

# **PINNACLE**

CONSULTING ENGINEERS

**ØRSTED, OATFIELD  
WINDFARM, Co. CLARE.**

**PIN-RP-00-C001-V7**

**TURBINE DELIVERY ROUTE**

- **BUILDING INFORMATION MODELLING (BIM)**
- **CIVIL DESIGN & ENGINEERING**
- **DUE DILIGENCE**
- **OFFSHORE & ONSHORE ENGINEERING**
- **PRE-DEVELOPMENT**
- **STRUCTURAL ENGINEERING**
- **TRANSPORTATION & HIGHWAYS**

## DOCUMENT CONTROL SHEET

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Approved by	James Mayer	Director	15/12/2023

## REVISIONS

Revision By	Date	Context
V1	25/09/23	Draft
V2	16/10/23	Updated draft
V3	24/10/23	Updated TDR Route Selection

Pinnacle Engineering Consultants

Turbine Delivery Route & Grid Connection Route Assessment

Version No – 7

V4	27/10/23	Grid Connection Route included
V5	02/11/23	Blade /Nacelle Transport Assessment Added
V6	24/11/23	Revised TDR
V7	15/12/2023	Issued for planning

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Turbine Delivery Route & Grid Connection Route Assessment

Version No – 7

## Table of Contents

---

1	INTRODUCTION.....	<b>3</b>
1.1	INTRODUCTION .....	3
1.2	SITE LOCATION .....	3
1.3	PORT SELECTION CRITERIA.....	3
1.4	SCOPE OF WORKS.....	6
2	TURBINE DELIVERY ROUTE ASSESSMENT .....	<b>7</b>
2.1	INTRODUCTION .....	7
2.2	EXISTING TDR ROUTE .....	7
2.3.1	ROUTE OVERVIEW.....	8
2.3.2	ISSUES ENCOUNTERED.....	9
2.4	TURBINE DELIVERY ROUTE – OPTION 1A: FOYNES – LIMERICK TUNNEL – BALLINPHUNTA - SITE .....	10
2.4.1	ISSUES ENCOUNTERED.....	11
2.5	TURBINE DELIVERY ROUTE – OPTION 2: FOYNES – N18 – M7 – GRANGEWOOD – DALY CROSS – O'BRIENS BRIDGE – CLOONLARA -SITE .....	13
2.5.1	ROUTE OVERVIEW.....	13
2.5.2	ISSUES ENCOUNTERED.....	13
2.6	TURBINE DELIVERY ROUTE – OPTION 3: FOYNES – N18 – M7 – GRANGEWOOD – COOLDERRY– CLOONLARA - BALLINA – SITE.....	15
2.6.1	ROUTE OVERVIEW.....	15
2.6.2	ISSUES ENCOUNTERED.....	16
2.7	TURBINE DELIVERY ROUTE – OPTION 3A: FOYNES – N18 – M7 – GRANGEWOOD – COOLDERRY– KILLALOE BYPASS- CLOONLARA -- SITE .....	17
2.7.1	ROUTE OVERVIEW.....	17
2.7.2	ISSUES ENCOUNTERED.....	18
2.8	ROUTE SELECTION .....	23
2.9	RAG RATING.....	23
2.10	NEXT STEPS.....	23
2.11	POST PLANNING REVIEW .....	24
3	CONCLUSION .....	<b>26</b>
3.1	INTRODUCTION .....	26
	APPENDIX A TURBINE DELIVERY ROUTE – OPTIONS.....	<b>27</b>

APPENDIX B TURBINE DELIVERY ROUTE – OPTION 3A: FOYNES – N18 – M7 –  
GRANGEWOOD – COOLDERRY– KILLALOE BYPASS –CLOONLARA -- SITE  
SWEPT PATH ANALYSIS .....**28**

APPENDIX C SAMPLE TEMPORARY TRAFFIC MANAGEMENT PLANS .....**30**

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## 1 INTRODUCTION

### 1.1 Introduction

The proposed Oatfield Wind Farm, Co. Clare will consist of up to 11 no. Wind Turbines.

### 1.2 Site Location

The site is in the townland of Oatfield, Co. Clare, Republic of Ireland.

The proposed site is illustrated in the figure below.



Figure 1 Site Location

### 1.3 Port Selection Criteria

The location of Irish ports is shown in the figure below.

To assess the most suitable port for the Turbine Delivery Route(s) the following filtering criteria was used:

1. Capable of landing and storing turbine equipment
2. Access to local M-Roads and N-Road
3. Close to the site



Figure 2 Irish Port Locations

The port of Foynes was chosen for the following reason(s):

1. Closest port to the development site that can land.
2. Store turbine equipment.
3. Direct access to the N69, N18, M8



## 1.4 Scope of Works

Pinnacle Consulting Engineers have been commissioned to provide a study on the feasibility of transporting components for this project from Port of Foynes along the following routes:

1. Option 1: Foynes – Limerick Tunnel – Six Mile Bridge - Site
2. Option 1A: Foynes – Limerick Tunnel – Ballinphunta - Site
3. Option 2: Foynes – N18 – M7 – Grangewood – Daly Cross – O’Briens Bridge – Cloonlara - Site
4. Option 3: Foynes – N18 – M7 – Grangewood – Coolderry– Cloonlara - Ballina – Site
5. Option 3a: Foynes – N18 – M7 – Grangewood – Coolderry– Cloonlara – Killaloe Bypass - Site

## 2 TURBINE DELIVERY ROUTE ASSESSMENT

### 2.1 Introduction

This section provides a study on the viability of delivering wind farm components from the Foynes to the development site.

Pinch points were identified using a combination of desktop survey and visual surveys of the shortlisted routes.

This report does not identify items such as telephone lines, hedge cutting, street furniture, etc required to achieve the desired envelope/clearance that will be required during transportation. This will be reviewed when the delivery contractor is appointed.

It will be the responsibility of the appointed delivery contractor to verify the conclusions of this report prior to the transport of components. It is recommended that a test transport is carried out in advance.

### 2.2 Existing TDR Route

It is known that the Port of Foynes has been used to by other operators for the importation, storage and transport of windfarm equipment via the N69.

This is evident by the fact that some of the measures required to accommodate the transport of windfarm equipment, such as temporary surfaces through roundabouts and traffic signs in retention sockets, is current in place along the N69 towards Limerick.

The specification of the windfarm equipment transported to Foynes along the N69 is not known but it is assumed that this route is proven. However, any issues encountered along this portion of the route have been recorded to allow for further consideration based on feedback from the Port of Foynes and the final equipment specification for this project.



Figure 3 Roundabout with temporary surface for windfarm equipment transport along N69  
For ease of reference, the portion of the route from the Port of Foynes to Limerick Tunnel is highlighted in orange in the sections below.

## 2.3 Turbine Delivery Route – Option 1: Foynes – Limerick Tunnel – Six Mile Bridge - Site

### 2.3.1 Route Overview

An overview of Turbine Delivery Route – Option 1 is illustrated in the figure below. For further detail, refer to Pinnacle Drawing No. PIN-XX-DR-D-101-S1-P01.



Figure 4 Turbine Delivery Route - Option 1 (Extract from PIN-XX-DR-D-101-S1-P01)

### 2.3.2 Issues Encountered

The route from the Port of Foynes to the site via Sixmilebridge is not suitable for the following reasons:

1. There are a series of rail bridges on approach to Sixmilebridge. These bridges have a noted clearance of between. 3.48m.
2. The horizontal alignment on approach to these bridges is not suitable for the transport of turbine equipment.
3. The route from Sixmilebridge towards site may not be suitable for Turbine Delivery due to low quality horizontal and vertical alignments. To be confirmed by specialist haulage contractor.



Figure 5 Bridge on approach to Sixmilebridge

As a result, this route is not considered viable for the transport of windfarm equipment from the Port of Foynes.

#### 2.4 Turbine Delivery Route – Option 1A: Foynes – Limerick Tunnel – Ballinphunta - Site

An overview of Turbine Delivery Route – Option 1a is illustrated in the figure below. For further detail, refer to Pinnacle Drawing No. PIN-XX-DR-D-102-S1-P01.



Figure 6 Turbine Delivery Route - Option 1a (Extract from PIN-XX-DR-D-102-S1-P01)

#### 2.4.1 Issues Encountered

The turn from the R471 at Oatfield towards the site may not be suitable for Turbine Delivery due to low quality horizontal and vertical alignments.



Figure 7 Turn from R471 (west) towards site

With limited opportunity for a blade lifter to be used in advance of the site, it is deemed that this route is not feasible for the transport of turbines or turbines equipment.

## 2.5 Turbine Delivery Route – Option 2: Foynes – N18 – M7 – Grangewood – Daly Cross – O’Briens Bridge – Cloonlara – Site

### 2.5.1 Route Overview



Figure 8 Turbine Delivery Route - Option 2 (Extract from PIN-XX-DR-D-103-S1-P01)

### 2.5.2 Issues Encountered

There are a series of acute turns on approach to O’Briens Bridge that may require third party lands in order to facilitate the swept path of the turbine transport vehicle.





Figure 9 Swept Path over O'Briens Bridge

The above tracking suggests that the swept path for turbine deliver vehicles cannot be achieved without extensive engineering works to O'Briens Bridge.



Figure 10 Junction with R446 and R463

Similar issues are encountered at the junction of the R446 and the R463. When collectively considered and compared to other routes, this route is not deemed feasible for the transport of turbines and turbine equipment.

## 2.6 Turbine Delivery Route – Option 3: Foynes – N18 – M7 – Grangewood – Coolderry– Cloonlara - Ballina – Site

### 2.6.1 Route Overview

An overview of Turbine Delivery Route – Option 3 is illustrated in the figure below. For further detail, refer to Pinnacle Drawing No. PIN-XX-DR-D-104-S1-P01.



Figure 11 Turbine Delivery Route - Option 3 (Extract from PIN-XX-DR-D-104-S1-P01)

### 2.6.2 Issues Encountered

The turn from R463 to the R471 is likely to require third party lands in order to facilitate the swept path of the turbine transport vehicle. This is illustrated in the figure below.

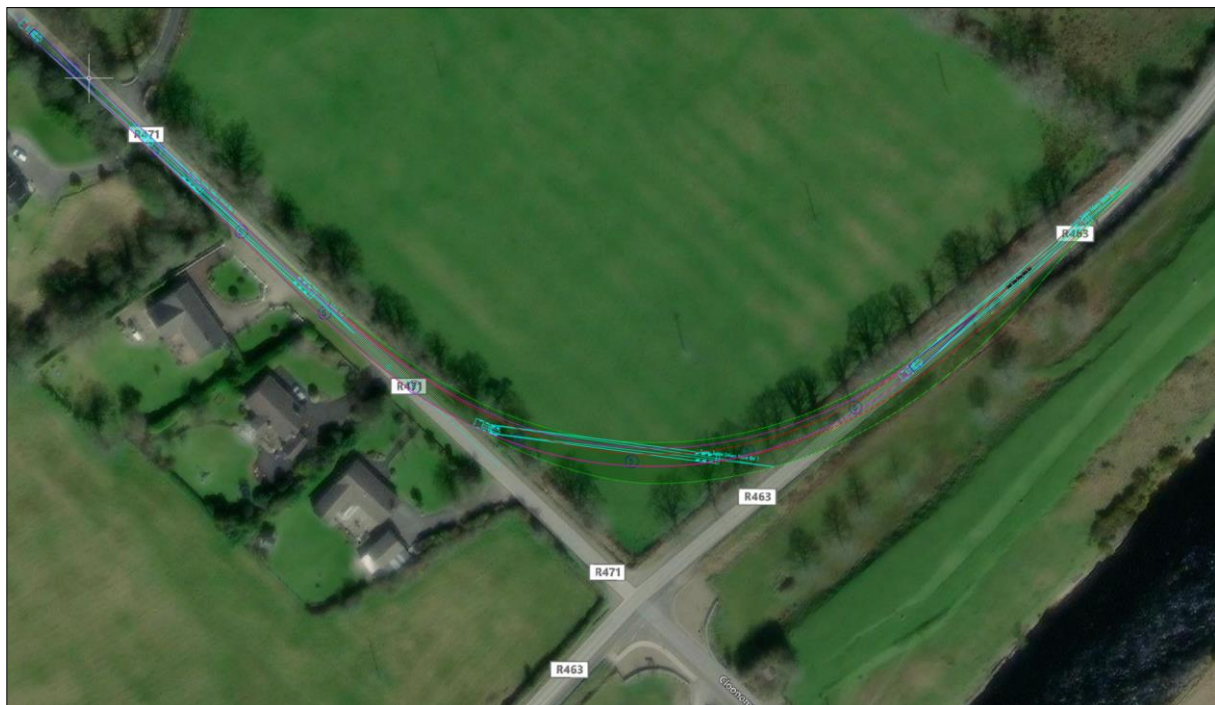


Figure 12 Sample of Acute turn at Cloonmra (Location 10)

The swept path through Killaloe (Location 16) is illustrated in the figure below. This route is not suitable for the standard turbine delivery equipment.

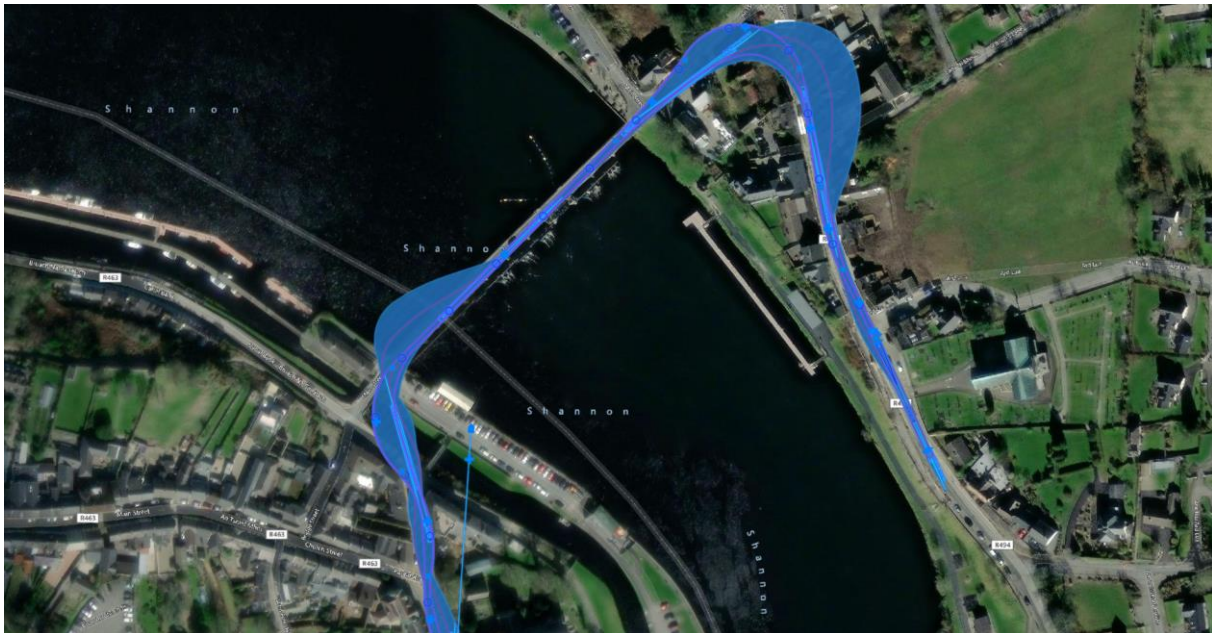


Figure 13 The route through Killaloe (Location 16)

The feasibility Turbine Delivery Route 3 is dependent on the location of the transition area for the blade lifter. S

Should the site be located in advance of these points, the route should be assessed for a blade lifter.

Additional survey is required to prove this option.

## 2.7 Turbine Delivery Route – Option 3a: Foynes – N18 – M7 – Grangewood – Coolderry– Killaloe Bypass- Cloonlara -- Site

### 2.7.1 Route Overview

An overview of Turbine Delivery Route – Option 3a is illustrated in the figure below. For further detail, refer to Pinnacle Drawing No. PIN-XX-DR-D-105-S1-P01.

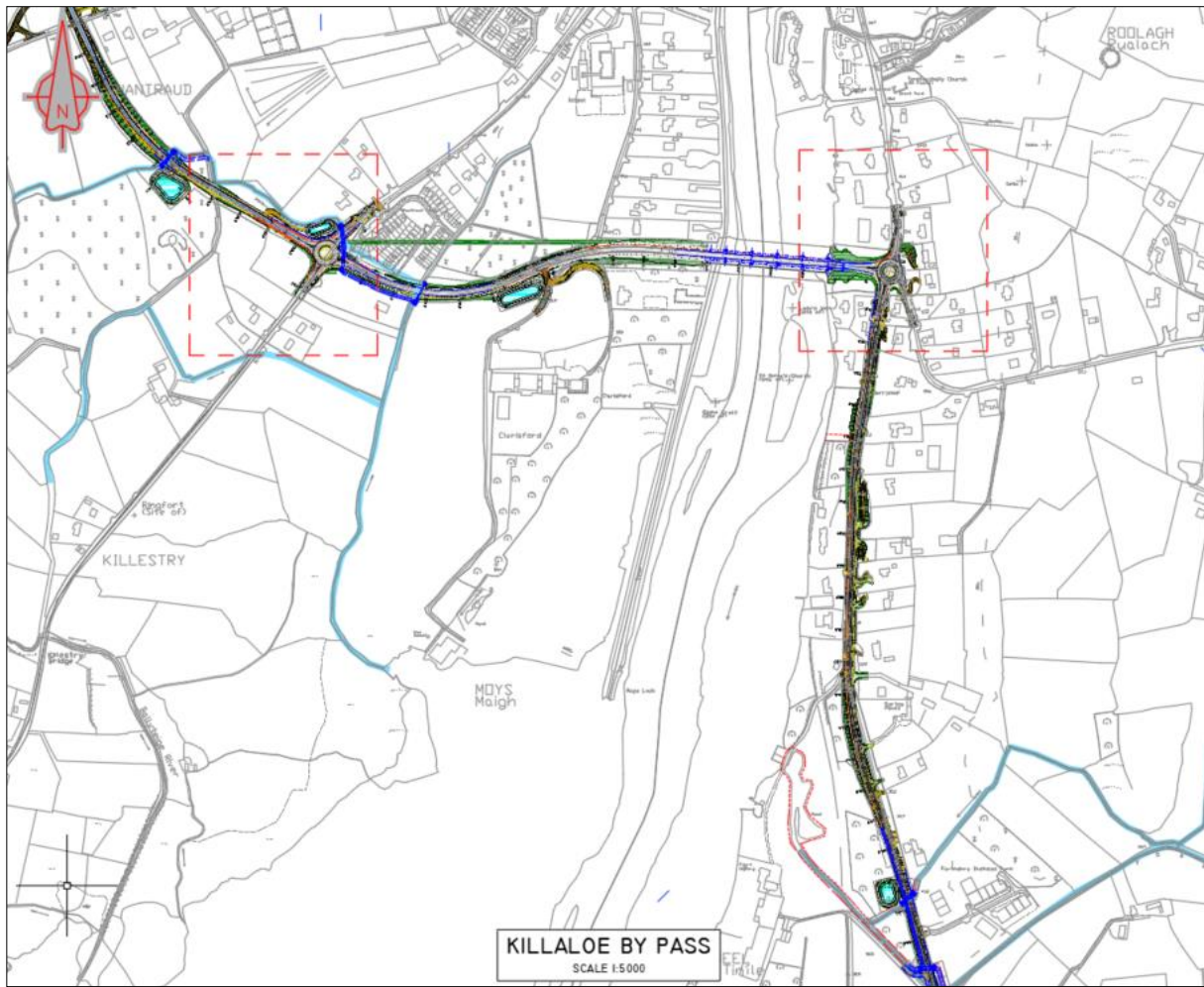


Figure 14 Turbine Delivery Route - Option 3a

### 2.7.2 Issues Encountered

Turbine Delivery Route Option 3a was assessed using the turbine equipment outlined in the table below.

Turbine Type	Output (MW)	Hub Height	Rotor Diameter	Tip Height	Ground Clearance
Nordex N149	5.7	105	149	179.5	30.5
Vestas V150	6.0	105	150	180	30
Nordex N133	4.8	110	133	176.5	43.5

Table 1 Turbine equipment Schedule

More details on turbine and blade lifting vehicles can be found in Section 29 and 2.11 of this report.

In addition to issues encountered in Route Option 3, the following issues were identified for Route Option 3a.

Turbine Delivery Route 3a				
Location	Drawing No.	Co-Ordinates	Issue	Next Steps
Site No. 1	PIN-XX-DR-D-121-S1	X = 554557.654 Y = 655159.948	Unable to confirm route around roundabout.	Truck/trailer to over track roundabout. Temporary hard standing area required. Grasscrete or similar Approved system to be used.
Site No. 2	PIN-XX-DR-D-122-S1	X = 572341.723 Y = 667439.739	Unable To Confirm Route Around Roundabout.	Truck/trailer to over track roundabout. Temporary hard standing area required. Grasscrete or similar Approved system to be used.
Site No. 3	PIN-XX-DR-D-123-S1	X = 572341.723 Y = 667439.739	Unable To Confirm Route Around Roundabout.	Truck/trailer to over track roundabout. Temporary hard standing area required. Grasscrete or similar Approved system to be used.
Site No. 4	PIN-XX-DR-D-124-S1	X = 570727.931 Y = 672155.133	Unable To Confirm Route Around Roundabout.	Confirmatory survey required by turbine haulage contractor post planning. Temporary hard standing area required. Grasscrete or similar approved system to be used.

Site No. 5	PIN-XX- DR-D- 125-S1	X = 572341.723 Y = 667439.739	Unable To Confirm Route Around Roundabout.	Confirmatory survey required by turbine haulage contractor post planning.  Temporary hard standing area required.  Grasscrete or similar approved system to be used.
Site No. 6	PIN-XX- DR-D- 126-S1	X = 569432.006 Y = 671641.584	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.
Site No. 7	PIN-XX- DR-D-127- S1	X = 567864.677 Y = 669998.932	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.
Site No. 8	PIN-XX- DR-D- 128-S1	X = 567513.953 Y = 669243.307	Pinch Point In Road. Narrow Bridge Crossing	Confirmatory survey required by turbine haulage contractor post planning.  Structural Engineer to confirm bridge suitability
Site No. 9	PIN-XX- DR-D- 129-S1	X = 566724.255 Y = 667534.965	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.
Site No. 10	PIN-XX- DR-D- 130-S1	X = 564712.399 Y = 665652.421	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.
Site No. 11	PIN-XX- DR-D-131- S1	X = 564477.593 Y = 665524.412	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.

Site No. 12	PIN-XX- DR-D- 132-S1	X = 564207.663 Y = 665178.457	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.
Site No. 13	PIN-XX- DR-D- 133-S1	X = 562361.923 Y = 664080.392	Third Party Lands Required to facilitate swept path for turbine delivery..	Third party lands acquired to facilitate swept path for turbine delivery.
Site No. 14	PIN-XX- DR-D- 134-S1	X = 560901.060 Y = 665450.158	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.
Site No. 15	PIN-XX- DR-D- 135-S1	X = 559994.143 Y = 665897.110	Pinch Point In Road. Narrow Bridge Crossing	Confirmatory survey required by turbine haulage contractor post planning. Structural Engineer to confirm bridge suitability
Site No. 16	PIN-XX- DR-D- 136-S1	X = 559542.660 Y = 665829.247	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.
Site No. 17	PIN-XX- DR-D-137- S1	X = 558538.618 Y = 666113.992	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.
Site No. 18	PIN-XX- DR-D- 138-S1	X = 557909.012 Y = 666234.514	Bridge Crossing	Confirmatory survey required by turbine haulage contractor post planning. Structural Engineer to confirm bridge suitability
Site No. 19	PIN-XX- DR-D- 139-S1	X = 557909.012 Y = 666234.514	Bridge Crossing	Confirmatory survey required by turbine



				haulage contractor post planning. Structural Engineer to confirm bridge suitability
Site No. 20	PIN-XX-DR-D-140-S1	X = 554175.442 Y = 667363.392	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.
Site No. 21	PIN-XX-DR-D-41-S1	557805.716 Y = 670692.844	Pinch Point In Road.	Confirmatory survey required by turbine haulage contractor post planning.
Site No. 22	PIN-XX-DR-D-142-S1	X = 558153.868 Y = 666162.954	Bridge Crossing	Confirmatory survey required by turbine haulage contractor post planning. Structural Engineer to confirm bridge suitability
Site No. 23	PIN-XX-DR-D-143-S1	X = 555074.159 Y = 667191.220	Narrow Bridge Crossing	Confirmatory survey required by turbine haulage contractor post planning. Structural Engineer to confirm bridge suitability
Site No. 24	PIN-XX-DR-D-144-S1	X = 557532.251 Y = 666345.488	Bridge Crossing	Confirmatory survey required by turbine haulage contractor post planning. Structural Engineer to confirm bridge suitability

Table 2 Issues - Turbine Delivery Route 3a

## 2.8 Route Selection

Based on a visual survey, Route Option 3a presents the best option for transporting turbine equipment from Foynes to the development site based on the following criteria:

- Direct access from Port of Foynes to Killaloe
- Minimises the potential for third party lands.

This route optimises the balance between using appropriate road infrastructure i.e., M-roads, N-roads, etc and reducing the number of L-roads used.

The use of Turbine Delivery Route Option 3a is dependent on completion of the Killaloe By-Pass. This is expected to be finished prior to transport. At the time of writing, it is anticipated that the Killaloe By-Pass will be open in March 2025.

## 2.9 RAG Rating

The following RAG ratings have been applied to the 5 routes@

- Red – Route not feasible
- Amber – Route feasible subject to significant third-party lands alterations/location of transition area
- Green – Route feasible subject to some third-party lands' alteration

Route	Red	Amber	Green
Route Option 1	Red		
Route Option 1a	Red		
Route Option 2		Amber	
Route Option 3		Amber	
Route Option 3a			Green

Table 3 RAG Ratings

## 2.10 Next Steps

A Swept Path Analysis (SPA) should be completed on the areas identified above using Autodesk Vehicle Tracking (formally called AutoTrack) software, or similar. This analysis should be based on topographical survey of the study area.

Pinch points along the route will be identified using Swept Path Analysis

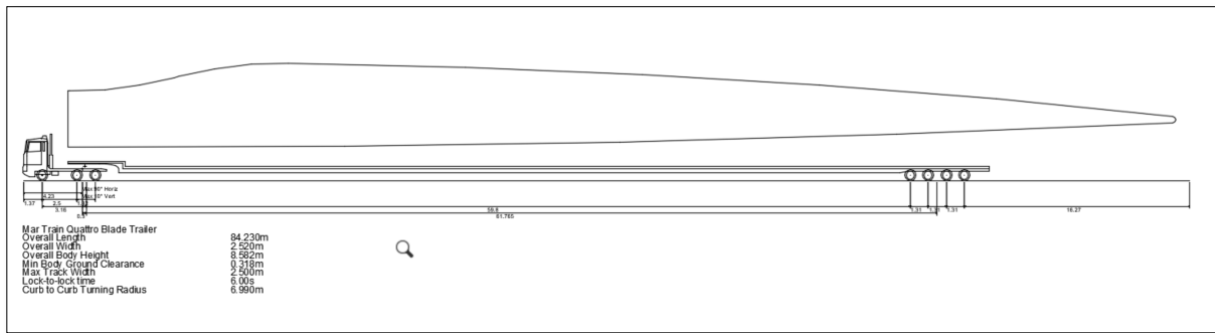


Figure 15 AutoTrack Profile – Turbine

An AutoTrack model will be developed for an 75m long blade with a 10m overhang on a bogie trailer in accessing the route from Foynes to the development site.

The type of trailer proposed for blade transportation is commonly available from turbine transport companies. The analysis is based on a Volvo FH16 8x4 + Broshuis Blade Trailer, as illustrated in Figure 18.

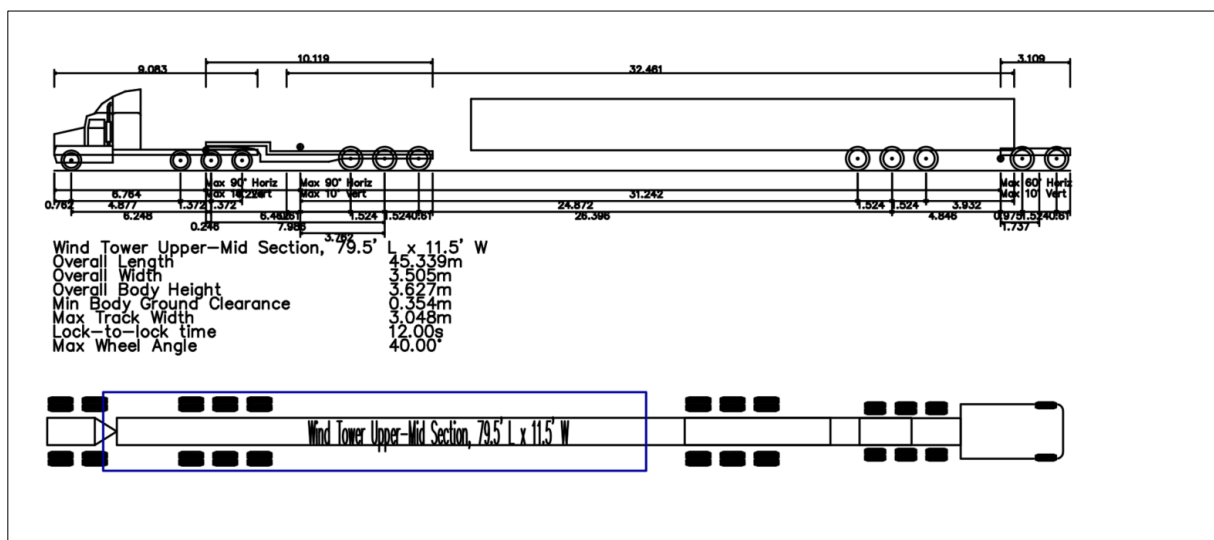


Figure 16 AutoTrack Profile – Mid Section Transporter

The trailer is set at 65m with a 10m blade overhang. The Broshuis Blade Trailer can be partially retracted when the blade is loaded, which shortens the wheelbase and achieves a better turning radius. The shorter wheelbase makes it possible to take tighter turns. The figure above shows the full length of the trailer.

The Mid-Section Transporter is based on a c. 45m long Wind Tower Upper-Mid Section Vehicle contained in the Autodesk Vehicle Tracking library.

## 2.11 Post Planning Review

Should the application receive a grant of planning detailed traffic management plans will be drawn up. Traffic management measures specific to the Turbine Delivery Route will include the following:

Identification of a delivery routes and schedules, as illustrated in Figure 13:

- Details of the alterations required to the infrastructure identified in this report and any other minor alteration identified (hedgerows etc.); and
- A Test Run to be carried out by the appointed haulage contractor to prove the route in advance of delivery of any turbine equipment.

The transportation of large components is challenging and can only be done following extensive route selection as outlined in the Turbine Delivery and Grid Connection Route Assessment. Post planning, extensive route proofing will be carried out consultation with An Garda Síochána, the local authority and the appointed haulage contractor.

## 3 CONCLUSION

### 3.1 Introduction

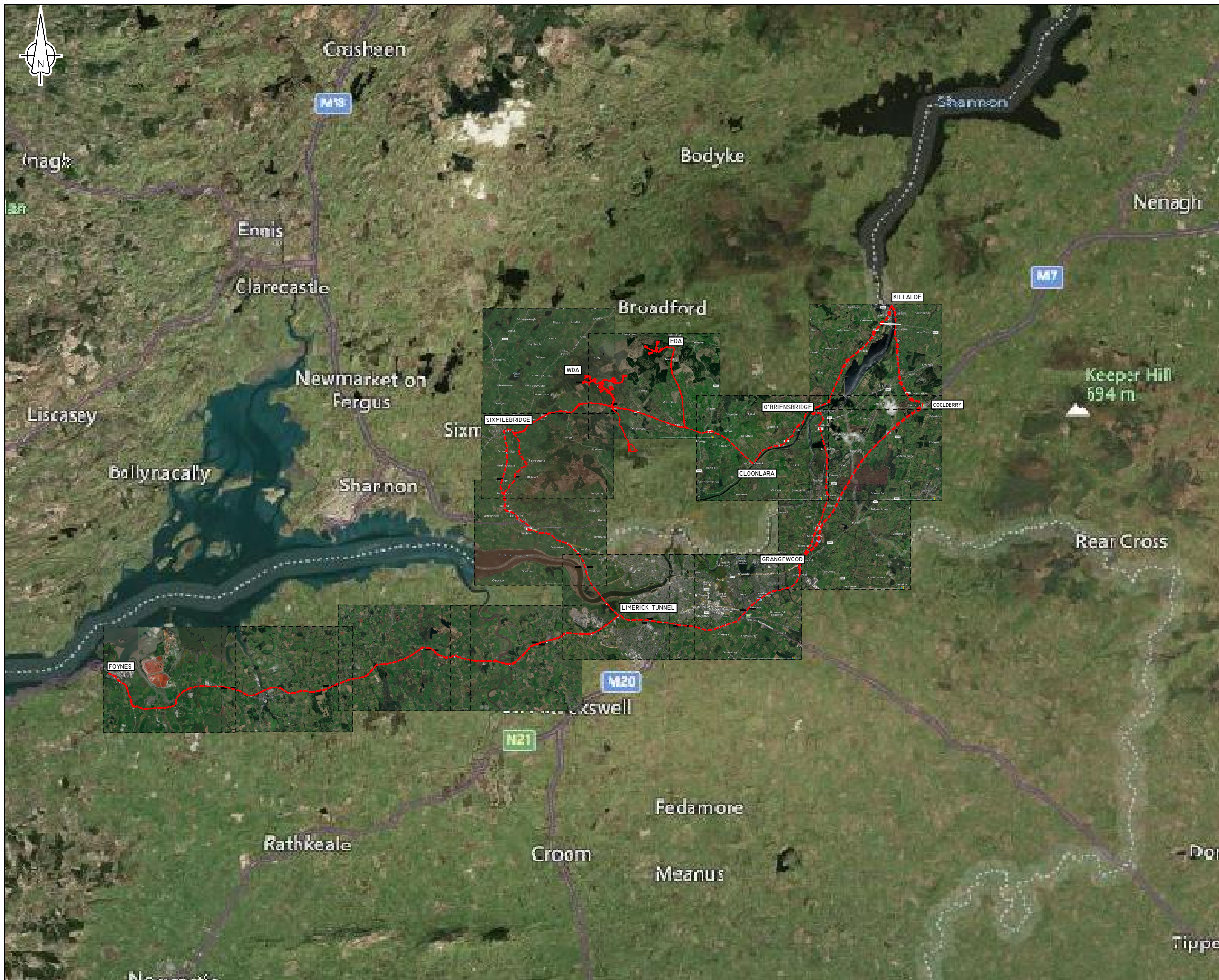
The delivery of a 75m blade to the site using Turbine Delivery Route Option 1,2, 3 or 3a is feasible with some modifications to existing boundaries and temporary widenings. At the time of writing, the preferred route is Turbine Delivery Route Option 3a.

Temporary works will be required at several locations along the proposed route(s) which will be identified as part of the detail design of the chosen Turbine Delivery Route.

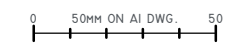
It is recommended that the following is carried out as early as possible post-consent:

- A schedule of street furniture alterations required will be compiled and formally agreed with Clare County Council, Limerick City & County Council, Transport Infrastructure Ireland (TII) and other relevant stake holders.
- Approval should be obtained from Shannon Foynes Port Company for the temporary measures required at the entrance to the port.
- Carry out a topographical survey of all pinch points to confirm exact extent of temporary remedial works, location of street furniture, location of edge of roadway, and location of utility poles.
- Consultation with all relevant authorities and stakeholders such as CCC, LCCC and An Garda Síochana regarding possible traffic restrictions when transporting components.
- Consultation with landowners along the route regarding temporary widening and temporary removal of any fences, boundary walls etc.
- A utility survey should be completed to confirm the predictions in this EIAR regarding clearance requirements for turbine components along the transport route which should include public streetlight, telephone poles and overhead lines. Consultation should be made with Eir and ESB Networks about temporary removal of their services during delivery if necessary.

## APPENDIX A TURBINE DELIVERY ROUTE – OPTIONS



- GENERAL NOTES**
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REV	DESCRIPTION	BY	CHK	DATE

CLIENT  
ORSTED

PROJECT  
PROPOSED WINDFARM  
PROJECT AT OATFIELD,  
CO. CLARE

DRAWING TITLE  
TURBINE DELIVERY ROUTE  
SITE CONTEXT

**PINNACLE**  
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**LEGEND:**

- - - - TDR - OPTION 1
- - - - TDR - OPTION 1a
- - - - SITE ACCESS ROUTE
- - - - TDR - OPTION 2
- - - - TDR - OPTION 3
- - - - TDR - OPTION 3a



REV	DESCRIPTION	BY	CHK	DATE

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PROJECT  
PROPOSED WINDFARM PROJECT AT OATFIELD, CO. CLARE

DRAWING TITLE  
TURBINE DELIVERY ROUTE OPTION 1

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**LEGEND:**

	TDR - OPTION 1
	TDR - OPTION 1a
	SITE ACCESS ROUTE
	TDR - OPTION 2
	TDR - OPTION 3
	TDR - OPTION 3a



REV	DESCRIPTION	BY	CHK	DATE

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PROJECT  
PROPOSED WINDFARM PROJECT AT OATFIELD, CO. CLARE

DRAWING TITLE  
TURBINE DELIVERY ROUTE OPTION 1A

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PIN-XX-DR-D-102-SI	P01		



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**LEGEND:**

	TDR - OPTION 1
	TDR - OPTION 1a
	SITE ACCESS ROUTE
	TDR - OPTION 2
	TDR - OPTION 3
	TDR - OPTION 3a

REV	DESCRIPTION	BY	CHK	DATE

CLIENT  
**ORSTED**

PROJECT  
**PROPOSED WINDFARM PROJECT AT OATFIELD, CO. CLARE**

DRAWING TITLE  
**TURBINE DELIVERY ROUTE OPTION 2**

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4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, ARCHITECTS AND SUB-CONTRACTORS DRAWINGS AND DETAILS.

- LEGEND:**
- TDR - OPTION 1
  - TDR - OPTION 1a
  - SITE ACCESS ROUTE
  - TDR - OPTION 2
  - TDR - OPTION 3
  - TDR - OPTION 3a



REV	DESCRIPTION	BY	CHK	DATE

CLIENT  
ORSTED

PROJECT  
PROPOSED WINDFARM  
PROJECT AT OATFIELD,  
CO. CLARE

DRAWING TITLE  
TURBINE DELIVERY ROUTE  
OPTION 3

**PINNACLE**  
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3. ANY DISCREPANCIES ARE TO BE REPORTED TO PINNACLE CONSULTING ENGINEERS IMMEDIATELY.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, ARCHITECTS AND SUB-CONTRACTORS DRAWINGS AND DETAILS.

- LEGEND:**
- TDR - OPTION 1
  - TDR - OPTION 1a
  - SITE ACCESS ROUTE
  - TDR - OPTION 2
  - TDR - OPTION 3
  - TDR - OPTION 3a



REV	DESCRIPTION	BY	CHK	DATE

CLIENT  
ORSTED

PROJECT  
PROPOSED WINDFARM  
PROJECT AT OATFIELD,  
CO. CLARE

DRAWING TITLE  
TURBINE DELIVERY ROUTE  
OPTION 3A - KILLALOE BYPASS/  
SHANNON BRIDGE CROSSING

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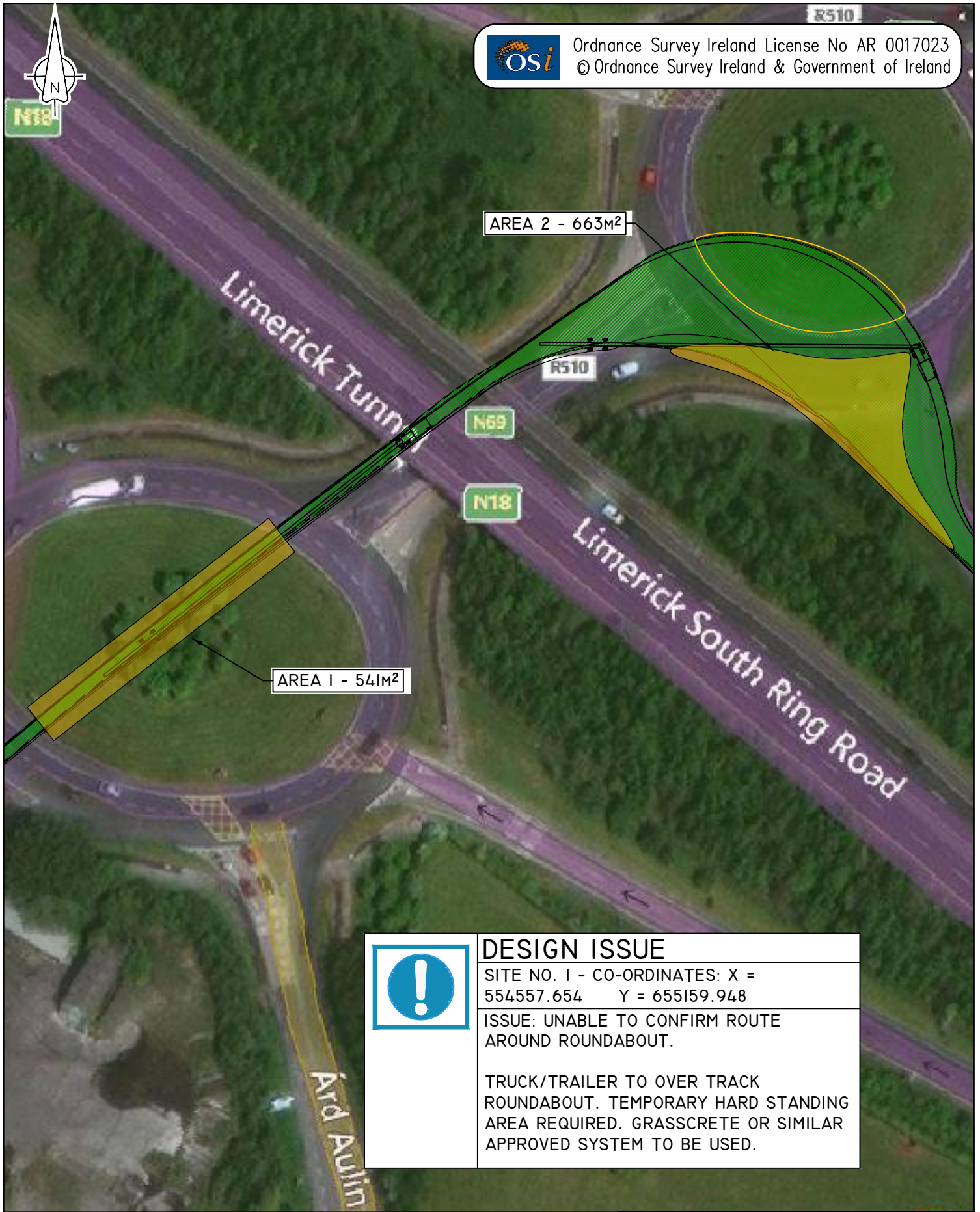
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SCALE @ A1	DATE	DRAWN BY	CHECKED
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DRG NO.	REVISION		
PIN-XX-DR-D-105-SI			P01

APPENDIX B TURBINE DELIVERY ROUTE – OPTION 3A: FOYNES – N18  
– M7 – GRANGEWOOD – COOLDERRY– KILLALOE BYPASS -  
CLOONLARA -- SITE SWEPT PATH ANALYSIS





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**DESIGN ISSUE**

SITE NO. 1 - CO-ORDINATES: X = 554557.654 Y = 655159.948

ISSUE: UNABLE TO CONFIRM ROUTE AROUND ROUNDABOUT.

TRUCK/TRAILER TO OVER TRACK ROUNDABOUT. TEMPORARY HARD STANDING AREA REQUIRED. GRASSCRETE OR SIMILAR APPROVED SYSTEM TO BE USED.

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**TDR OPTION 3/A REVIEW**  
**ISSUE No. 1**

REV	DESCRIPTION	BY	CHK	DATE
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**PLANNING**

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AREA 3 - 310M<sup>2</sup>

AREA 4 - 146M<sup>2</sup>

R494

N7

M7

M7



**DESIGN ISSUE**

SITE NO. 2 - CO-ORDINATES: X = 572341.723 Y = 667439.739

ISSUES: UNABLE TO CONFIRM ROUTE AROUND ROUNDABOUT. SURVEY REQUIRED.

TRUCK/TRAILER TO OVER TRACK ROUNDABOUT. TEMPORARY HARD STANDING AREA REQUIRED. GRASSCRETE OR SIMILAR APPROVED SYSTEM TO BE USED.

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TDR OPTION 3/A REVIEW

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**PLANNING**

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### DESIGN ISSUE

SITE NO. 3 - CO-ORDINATES: X = 572341.723 Y = 667439.739

ISSUE: UNABLE TO CONFIRM ROUTE AROUND ROUNDABOUT. SURVEY REQUIRED.

TRUCK/TRAILER TO OVER TRACK ROUNDABOUT. TEMPORARY HARD STANDING AREA REQUIRED. GRASSCRETE OR SIMILAR APPROVED SYSTEM TO BE USED.

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**TDR OPTION 3/A REVIEW**  
**ISSUE No. 3**

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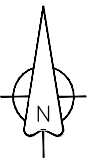
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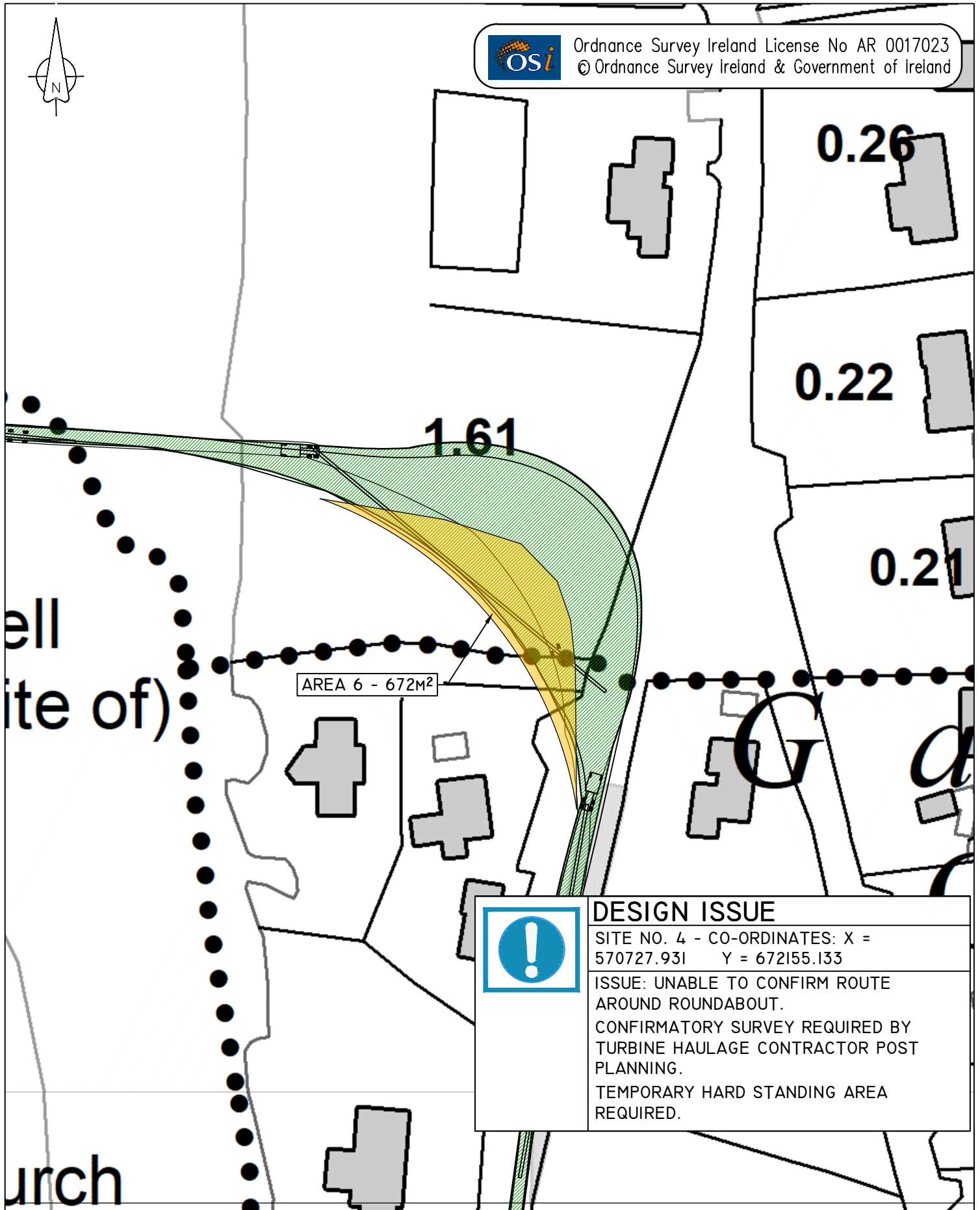
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**DESIGN ISSUE**

SITE NO. 4 - CO-ORDINATES: X = 570727.931 Y = 672155.133

ISSUE: UNABLE TO CONFIRM ROUTE AROUND ROUNDABOUT.  
CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING.  
TEMPORARY HARD STANDING AREA REQUIRED.

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TDR OPTION 3/A REVIEW  
ISSUE No. 4

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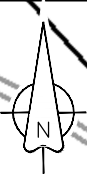
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**PLANNING**

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0.39

0.29

1.44

0.39

1.13

AREA 7 - 849M<sup>2</sup>



**DESIGN ISSUE**

SITE NO. 5 - CO-ORDINATES: X = 572341.723 Y = 667439.739

ISSUE: UNABLE TO CONFIRM ROUTE AROUND ROUNDABOUT.

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING.

TEMPORARY HARD STANDING AREA REQUIRED.

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TDR OPTION 3/A REVIEW  
ISSUE No. 5

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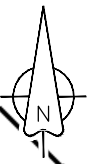
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**PLANNING**

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0.29

0.21

4

1.25



**DESIGN ISSUE**

SITE NO. 6 - CO-ORDINATES: X =  
569432.006 Y = 671641.584

ISSUE: PINCH POINT IN ROAD.

CONFIRMATORY SURVEY REQUIRED BY  
TURBINE HAULAGE CONTRACTOR POST  
PLANNING.

REV	DESCRIPTION	BY	CHK	DATE
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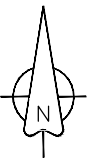
PROJECT  
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ISSUE No. 6

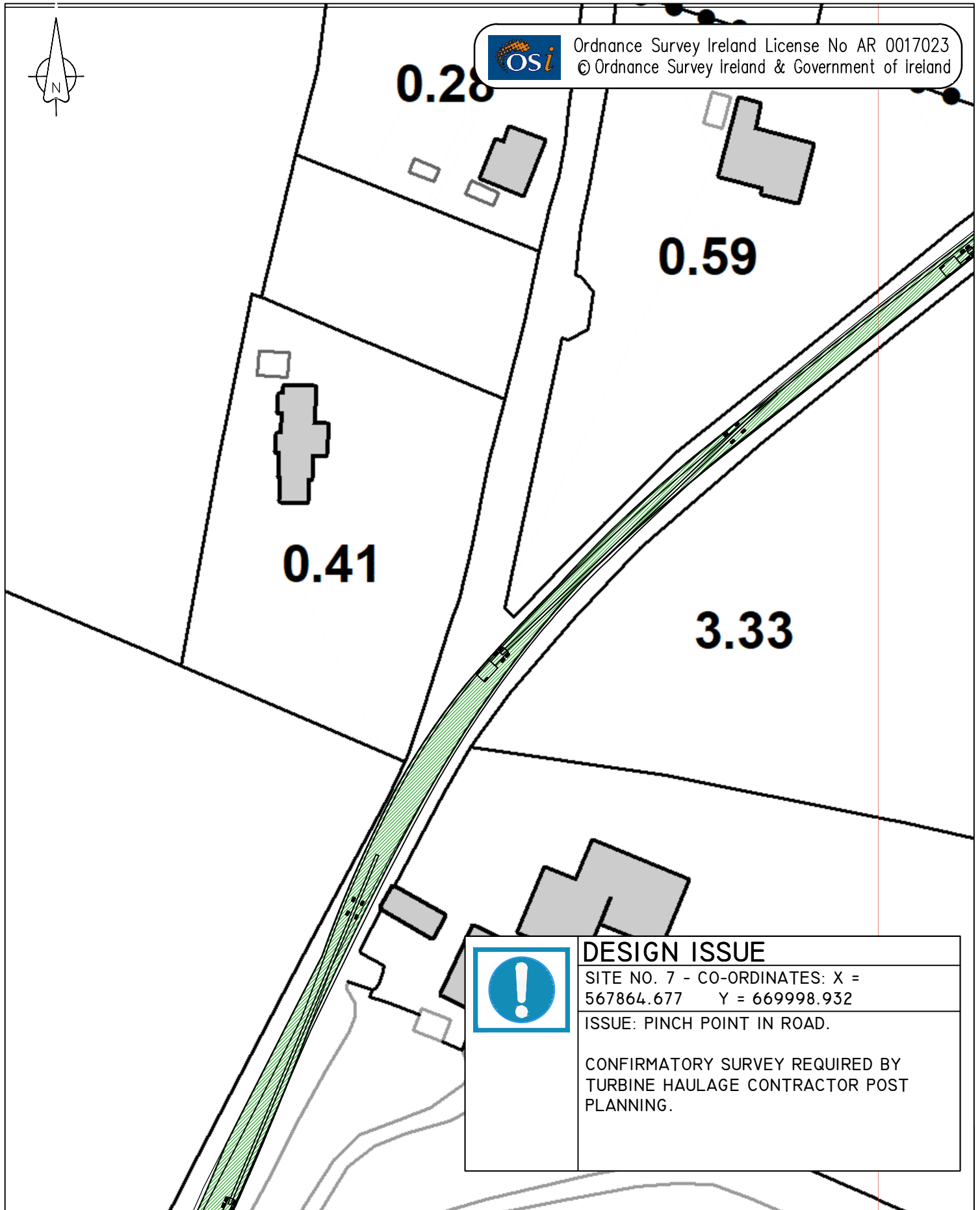
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<b>PLANNING</b>			
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DRG NO. PIN-XX-DR-D-126-SI			REV P01

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### DESIGN ISSUE

SITE NO. 7 - CO-ORDINATES: X = 567864.677 Y = 669998.932

ISSUE: PINCH POINT IN ROAD.

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING.

REV	DESCRIPTION	BY	CHK	DATE
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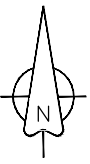
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**TDR OPTION 3/A REVIEW**  
**ISSUE No. 7**

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0.58

1.33

0.84

0.74



**DESIGN ISSUE**

SITE NO. 8 - CO-ORDINATES: X = 567513.953 Y = 669243.307

ISSUE: PINCH POINT IN ROAD. NARROW BRIDGE CROSSING  
CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING.  
STRUCTURAL ENGINEER TO CONFIRM BRIDGE SUITABILITY

REV	DESCRIPTION	BY	CHK	DATE
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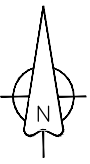
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0.60

0.28

1.91



**DESIGN ISSUE**

SITE NO. 9 - CO-ORDINATES: X = 566724.255 Y = 667534.965

ISSUE: PINCH POINT IN ROAD.

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING.

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 TDR OPTION 3/A REVIEW  
 ISSUE No. 9

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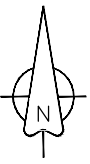
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**2.76**

**0.67**

**0.20**

**0.23**

**0.28**

**0.70**



**DESIGN ISSUE**

SITE NO. 10 - CO-ORDINATES: X = 564712.399 Y = 665652.421

ISSUE: PINCH POINT IN ROAD.

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING.

REV	DESCRIPTION	BY	CHK	DATE
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**ORSTED**  
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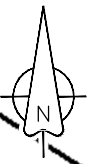
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**ISSUE No. 10**

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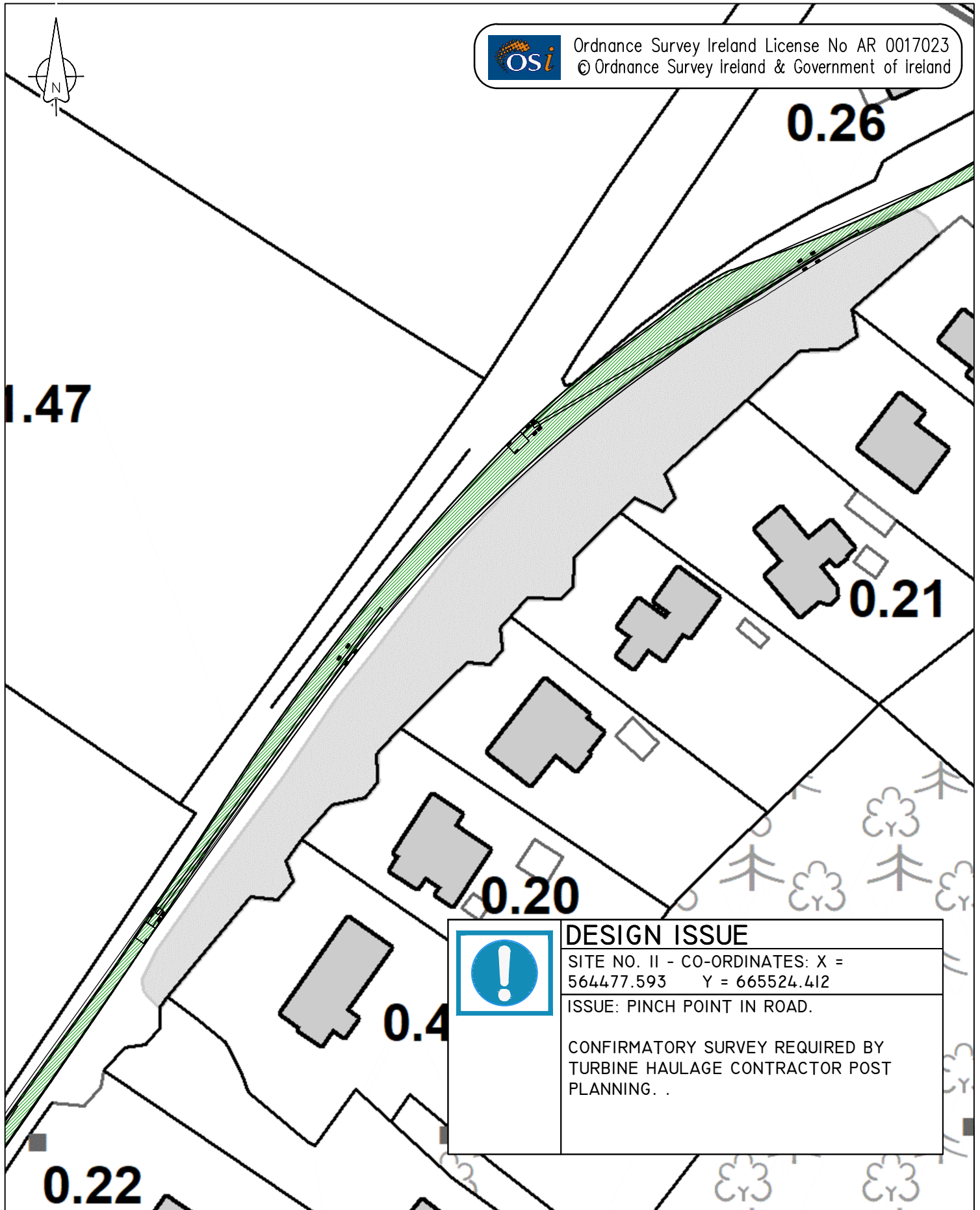
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	<b>DESIGN ISSUE</b>
	SITE NO. II - CO-ORDINATES: X = 564477.593 Y = 665524.412
	ISSUE: PINCH POINT IN ROAD.
CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING. .	

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**ISSUE No. II**

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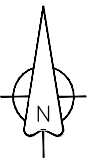
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**PLANNING**

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0.43

0.77

0.90

0.48



**DESIGN ISSUE**

SITE NO. 12 - CO-ORDINATES: X = 564207.663 Y = 665178.457

ISSUE: PINCH POINT IN ROAD.

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING.

REV	DESCRIPTION	BY	CHK	DATE
DRAWING STATUS				
<b>PLANNING</b>				
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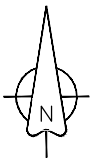
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-

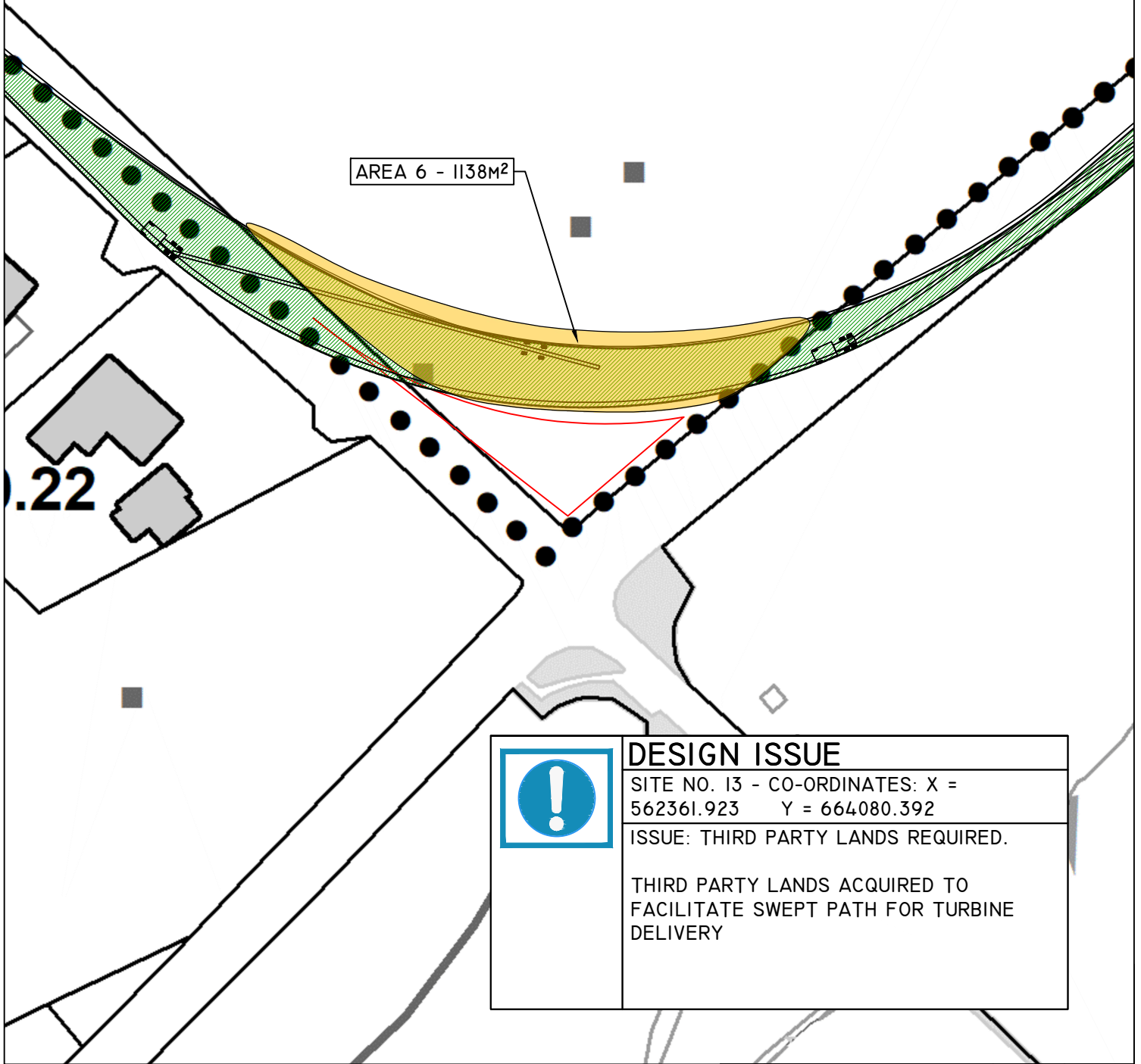
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# 3.58



AREA 6 - 1138M<sup>2</sup>



### DESIGN ISSUE

SITE NO. 13 - CO-ORDINATES: X = 562361.923 Y = 664080.392

ISSUE: THIRD PARTY LANDS REQUIRED.

THIRD PARTY LANDS ACQUIRED TO FACILITATE SWEEP PATH FOR TURBINE DELIVERY

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REV	DESCRIPTION	BY	CHK	DATE
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2.07

1.04

0.29

0.21



**DESIGN ISSUE**

SITE NO. 14 - CO-ORDINATES: X = 560901.060 Y = 665450.158

ISSUE: PINCH POINT IN ROAD.

CONFIRMATORY SURVEY REQUIRED BY  
TURBINE HAULAGE CONTRACTOR POST  
PLANNING.

REV	DESCRIPTION	BY	CHK	DATE
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DRAWING STATUS

**PLANNING**

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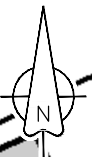
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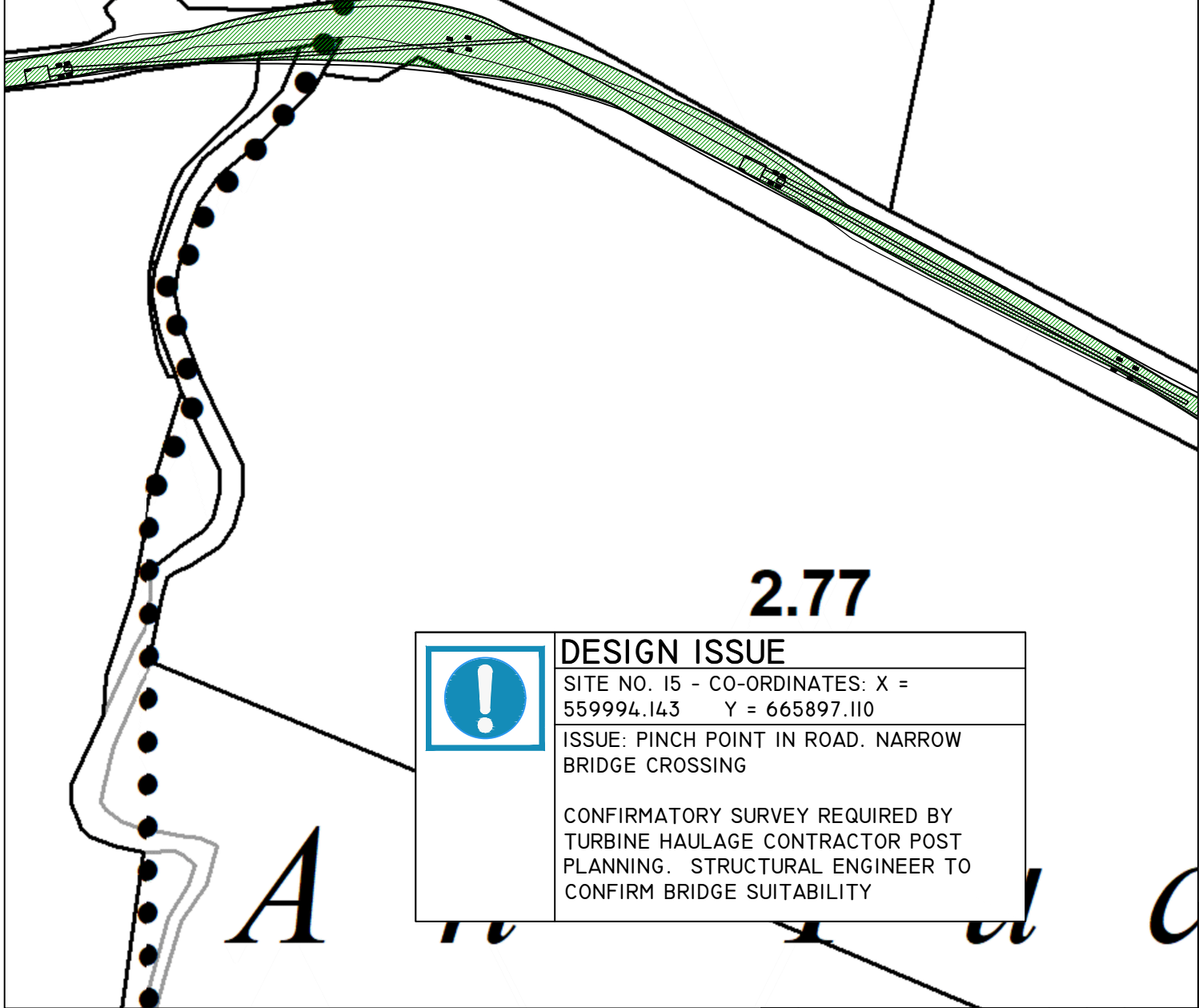
REF: P230200359



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1.00

34



2.77



**DESIGN ISSUE**

SITE NO. 15 - CO-ORDINATES: X = 559994.143 Y = 665897.110

ISSUE: PINCH POINT IN ROAD. NARROW BRIDGE CROSSING

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING. STRUCTURAL ENGINEER TO CONFIRM BRIDGE SUITABILITY

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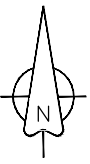
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TDR OPTION 3/A REVIEW  
ISSUE No. 15

REV	DESCRIPTION	BY	CHK	DATE
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<b>PLANNING</b>			
SCALE @ A4 1:1000	DATE OCT'23	DRAWN RK	CHKD RK
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0.67

1.25

0.37

0.69

0.36

0.26

0.21

0.29



**DESIGN ISSUE**

SITE NO. 16 - CO-ORDINATES: X = 559542.660 Y = 665829.247

ISSUE: PINCH POINT IN ROAD.

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING.

REV	DESCRIPTION	BY	CHK	DATE
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DRAWING STATUS  
**PLANNING**

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DRG NO.	REV
PIN-XX-DR-D-I36-SI	P01

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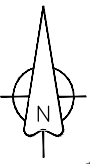
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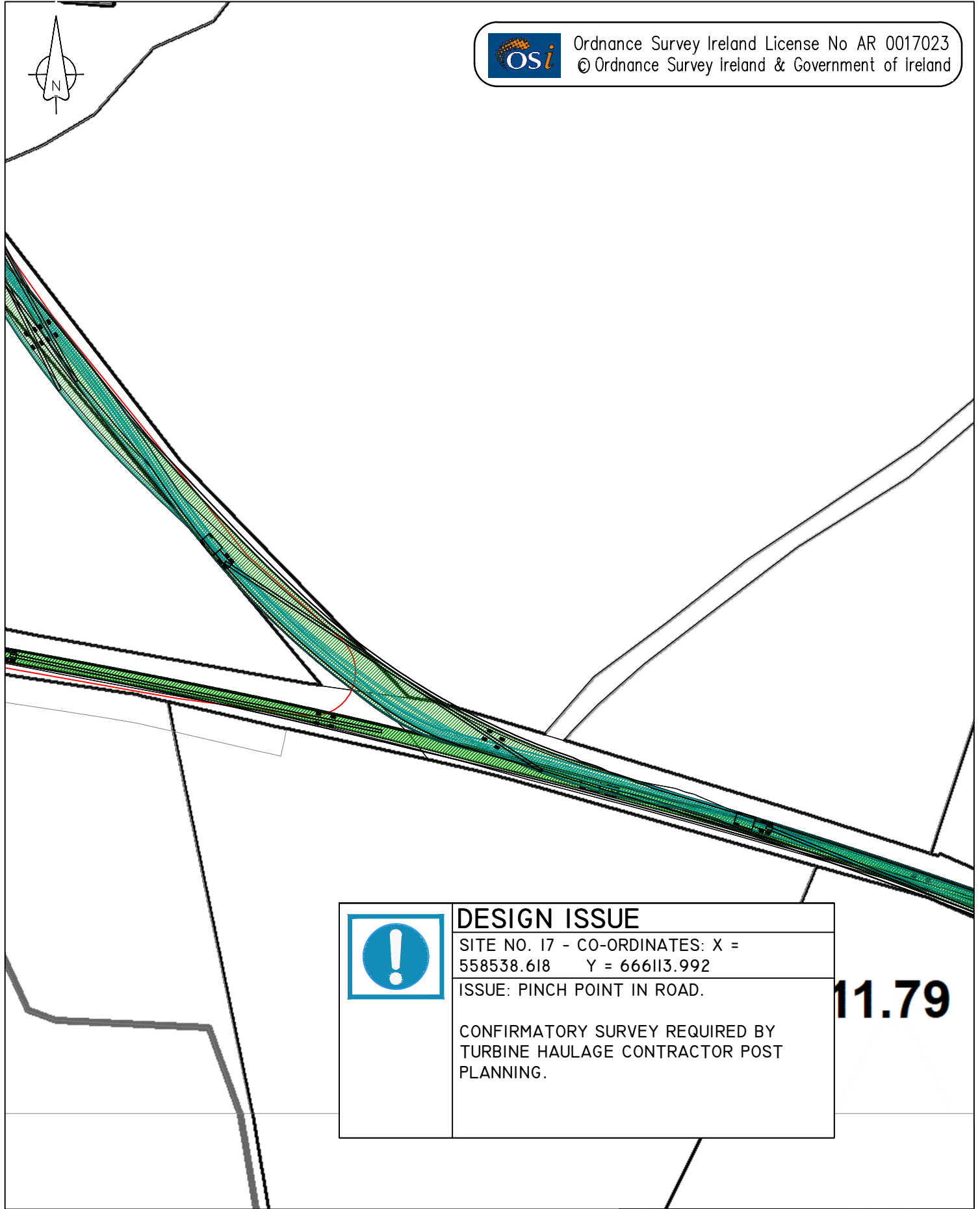
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**DESIGN ISSUE**

SITE NO. 17 - CO-ORDINATES: X = 558538.618 Y = 666113.992

ISSUE: PINCH POINT IN ROAD.

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING.

**11.79**

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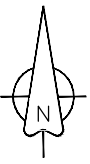
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**ISSUE No. 17**

REV	DESCRIPTION	BY	CHK	DATE
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<b>PLANNING</b>			
SCALE @ A4 1:1000	DATE OCT'23	DRAWN RK	CHKD RK
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0.76

0.69

1.50



**DESIGN ISSUE**

SITE NO. 18 - CO-ORDINATES: X = 557909.012 Y = 666234.514

ISSUE: BRIDGE CROSSING

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING. STRUCTURAL ENGINEER TO CONFIRM BRIDGE SUITABILITY

REV	DESCRIPTION	BY	CHK	DATE
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DRAWING STATUS

**PLANNING**

SCALE @ A4	DATE	DRAWN	CHKD
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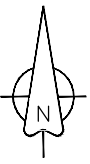
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0.48

0.27

1.07

0.59

0.92

Pond

Caraghan's Bridge



**DESIGN ISSUE**

SITE NO. 19 - CO-ORDINATES: X = 556662.869 Y = 666677.446

ISSUE: NARROW BRIDGE CROSSING

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING. STRUCTURAL ENGINEER TO CONFIRM BRIDGE SUITABILITY

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ISSUE No. 19

REV	DESCRIPTION	BY	CHK	DATE
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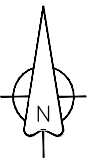
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**PLANNING**

SCALE @ A4	DATE	DRAWN	CHKD
1:1000	OCT'23	RK	RK

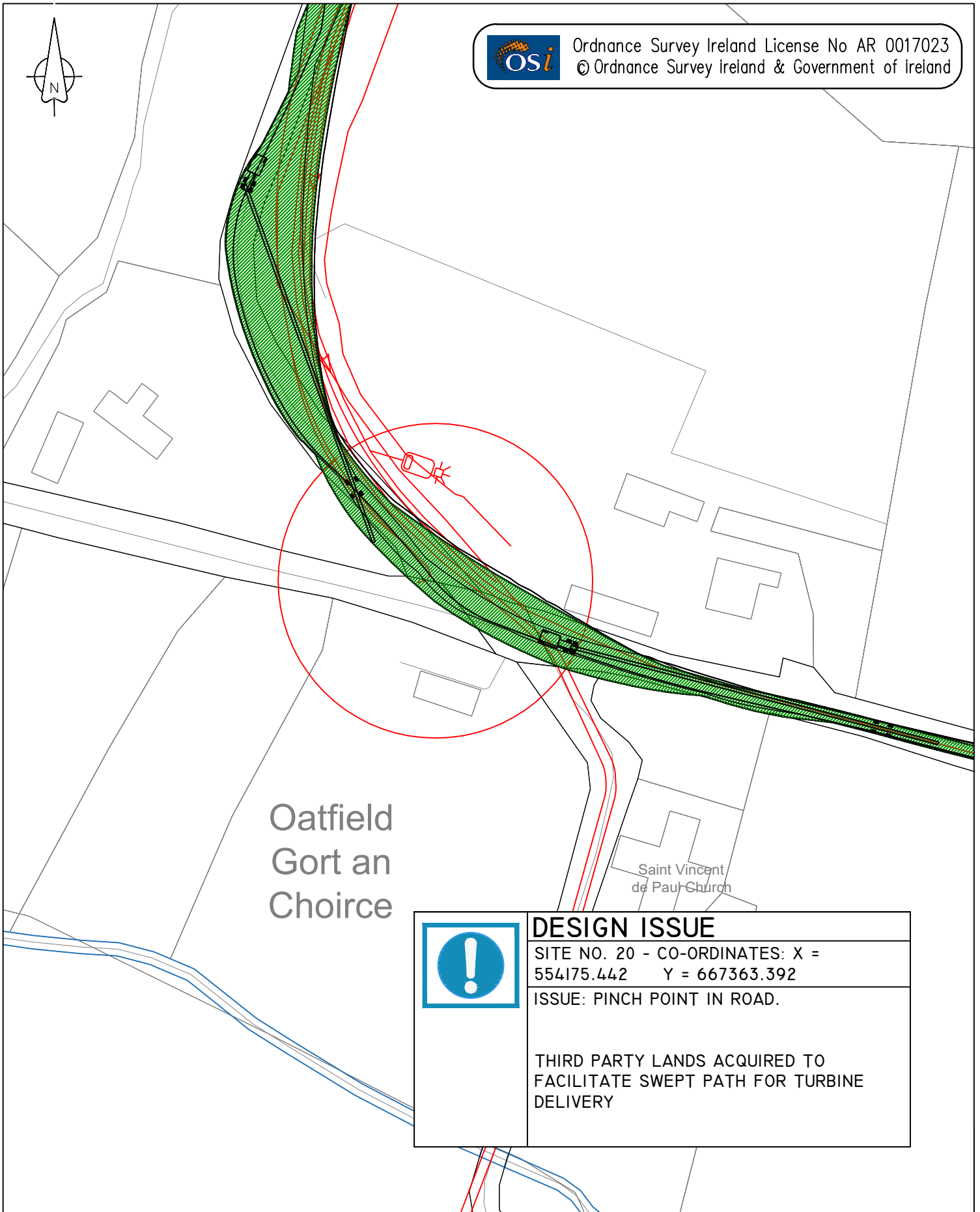
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### DESIGN ISSUE

SITE NO. 20 - CO-ORDINATES: X = 554175.442 Y = 667363.392

ISSUE: PINCH POINT IN ROAD.

THIRD PARTY LANDS ACQUIRED TO FACILITATE SWEEPED PATH FOR TURBINE DELIVERY

Oatfield  
Gort an  
Choirce

Saint Vincent  
de Paul Church

REV	DESCRIPTION	BY	CHK	DATE

**PINNACLE**  
CONSULTING ENGINEERS

PROJECT  
**ORSTED**  
-

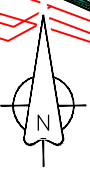
DRAWING TITLE  
**TDR OPTION 3/A REVIEW**  
**ISSUE No. 20**

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<b>PLANNING</b>			
SCALE @ A4 1:1000	DATE OCT'23	DRAWN RK	CHKD RK
DRG NO. PIN-XX-DR-D-I40-SI		REV P01	

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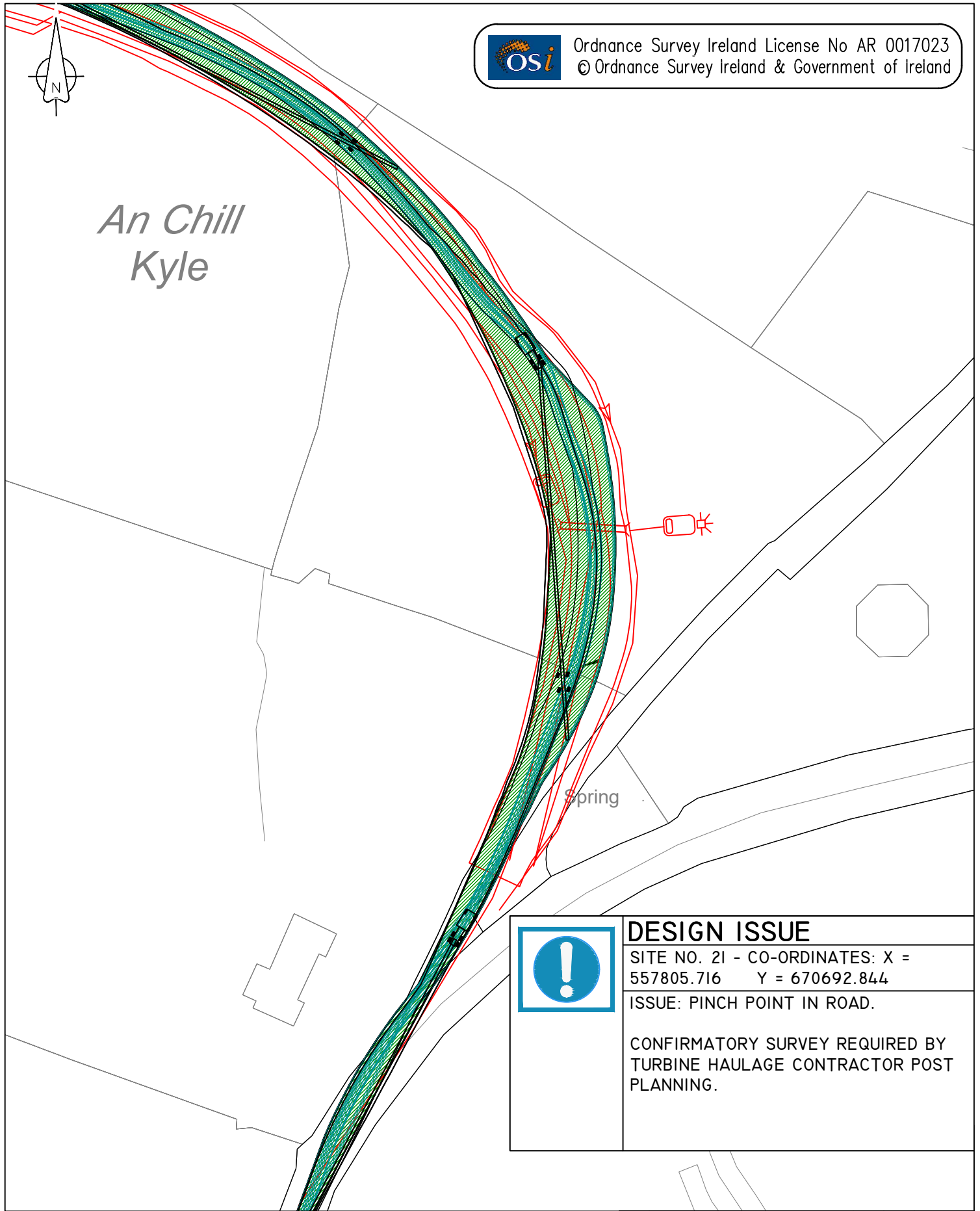
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*An Chill  
 Kyle*



**DESIGN ISSUE**

SITE NO. 21 - CO-ORDINATES: X = 557805.716 Y = 670692.844

ISSUE: PINCH POINT IN ROAD.

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING.

REV	DESCRIPTION	BY	CHK	DATE
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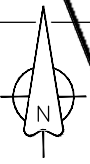
PROJECT  
**ORSTED**  
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DRAWING TITLE  
**TDR OPTION 3/A REVIEW**  
**ISSUE No. 21**

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<b>PLANNING</b>			
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2.75

0.38

4.38

38



**DESIGN ISSUE**

SITE NO. 22- CO-ORDINATES: X = 558153.868 Y = 666162.954

ISSUE: BRIDGE CROSSING

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING. STRUCTURAL ENGINEER TO CONFIRM BRIDGE SUITABILITY

REV	DESCRIPTION	BY	CHK	DATE
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**PLANNING**

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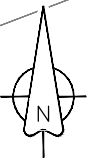
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**ORSTED**  
-

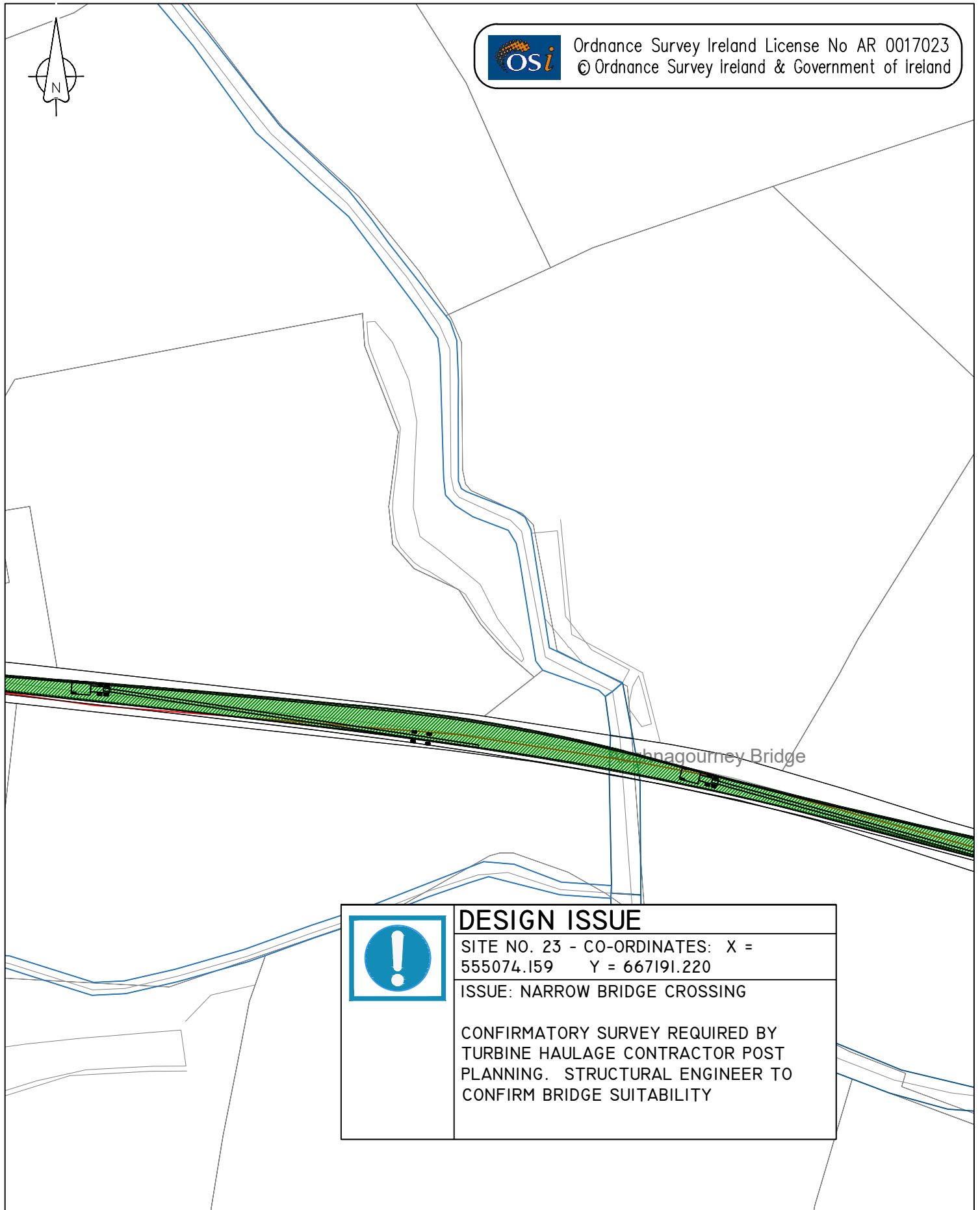
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**DESIGN ISSUE**

SITE NO. 23 - CO-ORDINATES: X = 555074.159 Y = 667191.220

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CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING. STRUCTURAL ENGINEER TO CONFIRM BRIDGE SUITABILITY

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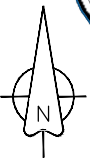
PROJECT  
**ORSTED**  
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DRAWING TITLE  
**TDR OPTION 3/A REVIEW**  
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DRAWING STATUS			
<b>PLANNING</b>			
SCALE @ A4 1:1000	DATE OCT'23	DRAWN RK	CHKD RK
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1.2

*Cluain Treá Thoir  
 Cloontra East*

0.83

0.37

3



**DESIGN ISSUE**

SITE NO. 24 - CO-ORDINATES: X = 557532.251 Y = 666345.488

ISSUE: BRIDGE CROSSING

CONFIRMATORY SURVEY REQUIRED BY TURBINE HAULAGE CONTRACTOR POST PLANNING. STRUCTURAL ENGINEER TO CONFIRM BRIDGE SUITABILITY

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 ISSUE No. 24

REV	DESCRIPTION	BY	CHK	DATE
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DRAWING STATUS  
**PLANNING**

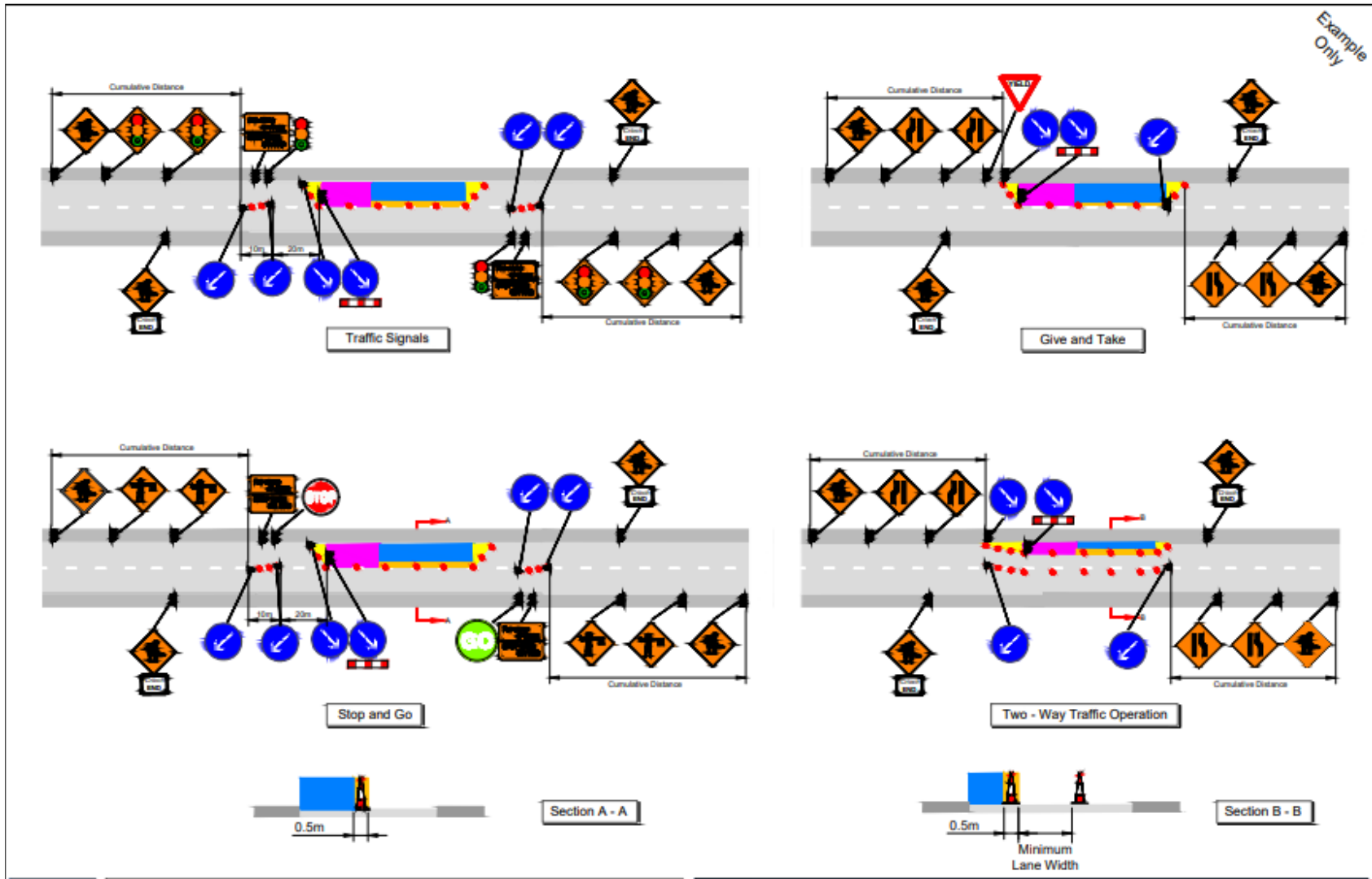
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## APPENDIX C SAMPLE TEMPORARY TRAFFIC MANAGEMENT PLANS

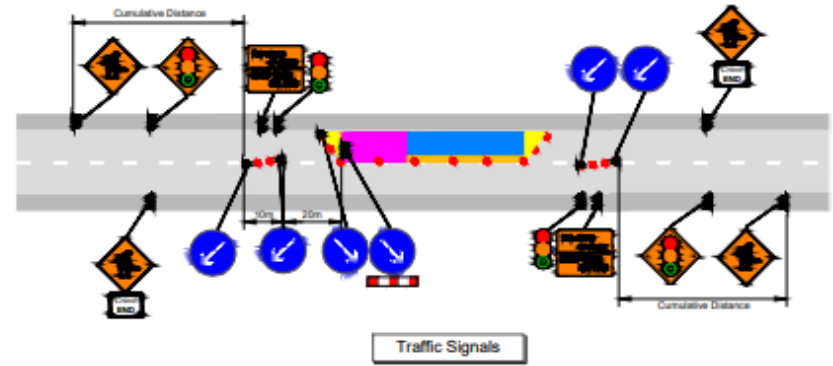


Example Only

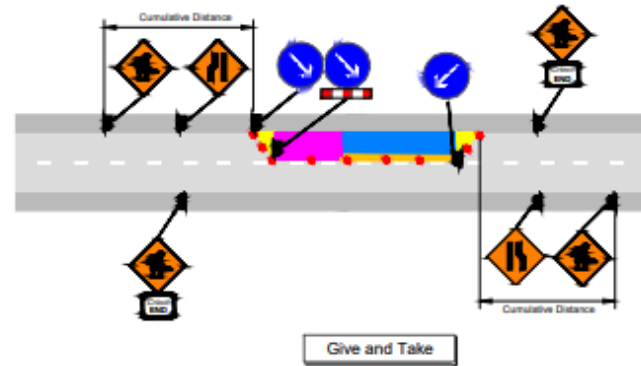
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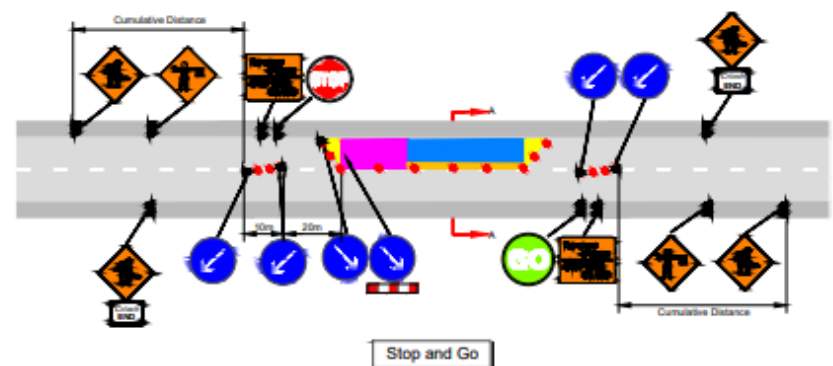
Example Only



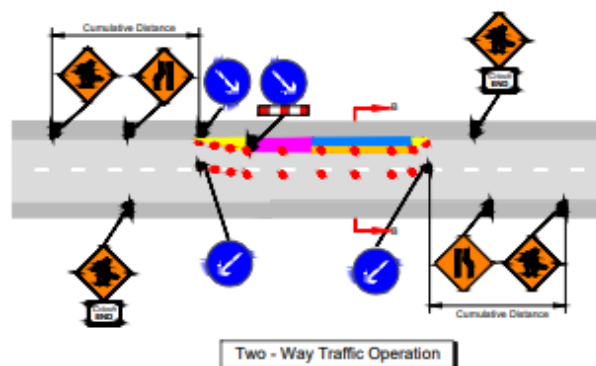
Traffic Signals



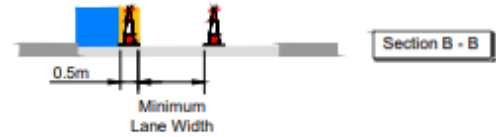
Give and Take



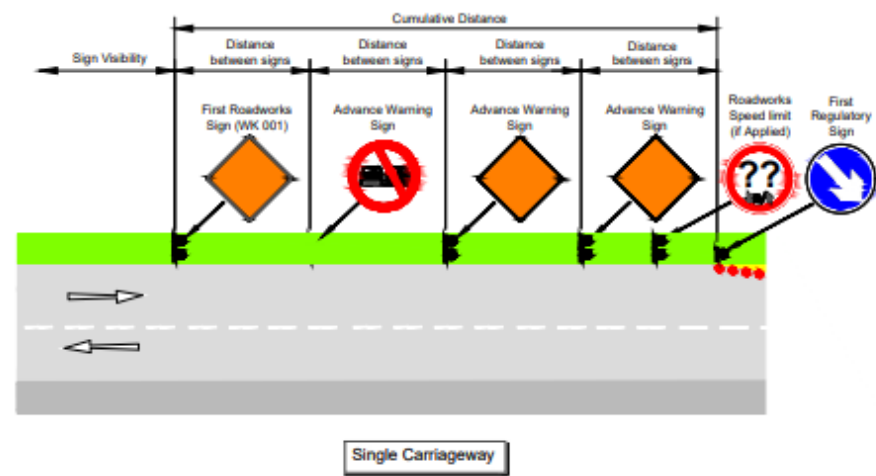
Stop and Go



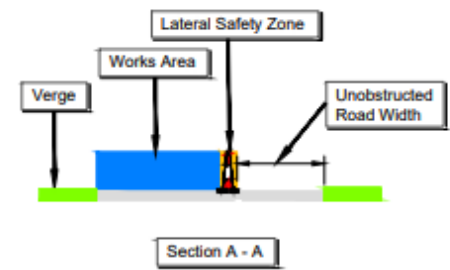
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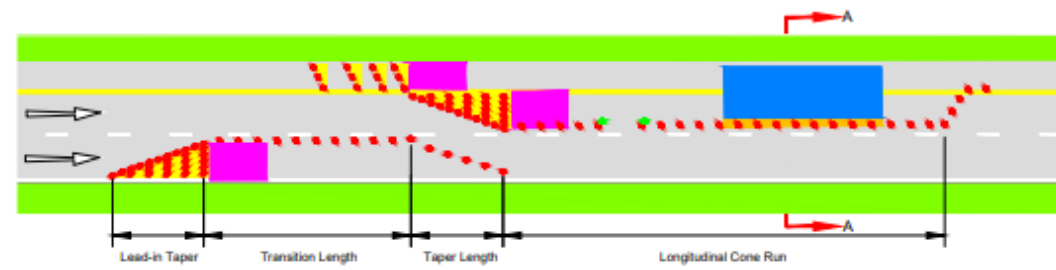
Example Only



Single Carriageway



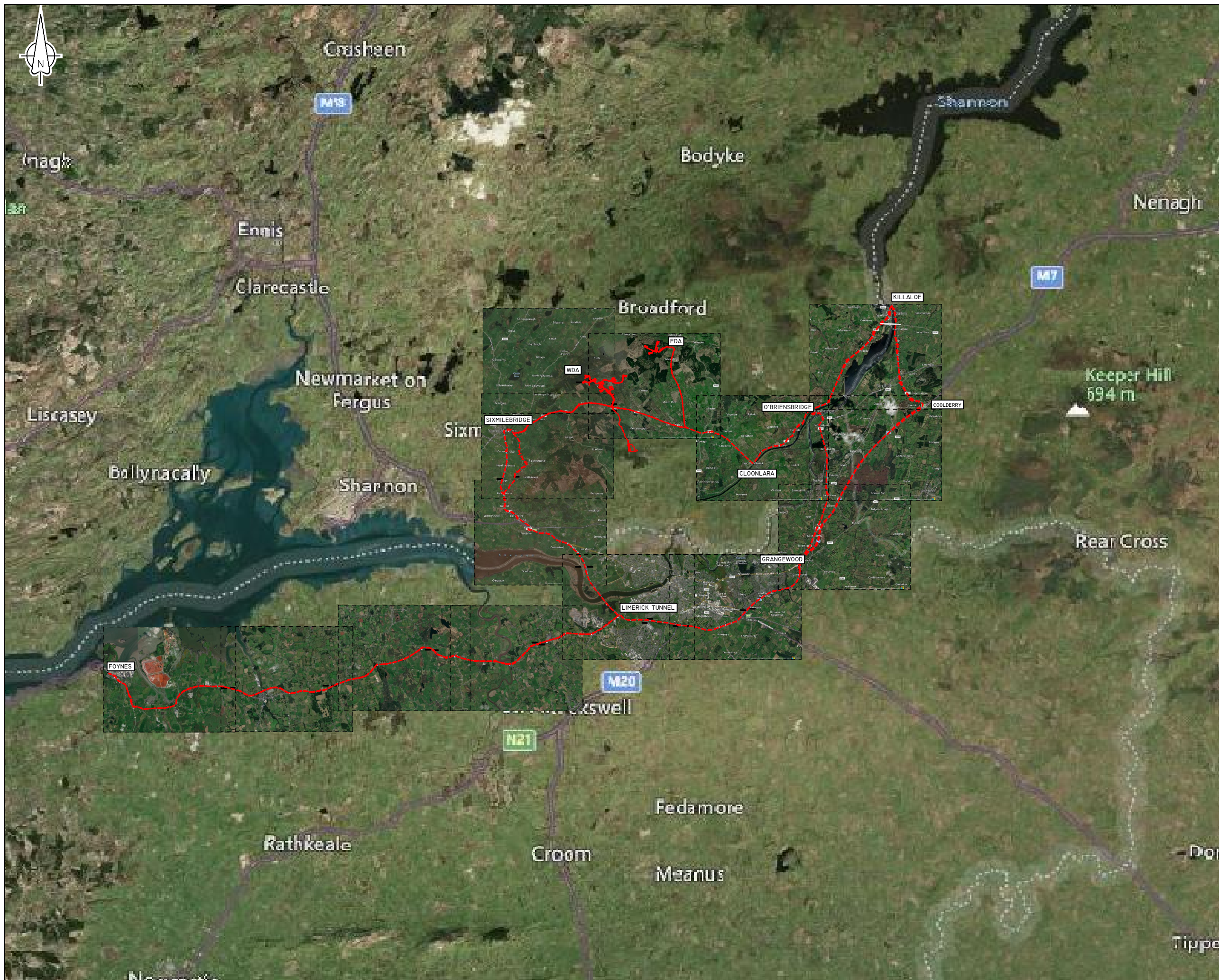
Section A - A



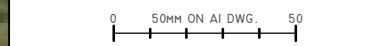
Motorway Lane Closure Detail







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  - FOR ALL RELEVANT NOTES, REFER TO STRUCTURAL AND CIVIL ENGINEERING PERFORMANCE SPECIFICATION.
  - ANY DISCREPANCIES ARE TO BE REPORTED TO PINNACLE CONSULTING ENGINEERS IMMEDIATELY.
  - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, ARCHITECTS AND SUB-CONTRACTORS DRAWINGS AND DETAILS.



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TURBINE DELIVERY ROUTE SITE CONTEXT

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