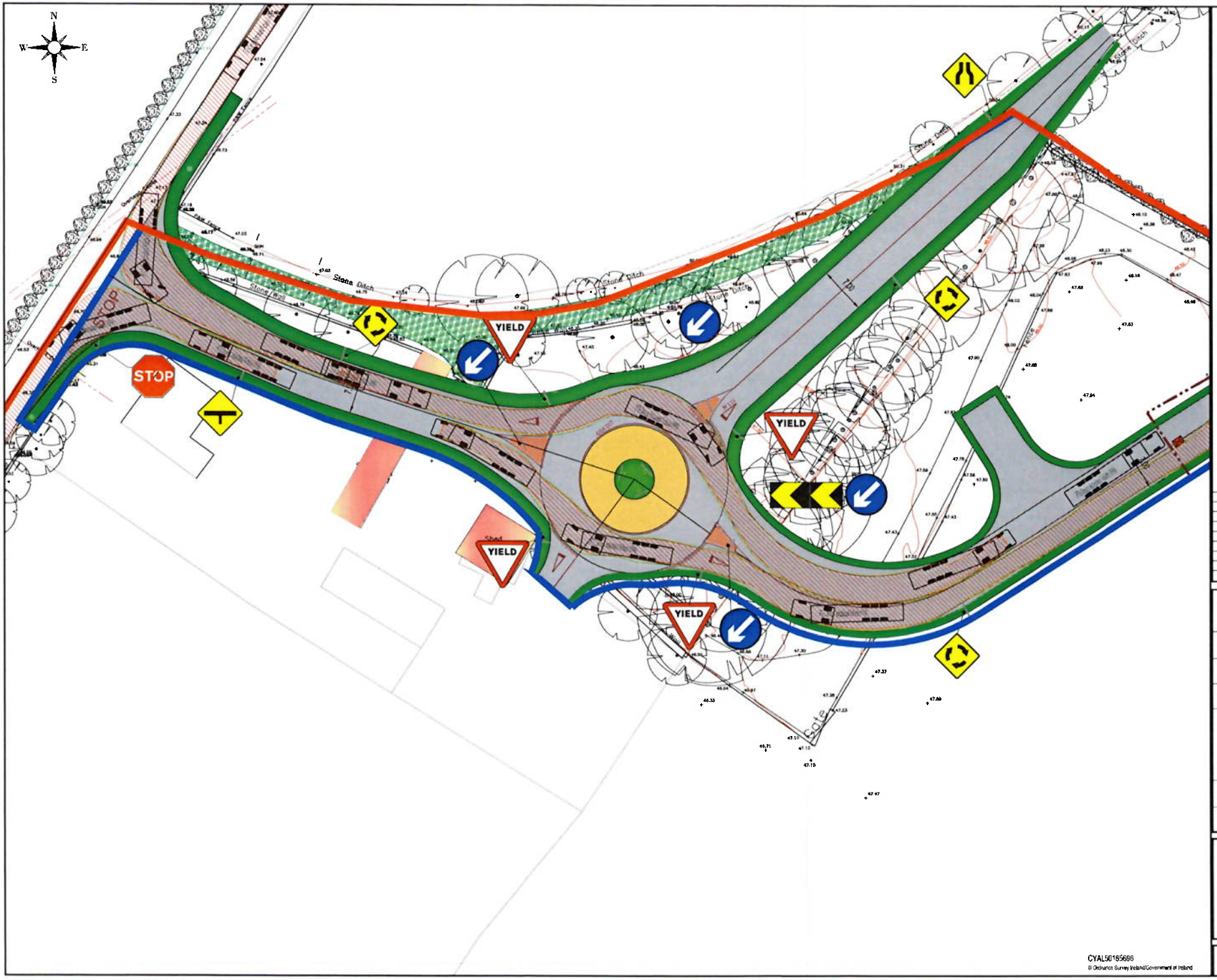
Title
L66121 Roundabout
Visibility at Roundabout

Scales
1:250 (A1)

Surveyed	Prepared By	Checked	Date
	JD	S.M.	04.06.2021

JENNINGS O'DONOVAN & PARTNERS
CONSULTING ENGINEERS,
FINISKLIN,
SLIGO,
IRELAND.
TEL. (071) 9161416.
FAX. (071) 9161080.
Email. info@jodireland.com
Web. www.jodireland.com

Job No.	Drawing no.	Revision
6129	6129-JOD-XX-DR-C-0232	P01.1



NOTES:

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING.
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES.
4. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.

Legend

- Chassis Outline
- Body Outline

P01.1	Road Safety Audit	JD	Sept. 22
rev.	modifications	by	date

Client
Mercury Renewables (Carrowleagh) Limited

Project
Firtough Wind Farm

Stage
Planning

ELEMENT
Site Layout

Title
N59 / L66121 Junction Autotrack Analysis

Scales
1:250 (A1)

Surveyed	Prepared By	Checked	Date
	JD	S.M.	21.09.2022

Job No.	Drawing no.	Revision
6129	6129-JOD-XX-DR-C-0233	P01.1

APPENDIX B

ROAD SAFETY AUDIT

Stage 1 Road Safety Audit

Firlough Wind Farm & Hydrogen Production Facility at Carrowleagh Bog, nr Ballina, Co Mayo

On behalf of Mercury Renewables

Prepared By:
CST Group Chartered Consulting Engineers
1, O'Connell Street, Sligo, F91 W7YV
+353 (0)71 919 4500 info@cstgroup.ie www.cstgroup.ie

June 2023

Civil
Structural
Traffic

Table of Contents

Document Control

Revision	R0	R0							
Purpose of Issue: P=Preliminary PG=Progress C=Comment I=Information PL=Planning T=Tender CN=Construction	C	PL							
Date:	07 10 22	20 06 23							
Originator:	SS	SS							
Checked By:	PJG	PJG							
Approved By:	SS	SS							

1. Introduction

1.1. This report describes a Stage 1 Road Safety Audit carried out on behalf of Mercury Renewables on the proposed hydrogen transport route at Firlough Wind Farm & Hydrogen Production Facility, Carrowleagh Bog, near Ballina, Co Mayo.

1.2. The audit was carried out between 24th June – 6th October 2022.

1.3. The audit team were as follows:

Team Leader: Stuart Summerfield, HNC (Civil) FCIHT FSoRSA
Certificate of Competency in Road Safety Audits (SoRSA, 2015)
TII Auditor Ref. SS73290

Team Member: PJ Gallagher. BEng M.Inst.A.E.A. MITAI
TII Auditor Ref. PG3425716

1.4. The audit comprised an examination of the drawings relating to the scheme supplied by the design office. A site visit was carried out by both Audit Team members together on 24th June 2022 between the hours of 13:00-15:00. Weather conditions during the inspection were raining and the road surface was wet. Traffic conditions were considered light with cars, light goods and occasional HGVs. Photographs were taken during the inspection.

1.5. This Stage 1 audit has been carried out in accordance with the relevant sections of the Transport Infrastructure Ireland (TII) Publication (Standard) GE-STY-01024 (Dec 2017) 'Road Safety Audit'. The audit team has examined only those issues within the design relating to the road safety implications of the scheme and has therefore not examined or verified the compliance of the design to any other criteria.

1.6. **Appendix A** describes the documents examined by the Audit Team.

Appendix B shows the location of the problems identified by the Audit Team.

Appendix C contains a copy of the TII's approval of the Audit Team.

Appendix D contains the Audit Feed Back Form. The Designer shall consider the Audit Report and prepare a Designer Response to each of the recommendations, using the Feedback Form. The response shall state clearly whether each recommendation is accepted, rejected, or whether an alternative recommendation is proposed. Copies of the Designer Response shall be sent to the Employer and the Audit Team. The Audit Team shall then consider the Designer Response and indicate on the Feedback Form whether the Designer's response to each recommendation is accepted. The completed Report contains the completed Feedback Form with signatures of all three parties involved - Designer, Audit Team Leader and Employer.

1.7. All of the problems described in this report are considered by the Audit Team to require action in order to improve the safety of the scheme and minimise accident occurrence.

2. ITEMS RESULTING FROM PREVIOUS ROAD SAFETY ASSESSMENT

A Road Safety Assessment audit was undertaken in June 2022. This Stage 1 audit follows on from this assessment. No other audits have been offered for reference.

3. OUTSTANDING ITEMS RESULTING FROM PREVIOUS ROAD SAFETY ASSESSMENT

3.1.1 Wayfinding

Problem: There are multiple access junctions with the N59 in the general area of the proposed junction.

Hazard: Development traffic may errantly turn into the wrong local road junction and be required to undertake a 'U' turn in order to re-join the national road. Impact with other road users may result.

Recommendation: Provide suitable wayfinding for both entry and exit to/from the development.

3.1.2 N59 Gradient

Problem: The N59 is to a downhill gradient when travelling south.

Hazard: Southbound public road traffic may experience difficulty in slowing/stopping behind a left turning development vehicle.

Recommendation: Assess the N59 road surface texture and replace if necessary.

4. ITEMS RESULTING FROM THIS STAGE 1 AUDIT

4.1 General Problems / Problems at Multiple Locations

4.1.1 Provision for pedestrians

Problem: The existing local road does not benefit from separate footpaths. Therefore, pedestrian traffic shares the carriageway with other motorised users.

Hazard: The amendments to the carriageway provides greater width and straighter alignments than existing and is likely to convey greater numbers of large vehicles, possibly at higher speeds. Pedestrians struck by high speed large vehicles are at greater risk of injury.

Recommendation: Provide a footpath adjacent to the upgraded carriageway where works are being undertaken. This footpath should provide a safe method of permitting pedestrians to access the pre-exiting carriageway at the terminations of the works.
The design team could investigate if the historic road could be repurposed for this use.

4.1.2 N59 – Swept Paths

Problem: The swept paths indicate the left turning HGV is required to cross the N59 centreline.

Hazard: Impact with northbound N59 traffic may result.

Recommendation: Redesign the junction to ensure crossing of the centreline is not required by left turning vehicles.

4.1.3 Forward Visibility

Problem: Some of the visibility splays shown on the drawing are outside of the carriageway surface. There is risk that vegetation will grow to restrict visibility.

Hazard: Users with insufficient visibility may errantly strike other road users or debris on the carriageway.

Recommendation: Ensure all visibility envelopes are kept clear of high vegetation.

4.1.4 Visibility at Roundabout

Problem: The visibility splays shown on the drawing are taken from the yield lines at the roundabout.

Hazard: The front of the vehicle will need to enter the circulatory carriageway in order for the driver's eye to sit on the visibility line shown. Impact with vehicles on the circulatory carriageway may result.

Recommendation: Provide visibility splays set back a suitable distance from the yield line.

4.1.5 Roundabout Central Island – Signage (1)

Problem: Incorrect signage is shown for the roundabout central island. Sign RUS 001 gives instruction to Keep Left of the sign only. Users unfamiliar with the area may believe the signage arrangement is advising of a bend in the road and may not slow sufficiently.

Hazard: Vehicle loss of control or impact with circulatory traffic may result.

Recommendation: Replace the RUS 001 sign with RUS 006.

4.1.6 Roundabout Central Island – Signage (2)

Problem: There are only 3 sets of chevron/Turn Left signs proposed for the roundabout central island, but the roundabout has 4 entry arms. The signage should face each entry arm.

Hazard: Users approaching the roundabout may have insufficient advanced warning to comprehend the junction type. Overshoot collisions may result.

Recommendation: Provide signage opposite each entry arm.

4.1.7 Roundabout Entry Curves

Problem: The entry / exit curves do not have a uniform radius. Trailing wheels of long vehicles may over-run the verge and drag detritus onto the carriageway surface.

Hazard: Following vehicles may skid / lose control on this detritus.

Recommendation: Provide a uniform radius from the roundabout entry to the exit.

4.1.8 Speed Limits

Problem: The proposed works are likely to require removal of the existing speed limit signage. The drawings do not indicate replacement / relocation of the signs.

Hazard: Users may drive at inappropriate speeds for the road conditions and lose control.

Recommendation: Reinstate any speed limit signs removed by the works.

(Note: It is suggested that consultations with the Road Authority are undertaken with a view to further reducing the speed limit on this road.)

4.2 Problems at Specific Locations

4.2.1 Roundabout Central Island – Road markings

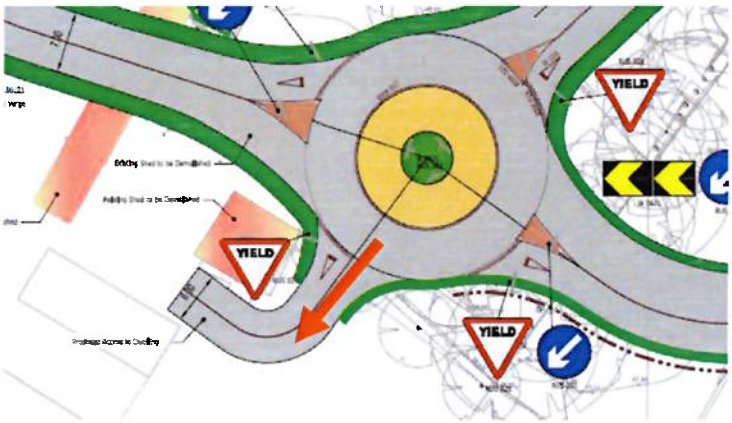
Problem: Incorrect road markings are indicated for the perimeter of the central island. The RRM 017 is a 200mm wide solid line. Road markings generally have less skid resistance than the road surfacing material.

Hazard: Powered two wheeled vehicles may over-run the wide line and skid / lose control.

Recommendation: Replace the RRM017 with RRM001.

4.2.2 Access to Dwelling House

Problem: The access to the dwelling house off the roundabout has a similar look to all the other exits. There is a risk that general public vehicles will errantly depart the roundabout on this arm.



Hazard: Vehicles entering this arm may not expect the very tight bend immediately within the property lands. Vehicle loss of control may result.

Recommendation: Redesign this arm or roadside treatment to enable road users to differentiate this private access from the public ones.

5. Audit Team Statement

We certify that we have examined the drawings and other information listed in Appendix A. This examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified to improve the safety of the scheme. The problems that we have identified have been noted in the report, together with suggestions for improvement which we recommend should be studied for implementation. No one in the Audit Team has been involved with the scheme design as shown in Appendix A.

Signed .....
Stuart Summerfield
Audit Team Leader

Date 7th October 2022

Signed .....
PJ Gallagher
Audit Team Member

Date 7th October 2022

Appendix A List of Documents Examined

DOCUMENT REF / NAME:	RECEIVED FROM:	DATE:
6129-JOD-XX-DR-C-0230 P01.1 – Layout Plan	JOD	28.09.2022
6129-JOD-XX-DR-C-0231 P01.1 – Junction Visibility	JOD	28.09.2022
6129-JOD-XX-DR-C-0232 P01.1 – Visibility at Roundabout	JOD	28.09.2022
6129-JOD-XX-DR-C-0233 P01.1 – Autotrack Analysis	JOD	28.09.2022

Appendix B TII Approval of RSA Team

From: TII Systems Notification <noreply@tii.systems>
Sent: Tuesday 12 July 2022 15:53
To: smolloy@jodireland.com
Cc: roadsafetyaudits@nra.ie; Fiona.Bohane@corkrdo.ie; Alastair.DeBeer@TII.ie; Bryan.kennedy@TII.ie; LCurtis@Kerrycoco.ie; Kevin.O'Flynn@tii.ie; Frank.Healy@tii.ie; Stuart Summerfield | CST Group <ssummerfield@cstgroup.ie>; pjgallagher20@hotmail.com
Subject: RSAAS - Road Safety Audit Approvals System - Audit Approval 28421293/29194/Stage 1
Importance: High

Sean Molloy
Finisklin Business Park
Sligo

Date: 12/07/2022

Our Ref: 28421293/29194/Stage 1

re: N59 Carraun Road (L6612) - N59 Junction

APPROVAL OF ROAD SAFETY AUDIT TEAM, Stage 1

Dear Sean Molloy,

The following members of the proposed road safety audit team are approved to carry out the Stage 1 road safety audit of N59 Carraun Road (L6612) - N59 Junction.

1. Stuart Summerfield - CST Group Consulting Engineers - Leader
2. PJ Gallagher - CST Consulting Engineers - Member

A copy of all audit reports, design team response and exception reports must be uploaded through RSAAS. Successful upload of these reports and completion of the audit approval process is necessary for any further audit approval on this scheme.

Yours sincerely,

Lucy Curtis

Regional Road Safety Engineer
roadsafetyaudits@tii.ie

Appendix C RSA Feedback Form

ROAD SAFETY AUDIT FEEDBACK FORM

CST Group Chartered Consulting Engineers
1, O'Connell Street, Sligo, F91 W7YV, Ireland

Scheme: Firlough Wind Farm & Hydrogen Production Facility at Carrowleagh Bog, nr Ballina, Co Mayo

Audit Stage: 1 **Date Audit Completed:** 07/10/2022 **Route No.** N59 **Our Ref :**122229|R0

TO BE COMPLETED BY DESIGNER				TO BE COMPLETED BY AUDIT TEAM LEADER
Paragraph No. in Safety Audit Report	**Problem accepted (Yes/No)**	**Recommended measure accepted (Yes/No)**	**Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted.**	**Alternative measures or reasons accepted by Auditors (Yes/No)**
3.1.1	Yes	Yes		
3.1.2	Yes	Yes		
4.1.1	Yes	Yes		
4.1.2	Yes	Yes		
4.1.3	Yes	Yes		
4.1.4	Yes	Yes		
4.1.5	Yes	Yes		
4.1.6	Yes	Yes		
4.1.7	Yes	Yes		
4.1.8	Yes	Yes		
4.2.1	Yes	Yes		
4.2.2	Yes	Yes		

Signed: _____ Design Team Leader Date: 17/4/23

PP Sean Molloy
Jennings O'Donovan

Signed: _____ Audit Team Leader Date: 20/06/2023

Stuart Summerfield
CST Group Chartered Consulting Engineers

Signed: _____ Employer Date: _____

For Mercury Renewables

ROAD SAFETY AUDIT FEEDBACK FORM

CST Group Chartered Consulting Engineers
1, O'Connell Street, Sligo, F91 W7YV, Ireland

Scheme: Firlough Wind Farm & Hydrogen Production Facility at Carrowleagh Bog, nr Ballina, Co Mayo

Audit Stage: 1 **Date Audit Completed:** 07/10/2022 **Route No.** N59 **Our Ref :**122229|R0

TO BE COMPLETED BY DESIGNER				TO BE COMPLETED BY AUDIT TEAM LEADER
Paragraph No. in Safety Audit Report	**Problem accepted (Yes/No)**	**Recommended measure accepted (Yes/No)**	**Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted.**	**Alternative measures or reasons accepted by Auditors (Yes/No)**
3.1.1	Yes	Yes		
3.1.2	Yes	Yes		
4.1.1	Yes	Yes		
4.1.2	Yes	Yes		
4.1.3	Yes	Yes		
4.1.4	Yes	Yes		
4.1.5	Yes	Yes		
4.1.6	Yes	Yes		
4.1.7	Yes	Yes		
4.1.8	Yes	Yes	a,	
4.2.1	Yes	Yes		
4.2.2	Yes	Yes		

Signed: pp Sean Molloy, Jennings O'Donovan — Design Team Leader — Date: 17/4/23

Signed: Stuart Summerfield, CST Group Chartered Consulting Engineers — Audit Team Leader — Date: 20/06/2023

Signed: For Mercury Renewables — Employer — Date: 21/06/2023

APPENDIX C

TRAFFIC ANALYSIS

Junctions 9

PICADY 9 - Priority Intersection Module

Filename: N59 Hydrogen Junction.j9
Path: P:\Jod-jobs\6129 Carrowleagh-Kilbride WF\700 Drawings\703 Planning\200- Road Design\Traffic analysis
Report generation date: 14/02/2024 12:28:11

Summary of junction performance

	AM									PM								
	Set ID	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Network Residual Capacity	Set ID	Queue (PCU)	95% Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Networ Residu Capaci
	2023 - Existing Traffic Flows																	
Stream B-AC	D1	0.0	~1	0.00	0.00	A	0.02	A	900 %	D2	0.0	~1	0.00	0.00	A	0.06	A	517 %
Stream C-AB		0.0	0.5	5.09	0.00	A			[]		0.0	0.5	4.70	0.01	A			[Strea C-AB]
	2025 Forecast Traffic Growth with Development Construction Traffic																	
Stream B-AC	D3	0.1	0.9	14.42	0.04	B	1.07	A	286 %	D4	0.1	0.9	14.53	0.04	B	0.86	A	258 %
Stream C-AB		0.0	0.8	9.08	0.02	A			[Stream B-AC]		0.0	0.7	7.46	0.02	A			[Strea B-AC]
	2026 Forecast Traffic Growth with Development Operational Traffic																	
Stream B-AC	D5	0.1	0.9	15.96	0.03	C	0.52	A	271 %	D6	0.1	0.9	16.33	0.03	C	0.43	A	232 %
Stream C-AB		0.0	0.8	8.97	0.00	A			[Stream B-AC]		0.0	0.7	7.36	0.00	A			[Strea B-AC]
	2046 Forecast Traffic Growth with Development Operational Traffic																	
Stream B-AC	D7	0.1	0.9	16.32	0.03	C	0.48	A	234 %	D8	0.1	0.9	16.77	0.03	C	0.39	A	198 %
Stream C-AB		0.0	0.8	8.84	0.00	A			[Stream B-AC]		0.0	0.7	7.10	0.00	A			[Strea B-AC]

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages. Network Residual Capacity indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

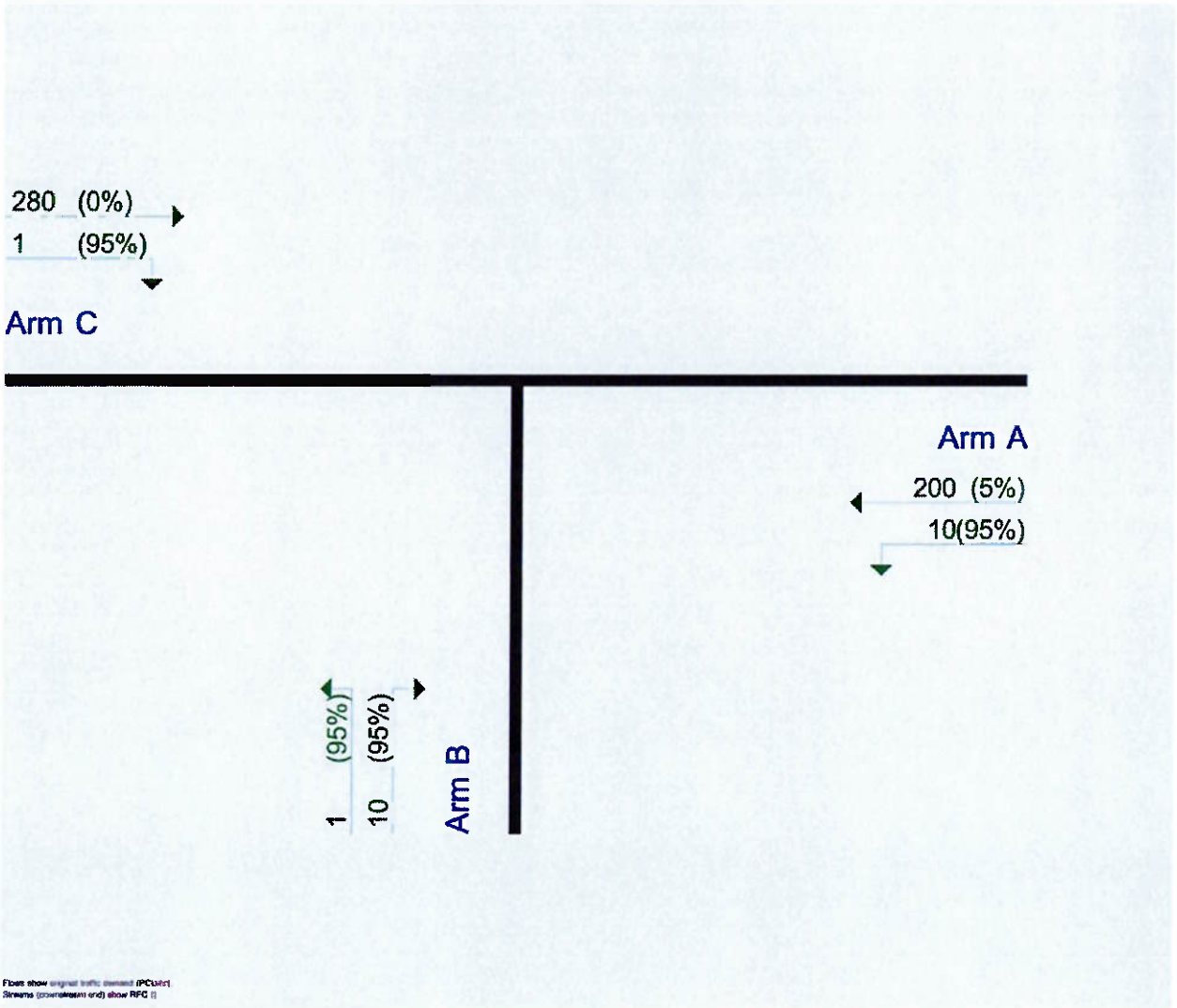
File summary

File Description

Title	Hydrogen Plant
Location	N59 / L6612
Site number	
Date	16/10/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	JODIRELAND\jdoogan
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
✓	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2023 - Existing Traffic Flows	AM	ONE HOUR	00:00	01:30	15
D2	2023 - Existing Traffic Flows	PM	ONE HOUR	00:00	01:30	15
D3	2025 Forecast Traffic Growth with Development Construction Traffic	AM	ONE HOUR	00:00	01:30	15
D4	2025 Forecast Traffic Growth with Development Construction Traffic	PM	ONE HOUR	00:00	01:30	15
D5	2026 Forecast Traffic Growth with Development Operational Traffic	AM	ONE HOUR	00:00	01:30	15
D6	2026 Forecast Traffic Growth with Development Operational Traffic	PM	ONE HOUR	00:00	01:30	15
D7	2046 Forecast Traffic Growth with Development Operational Traffic	AM	ONE HOUR	00:00	01:30	15
D8	2046 Forecast Traffic Growth with Development Operational Traffic	PM	ONE HOUR	00:00	01:30	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2023 - Existing Traffic Flows, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.02	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	900	

Arms

Arms

Arm	Name	Description	Arm type
A	N59 East		Major
B	N59 West		Minor
C	L6612		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	6.00			215.0	✓	0.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	3.50	20	20

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	519	0.094	0.239	0.150	0.341
B-C	668	0.102	0.259	-	-
C-B	698	0.271	0.271	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2023 - Existing Traffic Flows	AM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	211	100.000
B		✓	3	100.000
C		✓	114	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	1	210
	B	0	0	3
	C	113	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	0
	C	2	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	~1	A
C-AB	0.00	5.09	0.0	0.5	A
C-A					
A-B					
A-C					

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	536	0.000	0	0.0	0.000	A
C-AB	0.86	710	0.001	0.85	0.0	5.089	A
C-A	85			85			
A-B	0.75			0.75			
A-C	158			158			

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	527	0.000	0	0.0	0.000	A
C-AB	1	712	0.001	1	0.0	5.073	A
C-A	101			101			
A-B	0.90			0.90			
A-C	189			189			

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	514	0.000	0	0.0	0.000	A
C-AB	1	716	0.002	1	0.0	5.050	A
C-A	124			124			
A-B	1			1			
A-C	231			231			

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	514	0.000	0	0.0	0.000	A
C-AB	1	716	0.002	1	0.0	5.053	A
C-A	124			124			
A-B	1			1			
A-C	231			231			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	527	0.000	0	0.0	0.000	A
C-AB	1	712	0.001	1	0.0	5.078	A
C-A	101			101			
A-B	0.90			0.90			
A-C	189			189			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	536	0.000	0	0.0	0.000	A
C-AB	0.86	710	0.001	0.86	0.0	5.093	A
C-A	85			85			
A-B	0.75			0.75			
A-C	158			158			

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

00:15 - 00:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.25	0.45	0.48			N/A	N/A

00:30 - 00:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

00:45 - 01:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

01:00 - 01:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

01:15 - 01:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2023 - Existing Traffic Flows, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.06	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	517	Stream C-AB

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2023 - Existing Traffic Flows	PM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	172	100.000
B		✓	2	100.000
C		✓	243	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	1	171
	B	1	0	1
	C	239	4	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	0	3
	B	0	0	0
	C	4	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
B-AC	0.00	0.00	0.0	-1	A
C-AB	0.01	4.70	0.0	0.5	A
C-A					
A-B					
A-C					

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	533	0.000	0	0.0	0.000	A
C-AB	4	777	0.005	4	0.0	4.697	A
C-A	179			179			
A-B	0.75			0.75			
A-C	129			129			

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	523	0.000	0	0.0	0.000	A
C-AB	5	793	0.006	5	0.0	4.612	A
C-A	214			214			
A-B	0.90			0.90			
A-C	154			154			

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	509	0.000	0	0.0	0.000	A
C-AB	7	816	0.008	7	0.0	4.500	A
C-A	261			261			
A-B	1			1			
A-C	188			188			

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	509	0.000	0	0.0	0.000	A
C-AB	7	816	0.008	7	0.0	4.504	A
C-A	261			261			
A-B	1			1			
A-C	188			188			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	523	0.000	0	0.0	0.000	A
C-AB	5	793	0.006	5	0.0	4.622	A
C-A	214			214			
A-B	0.90			0.90			
A-C	154			154			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	0	533	0.000	0	0.0	0.000	A
C-AB	4	777	0.005	4	0.0	4.704	A
C-A	179			179			
A-B	0.75			0.75			
A-C	129			129			

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

00:15 - 00:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.01	0.01	0.25	0.46	0.48			N/A	N/A

00:30 - 00:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

00:45 - 01:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

01:00 - 01:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

01:15 - 01:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.00	0.00	0.00	0.00	0.00			N/A	N/A
C-AB	0.01	0.00	0.00	0.01	0.01			N/A	N/A

2025 Forecast Traffic Growth with Development Construction Traffic, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		1.07	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	286	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D3	2025 Forecast Traffic Growth with Development Construction Traffic	AM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	225	100.000
B		✓	20	100.000
C		✓	125	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	10	215
	B	10	0	10
	C	115	10	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	95	5
	B	95	0	95
	C	5	95	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
B-AC	0.04	14.42	0.1	0.9	B
C-AB	0.02	9.08	0.0	0.8	A
C-A					
A-B					
A-C					

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	15	533	0.028	15	0.1	13.550	B
C-AB	9	708	0.012	8	0.0	9.084	A
C-A	86			86			
A-B	8			8			
A-C	162			162			

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	523	0.034	18	0.1	13.907	B
C-AB	11	710	0.015	11	0.0	8.988	A
C-A	102			102			
A-B	9			9			
A-C	193			193			

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	509	0.043	22	0.1	14.421	B
C-AB	13	714	0.019	13	0.0	8.786	A
C-A	124			124			
A-B	11			11			
A-C	237			237			

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	509	0.043	22	0.1	14.424	B
C-AB	13	714	0.019	13	0.0	8.694	A
C-A	124			124			
A-B	11			11			
A-C	237			237			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	523	0.034	18	0.1	13.914	B
C-AB	11	710	0.015	11	0.0	8.789	A
C-A	102			102			
A-B	9			9			
A-C	193			193			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	15	533	0.028	15	0.1	13.564	B
C-AB	9	708	0.012	9	0.0	8.985	A
C-A	86			86			
A-B	8			8			
A-C	162			162			

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-AB	0.02	0.00	0.00	0.02	0.02			N/A	N/A

00:15 - 00:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.07	0.05	0.49	0.88	0.93			N/A	N/A
C-AB	0.03	0.03	0.44	0.78	0.83			N/A	N/A

00:30 - 00:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.09	0.05	0.50	0.89	0.94			N/A	N/A
C-AB	0.04	0.00	0.00	0.04	0.04			N/A	N/A

00:45 - 01:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.09	0.00	0.00	0.09	0.09			N/A	N/A
C-AB	0.04	0.00	0.00	0.04	0.04			N/A	N/A

01:00 - 01:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.07	0.00	0.00	0.07	0.07			N/A	N/A
C-AB	0.03	0.00	0.00	0.03	0.03			N/A	N/A

01:15 - 01:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-AB	0.02	0.00	0.00	0.02	0.02			N/A	N/A

2025 Forecast Traffic Growth with Development Construction Traffic, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.86	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	258	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D4	2025 Forecast Traffic Growth with Development Construction Traffic	PM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	185	100.000
B		✓	20	100.000
C		✓	255	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	10	175
	B	10	0	10
	C	245	10	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	95	5
	B	95	0	95
	C	0	95	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
B-AC	0.04	14.53	0.1	0.9	B
C-AB	0.02	7.46	0.0	0.7	A
C-A					
A-B					
A-C					

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	15	530	0.028	15	0.1	13.609	B
C-AB	10	778	0.013	10	0.0	7.461	A
C-A	182			182			
A-B	8			8			
A-C	132			132			

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	520	0.035	18	0.1	13.985	B
C-AB	12	794	0.016	12	0.0	7.203	A
C-A	217			217			
A-B	9			9			
A-C	157			157			

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	505	0.044	22	0.1	14.529	B
C-AB	16	817	0.020	16	0.0	6.782	A
C-A	264			264			
A-B	11			11			
A-C	193			193			

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	22	505	0.044	22	0.1	14.532	B
C-AB	16	817	0.020	16	0.0	6.668	A
C-A	264			264			
A-B	11			11			
A-C	193			193			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	18	520	0.035	18	0.1	13.994	B
C-AB	12	794	0.016	13	0.0	6.943	A
C-A	217			217			
A-B	9			9			
A-C	157			157			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	15	530	0.028	15	0.1	13.626	B
C-AB	10	778	0.013	10	0.0	7.324	A
C-A	182			182			
A-B	8			8			
A-C	132			132			

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-AB	0.02	0.00	0.00	0.02	0.02			N/A	N/A

00:15 - 00:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.07	0.05	0.49	0.88	0.93			N/A	N/A
C-AB	0.03	0.03	0.39	0.70	0.74			N/A	N/A

00:30 - 00:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.09	0.05	0.50	0.89	0.94			N/A	N/A
C-AB	0.04	0.00	0.00	0.04	0.04			N/A	N/A

00:45 - 01:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.09	0.00	0.00	0.09	0.09			N/A	N/A
C-AB	0.04	0.00	0.00	0.04	0.04			N/A	N/A

01:00 - 01:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.07	0.00	0.00	0.07	0.07			N/A	N/A
C-AB	0.03	0.00	0.00	0.03	0.03			N/A	N/A

01:15 - 01:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-AB	0.02	0.00	0.00	0.02	0.02			N/A	N/A

2026 Forecast Traffic Growth with Development Operational Traffic, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.52	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	271	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D5	2026 Forecast Traffic Growth with Development Operational Traffic	AM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	227	100.000
B		✓	11	100.000
C		✓	118	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	10	217
	B	10	0	1
	C	117	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	95	5
	B	95	0	95
	C	5	95	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
B-AC	0.03	15.96	0.1	0.9	C
C-AB	0.00	8.97	0.0	0.8	A
C-A					
A-B					
A-C					

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	477	0.017	8	0.0	14.985	B
C-AB	0.86	708	0.001	0.85	0.0	8.965	A
C-A	88			88			
A-B	8			8			
A-C	163			163			

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	10	466	0.021	10	0.0	15.381	C
C-AB	1	711	0.001	1	0.0	8.844	A
C-A	105			105			
A-B	9			9			
A-C	195			195			

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	12	452	0.027	12	0.1	15.954	C
C-AB	1	715	0.002	1	0.0	8.609	A
C-A	129			129			
A-B	11			11			
A-C	239			239			

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	12	452	0.027	12	0.1	15.958	C
C-AB	1	715	0.002	1	0.0	8.517	A
C-A	129			129			
A-B	11			11			
A-C	239			239			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	10	466	0.021	10	0.0	15.387	C
C-AB	1	711	0.001	1	0.0	8.648	A
C-A	105			105			
A-B	9			9			
A-C	195			195			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	477	0.017	8	0.0	14.996	B
C-AB	0.86	708	0.001	0.86	0.0	8.868	A
C-A	88			88			
A-B	8			8			
A-C	163			163			

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

00:15 - 00:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.04	0.49	0.88	0.93			N/A	N/A
C-AB	0.00	0.00	0.43	0.78	0.82			N/A	N/A

00:30 - 00:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

00:45 - 01:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

01:00 - 01:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

01:15 - 01:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2026 Forecast Traffic Growth with Development Operational Traffic, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.43	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	232	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D6	2026 Forecast Traffic Growth with Development Operational Traffic	PM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	187	100.000
B		✓	11	100.000
C		✓	248	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	10	177
	B	10	0	1
	C	247	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	95	5
	B	95	0	95
	C	0	95	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
B-AC	0.03	16.33	0.1	0.9	C
C-AB	0.00	7.36	0.0	0.7	A
C-A					
A-B					
A-C					

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	470	0.018	8	0.0	15.202	C
C-AB	0.99	778	0.001	0.98	0.0	7.361	A
C-A	186			186			
A-B	8			8			
A-C	133			133			

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	10	458	0.022	10	0.0	15.659	C
C-AB	1	794	0.002	1	0.0	7.083	A
C-A	222			222			
A-B	9			9			
A-C	159			159			

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	12	442	0.027	12	0.1	16.325	C
C-AB	2	818	0.002	2	0.0	6.640	A
C-A	271			271			
A-B	11			11			
A-C	195			195			

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	12	442	0.027	12	0.1	16.328	C
C-AB	2	818	0.002	2	0.0	6.532	A
C-A	271			271			
A-B	11			11			
A-C	195			195			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	10	458	0.022	10	0.0	15.664	C
C-AB	1	794	0.002	1	0.0	6.828	A
C-A	222			222			
A-B	9			9			
A-C	159			159			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	470	0.018	8	0.0	15.216	C
C-AB	0.99	778	0.001	0.99	0.0	7.224	A
C-A	186			186			
A-B	8			8			
A-C	133			133			

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

00:15 - 00:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.04	0.49	0.88	0.93			N/A	N/A
C-AB	0.00	0.00	0.39	0.69	0.73			N/A	N/A

00:30 - 00:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

00:45 - 01:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

01:00 - 01:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

01:15 - 01:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2046 Forecast Traffic Growth with Development Operational Traffic, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.48	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	234	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D7	2046 Forecast Traffic Growth with Development Operational Traffic	AM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	255	100.000
B		✓	11	100.000
C		✓	133	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	10	245
	B	10	0	1
	C	132	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	95	5
	B	95	0	95
	C	5	95	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
B-AC	0.03	16.32	0.1	0.9	C
C-AB	0.00	8.84	0.0	0.8	A
C-A					
A-B					
A-C					

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	470	0.018	8	0.0	15.200	C
C-AB	0.88	710	0.001	0.87	0.0	8.836	A
C-A	99			99			
A-B	8			8			
A-C	184			184			

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	10	458	0.022	10	0.0	15.656	C
C-AB	1	713	0.002	1	0.0	8.701	A
C-A	118			118			
A-B	9			9			
A-C	220			220			

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	12	442	0.027	12	0.1	16.319	C
C-AB	1	718	0.002	1	0.0	8.442	A
C-A	145			145			
A-B	11			11			
A-C	270			270			

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	12	442	0.027	12	0.1	16.322	C
C-AB	1	718	0.002	1	0.0	8.344	A
C-A	145			145			
A-B	11			11			
A-C	270			270			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	10	458	0.022	10	0.0	15.662	C
C-AB	1	713	0.002	1	0.0	8.490	A
C-A	118			118			
A-B	9			9			
A-C	220			220			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	470	0.018	8	0.0	15.211	C
C-AB	0.88	710	0.001	0.88	0.0	8.728	A
C-A	99			99			
A-B	8			8			
A-C	184			184			

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

00:15 - 00:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.04	0.49	0.88	0.93			N/A	N/A
C-AB	0.00	0.00	0.43	0.77	0.81			N/A	N/A

00:30 - 00:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

00:45 - 01:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.05	0.00	0.00	0.05	0.05			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

01:00 - 01:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

01:15 - 01:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

2046 Forecast Traffic Growth with Development Operational Traffic, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Queue variations	Analysis Options	Queue percentiles may be unreliable if the mean queue in any time segment is very low or very high.

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.39	A

Junction Network Options

Driving side	Lighting	Network residual capacity (%)	First arm reaching threshold
Left	Normal/unknown	198	Stream B-AC

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D8	2046 Forecast Traffic Growth with Development Operational Traffic	PM	ONE HOUR	00:00	01:30	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A		✓	210	100.000
B		✓	11	100.000
C		✓	281	100.000

Origin-Destination Data

Demand (PCU/hr)

		To		
		A	B	C
From	A	0	10	200
	B	10	0	1
	C	280	1	0

Vehicle Mix

Heavy Vehicle Percentages

		To		
		A	B	C
From	A	0	95	5
	B	95	0	95
	C	0	95	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max 95th percentile Queue (PCU)	Max LOS
B-AC	0.03	16.77	0.1	0.9	C
C-AB	0.00	7.10	0.0	0.7	A
C-A					
A-B					
A-C					

Main Results for each time segment

00:00 - 00:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	462	0.018	8	0.0	15.462	C
C-AB	1	790	0.001	1	0.0	7.099	A
C-A	211			211			
A-B	8			8			
A-C	151			151			

00:15 - 00:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	10	449	0.022	10	0.0	15.990	C
C-AB	1	809	0.002	1	0.0	6.804	A
C-A	251			251			
A-B	9			9			
A-C	180			180			

00:30 - 00:45

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	12	431	0.028	12	0.1	16.768	C
C-AB	2	835	0.002	2	0.0	6.338	A
C-A	308			308			
A-B	11			11			
A-C	220			220			

00:45 - 01:00

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	12	431	0.028	12	0.1	16.772	C
C-AB	2	835	0.002	2	0.0	6.230	A
C-A	308			308			
A-B	11			11			
A-C	220			220			

01:00 - 01:15

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	10	449	0.022	10	0.0	15.996	C
C-AB	1	809	0.002	1	0.0	6.545	A
C-A	251			251			
A-B	9			9			
A-C	180			180			

01:15 - 01:30

Stream	Total Demand (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-AC	8	462	0.018	8	0.0	15.476	C
C-AB	1	790	0.001	1	0.0	6.958	A
C-A	211			211			
A-B	8			8			
A-C	151			151			

Queue Variation Results for each time segment

00:00 - 00:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.03	0.00	0.00	0.03	0.03			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

00:15 - 00:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.04	0.49	0.88	0.93			N/A	N/A
C-AB	0.00	0.00	0.38	0.68	0.71			N/A	N/A

00:30 - 00:45

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

00:45 - 01:00

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.06	0.00	0.00	0.06	0.06			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

01:00 - 01:15

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A

01:15 - 01:30

Stream	Mean (PCU)	Q05 (PCU)	Q50 (PCU)	Q90 (PCU)	Q95 (PCU)	Percentile message	Marker message	Probability of reaching or exceeding marker	Probability of exactly reaching marker
B-AC	0.04	0.00	0.00	0.04	0.04			N/A	N/A
C-AB	0.00	0.00	0.00	0.00	0.00			N/A	N/A