Appendix 28-2:
Road Safety Audit

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

A TETRA TECH COMPANY

JERA NEX BP

Energy for generations

ORIEL WIND FARM PROJECT:
N33 ONSHORE CABLE INSTALLATION

Stage 1 Road Safety Audit

MDR1520CRp0005
Stage 1 Road Safety Audit
S4.P01
14 Apr 2025

rpsgroup.com

Contents

Appendices

1 INTRODUCTION

This Stage 1 Road Safety Audit report was prepared in response to a commission from Oriel Windfarm Limited for the N33 section of the Oriel Windfarm Project, which involves trenching and cabling installation works along the verge of the existing N33 National Primary route, and the construction of a substation just off the N33 east of Ardee, County Louth.

1.1 Audit Team Members

The Road Safety Audit team consists of:

Team Leader: **Shane Fanning** BA Civil Eng, BAI, BEng, CEng MIEI, Cert Comp RSA

RPS Consulting Engineers Ltd.

TII Auditor Approval Ref: SF 259694

Team Member: **Junru Ling** ME BE MIEI

RPS Consulting Engineers Ltd.

TII Auditor Approval Ref: JL 655873

1.2 Audit Information

The information supplied for this audit is listed in **Appendix A**. The information provided was considered adequate for the purposes of carrying out the road safety audit as requested.

The Road Safety Audit comprised of an examination of the site by the audit team members in daylight on 30th Jan 2025. The weather on the day of the site visit was dry, and road surfaces were predominantly dry with frost patches at certain locations. The traffic conditions on site were considered light.

This Stage 1 Road Safety Audit has been carried out in accordance with the requirements of TII Publication GE-STY-01024 December 2017 - Road Safety Audits, contained in the Safety (STY) stream of the General (GE) activities pillar of the Transport Infrastructure Ireland (TII) Publications.

A Road Safety Audit Feedback Form is attached in **Appendix B** to this report which lists the problems identified and this form requires completion by the Design Team Leader. If any of the recommendations within this safety audit report are not accepted, a written response is required, stating reasons for non-acceptance. Comments (if any) made within the report under the heading of Observation are intended to be for information only. Written responses to Observations are not required.

No previous RSAs were carried out on the scheme.

2 SCHEME DETAILS

2.1 Background to the Project

The Oriel Wind Farm Project will comprise of onshore and offshore infrastructure and includes 25 offshore wind turbines, a 16 km offshore cable, and 20.1 km of underground onshore cables (three) which will be installed in the same trench and buried for the entirety of this length, and connect to an onshore substation located just off the N33.

2.2 Location and Description of Site

The location of the overall scheme is shown below.

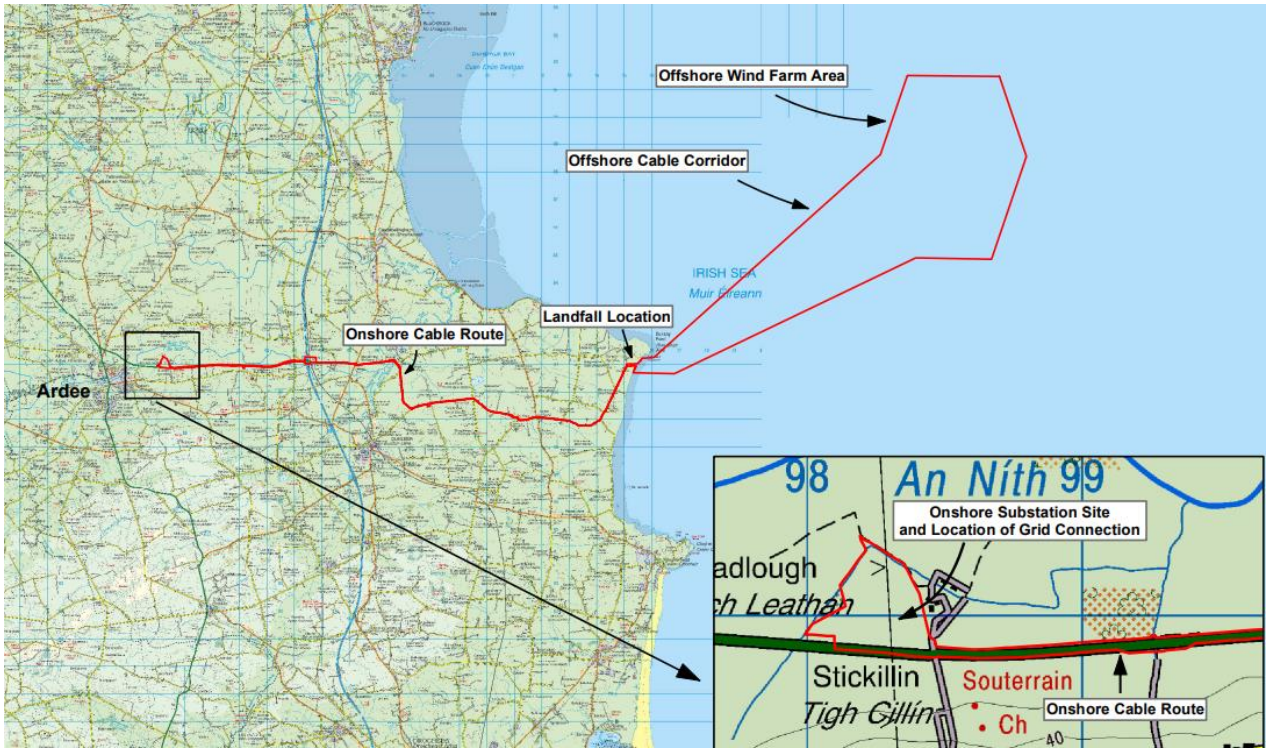


Figure 2.1 – Location Map

The section of the N33 (which is the subject of this RSA) affected by the trenching and cabling works, and which will serve the access to the new substation, runs from its junction with the M1 (Junction 14, Charleville Interchange) to the townland of Stickillin, as shown below in Figure 2.2.

Figure 2.2 – N33 Section Map

It is noted that the proposed scheme does not involve any permanent change to the existing N33 alignment or its cross section. The trenching and cabling installation works will take place in the existing verge. Any road furniture affected by these works will be repaired or replaced on a like for like basis. The existing access being used for the proposed substation will be improved.

2.3 Existing Context

The trenching and cabling installation works will be within the existing road boundary of the N33, and specifically within the northern verge. The N33 is a wide single carriageway national primary road with a posted speed limit of 100km/h. The N33 has vegetated verges with semi-mature hedgerow, which also contain road furniture including (in places) lighting columns, vehicle restraint systems, traffic signs, bridge parapets, etc.

The new substation will utilise an existing access which currently serves an agricultural premises. This access lane will be improved as part of the works.

2.4 Proposed Scheme / Scope of Works

The following is a brief summary of the proposed works along the N33:

Cabling and Trenching

- This section of cable route runs from the onshore substation to Joint Bay No. 8 and will involve trenching, ducting, and joint bay installation approximately 4.9km linearly from west to east along the N33.
- It is proposed to keep two lanes open during the works with one hard shoulder closure and partial lane closure.
- Two-way traffic flow will be maintained in both directions.
- Temporary Traffic Management will move linearly along the road with the works.
- No traffic passing bays are proposed for this road section.
- There are two proposed underground directional drilled (HDD) crossings: one under the River Dee crossing on the N33, and one under the existing M1 mainline, north-facing ramps, and the existing railway crossing.
- The River Dee crossing will be completed offline with an advisory diversion route for a section of the L-2215 Local Road adjacent to the N33.
- The M1/railway crossing is offline and no advisory road diversions are required.
- There is also one proposed fibre communications crossing perpendicular to the N33. It is anticipated that the trenching and ducting works will be carried out using two-way temporary traffic management, subject to temporary traffic management design by the contractor.
- It is anticipated that trenching, ducting, and joint bay installation along the 4.9km section of the N33 will take approximately 9 to 12 months – see Figure 2.3. The first 3 months of disruption will be as a result of the trenching, ducting and joint bay installation of Joint Bay No. 1 to Joint Bay No. 8. During this time the work related to the 2 no. HDD locations will also be completed. The remaining 6 months of activities will involve cable pulling, cable jointing, backfilling and reinstatement of Joint Bays.

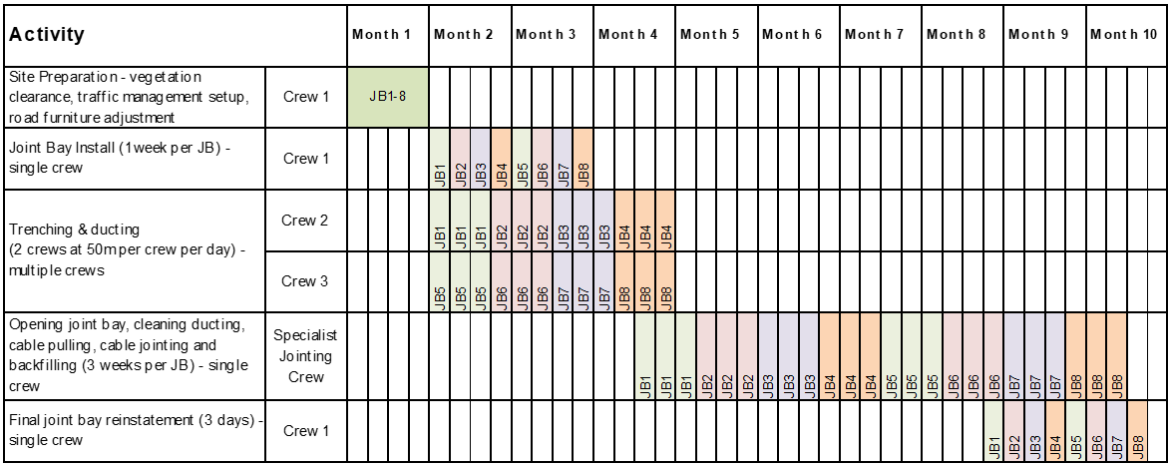


Figure 2.3 – N33 Construction Programme

Onshore Substation

- The construction of a substation will connect the Oriel Wind Farm in to the existing 'Woodland to Louth' 220 kV overhead transmission power line which traverses the site.

- The onshore substation will consist of three compounds and common areas. Compound 1 is the onshore transmission connection which is contained in a two storey GIS building; Compound 2 is for the offshore transmission system which contains single storey control and statcom buildings and associated infrastructure (switch gear, transformers etc.) and there is an entrance compound (Compound 3) which contains a telecommunications building and standby diesel generator. The existing pylon will be replaced with two loop in pylons for the connection to the existing transmission grid.
- The existing entrance and access lane serving the substation site from the N33 will be reconfigured, including widening the existing entrance and re-grading the existing lane to accommodate deliveries.
- Hedge trimming will be carried out to accommodate required visibility splays.

3 TRAFFIC & COLLISION INFORMATION

3.1 Traffic Data

The following summarises the traffic data, including forecasted vehicle movements arising from construction activities.

Table 3-1 – Extract from the scheme's CTMP: Impact of the significance of the effect due to additional construction vehicles on existing traffic volumes

Road Section	Existing AADT (%HV)	Potential Daily Construction Movements	AADT during works (%HV)
N33	13,061 (5.8%)	202	13,131 (6.2%)

Table 3-2 – Traffic Data Counts (from https://trafficdata.tii.ie)

Location	TII TMU N33 000.0 E (On the N33 between Ardee and M01, Richardstown, Co. Louth)	
Year	*AADT*	*% HGV*
2024	13,941	7.5%

Table 3-3 – Advisory Diversion Routes for each Road Section

Road Section	Joint Bay	Diversion Route	Advisory Diversion Route Length (approx..)	Approximate time and activities
N33	JB No. 1 – 8	Diversion 1: L-2215 Diversion via L-6246 and L-6227	4.4km	3 months – River Dee Crossing

3.2 Collision History

Collision information presented below was sourced from the Project's Traffic and Transport Assessment Report. No collision clusters were identified along the onshore cable route on the N33.

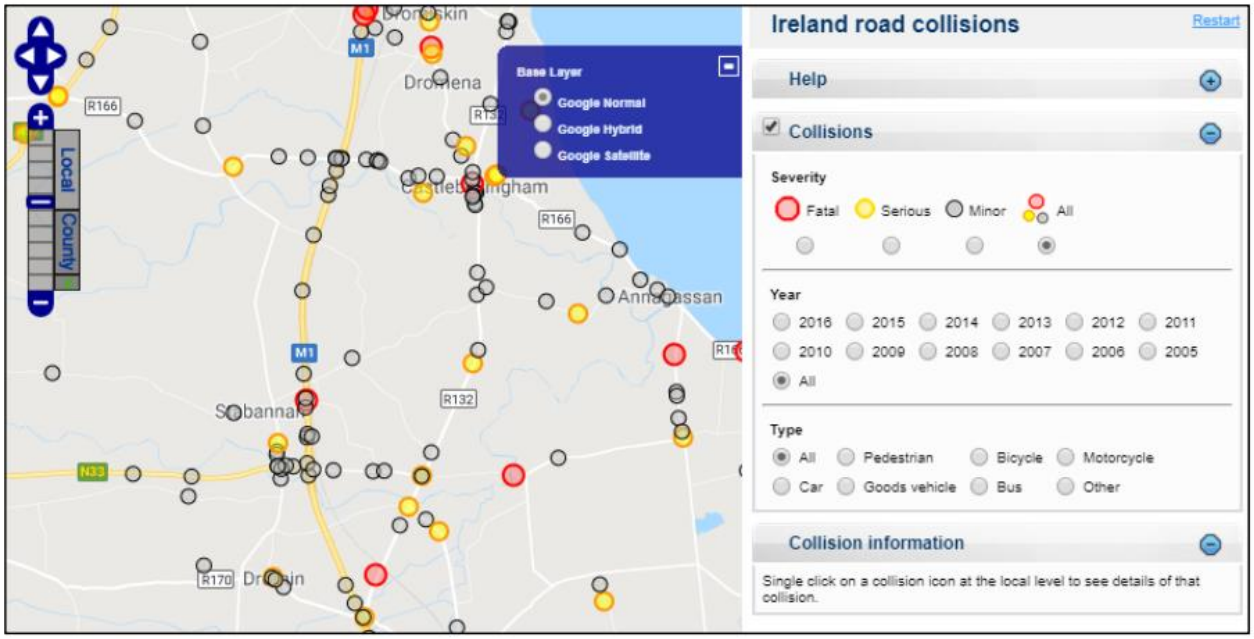


Figure 3.1 – Collision Data (from Figure 28-3 of the project's TTA)

4 ITEMS ARISING FROM STAGE 1 ROAD SAFETY AUDIT

4.1 Problem 4.1

Location: Proposed access to the proposed M1/Railway HDD Exit Pit compound

Summary: Visibility of vehicular traffic exiting the M1 Junction 14.

The proposed site entrance to the western HDD compound is located approximately 150m west of the existing roundabout. It is unclear if this site entrance is permanently required for maintenance works. The lack of visibility of vehicles exiting the roundabout at speed may lead to an increased risk of side-on or rear-end collisions with maintenance vehicles exiting and turning right onto the N33, particularly larger slow moving vehicles exiting right.

Recommendation:

It is recommended an assessment of visibility to be carried out for this site entrance, and that method statements should be employed for maintenance vehicles to restrict them from turning right onto the N33, but instead turn out left and use the M1 rotary junction roundabout.

4.2 Problem 4.2

Location: Scheme wide

Summary: Restricted Visibility of existing farm entrances

Some of the existing farm entrances along the N33 appeared to have restricted visibility. If these accesses are to be used for construction or maintenance of the cable routes, there is a risk of side-on or rear-end collisions between N33 traffic and construction vehicles exiting these assesses.

Recommendation:

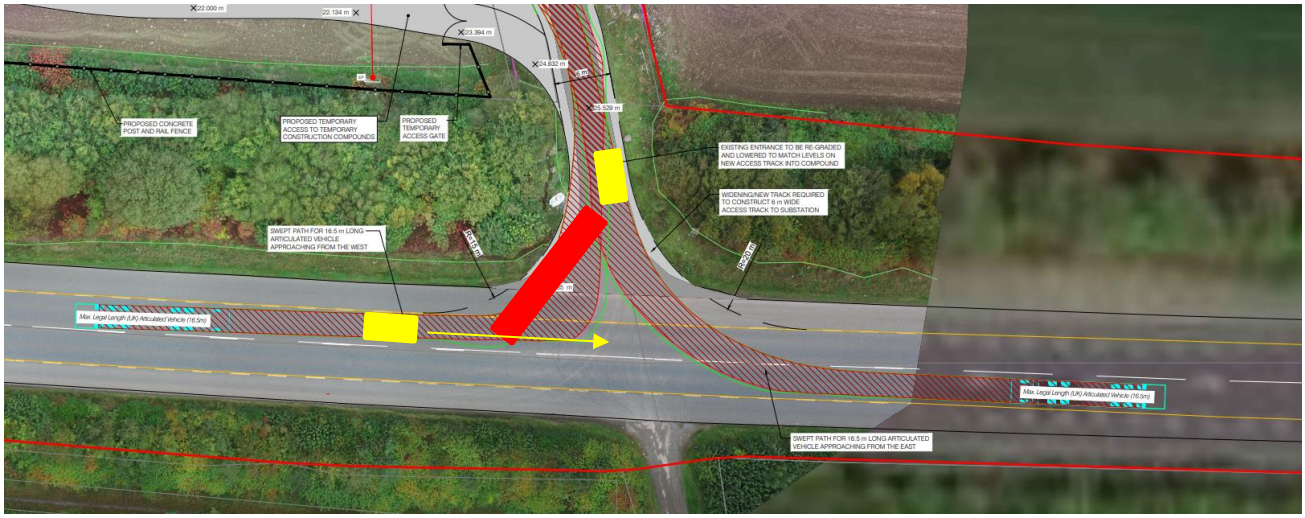
It is recommended an assessment of visibility to be carried out for these site entrances if construction and maintenance access is required.

4.3 Problem 4.3

Location: Proposed Entrance into the substation

Summary: Articulated HGV entering the substation partially blocking the eastbound lane of N33

At the proposed site entrance at the substation, the proposed widened track appears to be of insufficient width to accommodate two-way vehicular movements. In the situation that a HGV entering the site encounters the oncoming traffic exiting the farm/the substation, the HGV may be partially blocking the N33 eastbound carriageway lane to yield to oncoming traffic. This could lead to rear-end collision between N33 eastbound traffic and the yielding HGV, or head collision if traffic swerves to avoid the yielding HGV and crosses into the opposing N33 lane.



Recommendation:

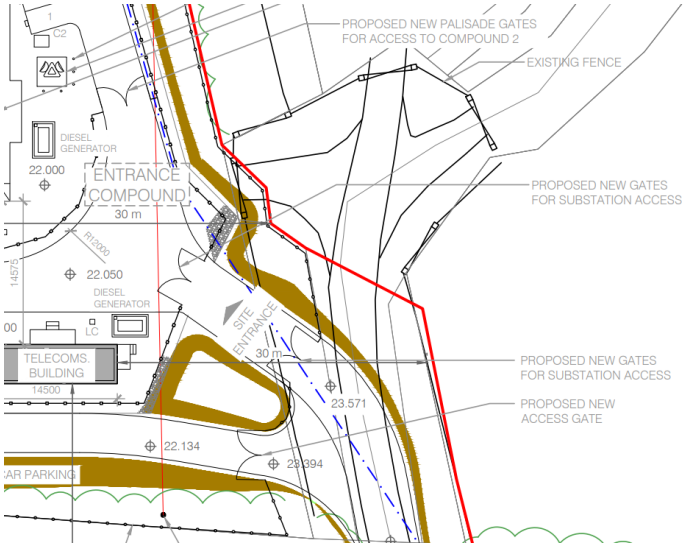
The access arrangements should be designed so as to provide adequate facilities to ensure that the all vehicles turning into the substation entrance will not impede in anyway, the N33 traffic.

4.4 Problem 4.4

Location: Proposed Entrance into the substation

Summary: No defined priority for existing private accesses

There appears to be multiple existing farm accesses/domestic entrance at the location where the entrance gate is being proposed for the substation. Lack of the definition of priority at this location could lead to confusion between users and lead to potential collisions.



Recommendation:

Consider measures to define priority for all users.

5 OBSERVATIONS UNDER STAGE 1 ROAD SAFETY AUDIT

5.1 Observation

Two existing farm underpasses are present along this section of N33, between proposed Joint Bay1 an Joint Bay 2 and between proposed Joint Bay 3 and Joint 4. Existing safety barriers are provided along the back of the hard shoulder and need to be retained at all times.

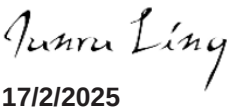
5.2 Observation

Existing chamber with chamber lid higher than the verge is present at the proposed widened access track to the substation.

6 AUDIT STATEMENT

We certify that we have examined the drawings and other information listed in Appendix A and visited the site during the day of the 30th January 2025. The examination has been carried out with the sole purpose of identifying any features of the scheme that could be removed or modified in order to improve road safety.

The problems identified have been noted in this report together with suggestions for road safety improvement, which we recommend should be studied for improvement. The road safety audit has been conducted by the persons named below who have no involvements in the design of the scheme.

Shane Fanning	**Signed:**	
(Audit Team Leader)	**Date:**	**17/2/25**
Junru Ling	**Signed:**	
(Audit Team Member)	**Date:**	**17/2/2025**

Appendix A

List of Drawings/Documents Audited

Table A.1 – List of Drawings / Documents Audited

- MDR1520CRP0003 S3.P01 - Stage 1 RSA Brief
- B39 PE605-D027-073-002 JOINT BAY GENERAL ARRANGEMENT
- B40 PE605-D027-071-002 COMMUNICATIONS CHAMBER
- B41 PE605-D027-072-002 LINK BOX CHAMBER
- B42 PE605-D027-083-001 TRENCH SECTION 700MM WIDE
- B43 PE605-D027-111-001 TRENCH SECTION 1.5M WIDE
- C01 PE605-D027-038-003 ONSHORE SUBSTATION SITE LOCATION
- C02 PE605-D027-038-028 ONSHORE-SUBSTN EXISTING SITE LAYOUT
- C04 PE605-D027-038-004 ONSHORE SUBSTN PROPOSED SITE LAYOUT
- C06 PE605-D027-038-005 ONSHORE SUBSTN SECTIONS SHEET 1 OF 2
- C07 PE605-D027-038-006 ONSHORE SUBSTN SECTIONS SHEET 2 OF 2
- C25 PE605-D027-038-023 ONSHORE SUBSTN LIGHTS ROAD AND TRACK
- C26 PE605-D027-038-018 ONSHORE SUBSTN ENTRANCE MODIFICATIONS
- C27 PE605-D027-038-025 ONSHORE SUBSTN TEMPORARY COMPOUNDS
- MDR1520c-RPS-AP-XX-D-Z-0002.S0.P01 Road Safety Audit - Study Area
- MDR1520c-RPS-AP-XX-D-Z-0003.S0.P02 N33 Revised Cable Route
- MDR1520c-RPS-AP-XX-D-Z-0004.S0.P02 N33 Revised Cable Route - Zoom

Appendix B

Audit Feedback Form

Appendix B - Road Safety Audit Feedback Form

(From online TII RSAAS)

Feedback Form

N33 County Louth, Oriel Wind Farm Project: Onshore Cable Installation: Stage 1

Paragraph no. in safety audit report	Problem accepted	Recommended measure accepted	Alternative measures	Alternative measures accepted
4.1	No	No	This access will be under TTM during the construction period. It is not required for maintenance works and it will be returned to its existing function as an agricultural field access. Post-construction yearly or 3-yearly monitoring visits (by a 2-man crew on foot) will be required to Joint Bay 8.	Yes
4.2	Yes	Yes	4.2 Yes Yes Visibility assessments have been carried out for all N33 access points. It is noted that during construction all movements in and out of the side will be under full TTM and will involve left-in left-out restrictions. It is also noted that these existing field entrances are intended to be used for construction vehicles to access the works from the hard shoulder (which will be part of the protected works site) rather than access the N33.	Yes
4.3	Yes	No	HGVs will only use this access during the construction stage, during which TTM will be in place to ensure movements in/out do not stop on or block the N33. It is not considered necessary to cater for 2-way traffic in the permanent operational situation due to low volumes of movements and small sized vehicles.	Yes
4.4	Yes	Yes	Layout will be amended to give priority to the existing agricultural business.	Yes

Signed off by designer (Doyle. Robert (Engineering and Major Projects))
Signed off by team leader (Fanning, Shane)
Signed off by client (Richard Church)