



## **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  
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**June 2023**

**Civil**  
**Structural**  
**Traffic**

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## Document Control

<b>Revision</b>	R0	R0								
<b>Purpose of Issue:</b> P=Preliminary PG=Progress C=Comment I=Information PL=Planning T=Tender CN=Construction	C	PL								
<b>Date:</b>	07 10 22	20 06 23								
<b>Originator:</b>	SS	SS								
<b>Checked By:</b>	PJG	PJG								
<b>Approved By:</b>	SS	SS								

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## 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 24<sup>th</sup> June – 6<sup>th</sup> 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 24<sup>th</sup> 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-existing 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)

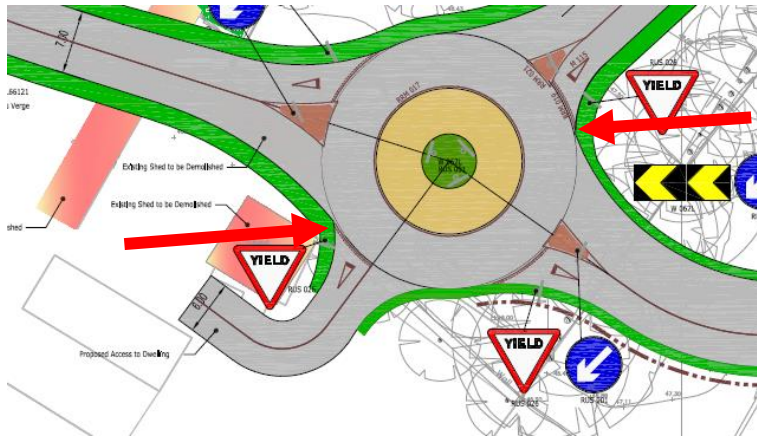
**Problem:** There are only 3 sets of chevron/Turn Left signs proposed for the roundabout central island, but the roundabout has 4 entry arms. The signage should face each entry arm.

**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

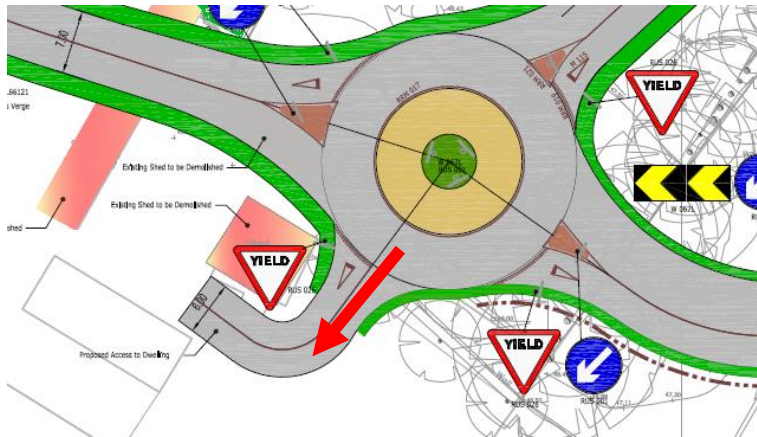
**Problem:** Incorrect road markings are indicated for the perimeter of the central island. The RRM 017 is a 200mm wide solid line. Road markings generally have less skid resistance than the road surfacing material.

**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.



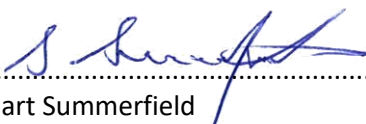
**Hazard:** Vehicles entering this arm may not expect the very tight bend immediately within the property lands. Vehicle loss of control may result.

**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 *7<sup>th</sup> October 2022* .....

Signed  .....  
PJ Gallagher  
Audit Team Member

Date *7<sup>th</sup> 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

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**From:** TII Systems Notification <[noreply@tii.systems](mailto:noreply@tii.systems)>  
**Sent:** Tuesday 12 July 2022 15:53  
**To:** [smolloy@jodireland.com](mailto:smolloy@jodireland.com)  
**Cc:** [roadsafetyaudits@nra.ie](mailto:roadsafetyaudits@nra.ie); [Fiona.Bohane@corkrdo.ie](mailto:Fiona.Bohane@corkrdo.ie); [Alastair.DeBeer@TII.ie](mailto:Alastair.DeBeer@TII.ie); [Bryan.kennedy@TII.ie](mailto:Bryan.kennedy@TII.ie); [LCurtis@Kerrycoco.ie](mailto:LCurtis@Kerrycoco.ie); [Kevin.O'Flynn@tii.ie](mailto:Kevin.O'Flynn@tii.ie); [Frank.Healy@tii.ie](mailto:Frank.Healy@tii.ie); Stuart Summerfield | CST Group <[ssummerfield@cstgroup.ie](mailto:ssummerfield@cstgroup.ie)>; [pjgallagher20@hotmail.com](mailto: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](mailto: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	31	
4.2.1	Yes	Yes		
4.2.2	Yes	Yes		

Signed:

*pp*   
Searn 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:

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|RO

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	2,	
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: 21/06/2023  
 For Mercury Renewables