



**ARCUS**

**SHEPHERDS' RIG WIND FARM**

**Appendix 15.1**

**ABNORMAL LOAD ROUTE ASSESSMENT**

**JULY 2018**





Prepared By:

**Arcus Consultancy Services**

7<sup>th</sup> Floor  
145 West George Street  
Glasgow  
G2 2HG

**T** +44 (0)141 221 9997 | **E** [info@arcusconsulting.co.uk](mailto:info@arcusconsulting.co.uk)  
**w** [www.arcusconsulting.co.uk](http://www.arcusconsulting.co.uk)

Registered in England & Wales No. 5644976



## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2</b>	<b>METHODOLOGY .....</b>	<b>1</b>
<b>2.1</b>	<b>Mapping.....</b>	<b>1</b>
<b>2.2</b>	<b>Site Visit .....</b>	<b>1</b>
<b>2.3</b>	<b>Delivery Vehicle Specifications .....</b>	<b>1</b>
<b>2.4</b>	<b>Route to Site and Site Entrance Location.....</b>	<b>1</b>
<b>2.5</b>	<b>Assumptions .....</b>	<b>2</b>
<b>3</b>	<b>RESULTS OF ASSESSMENT .....</b>	<b>2</b>
<b>4</b>	<b>CONCLUSION.....</b>	<b>6</b>
<b>4.1</b>	<b>Summary .....</b>	<b>6</b>
<b>4.2</b>	<b>Recommendations for Further Work.....</b>	<b>6</b>

### APPENDIX A – VEHICLE DATA SHEET

### APPENDIX B – ROUTE TO SITE

### APPENDIX C – SWEEP PATH ANALYSIS DRAWINGS



## 1 INTRODUCTION

Shepherds Rig Wind Farm is a proposed wind farm located off the B729 in Dumfries & Galloway. This Abnormal Load Route Assessment (ALRA) provides an assessment of land based routes to the wind farm site for the delivery of wind turbine components.

## 2 METHODOLOGY

This ALRA is a desk based study which uses publically available Ordinance Survey (OS) mapping to conduct swept path analysis of pinch points on the proposed delivery route. Swept path analysis is conducted in AutoCAD using the Vehicle Tracking software and a bespoke set of delivery vehicles developed for this ALRA.

### 2.1 Mapping

OS Mastermap was used to conduct swept path analysis along the proposed delivery route. This mapping is two-dimensional; therefore, the assessment only considers the horizontal geometry of pinch points on the route. Topographical surveys may be required in order to undertake an assessment of vertical constraints.

### 2.2 Site Visit

A site visit and route drive over was undertaken in July 2018 by an Arcus Engineer in order to verify results of an initial swept path analysis. During this drive over, the locations of identified constraints were confirmed in order to verify the accuracy of the OS mapping.

### 2.3 Delivery Vehicle Specifications

A vehicle data sheet is included in Appendix A. The candidate turbine used during the assessment is a Vestas V117. Dimensions of the blade and corresponding delivery vehicle specifications are provided in the following tables.

**Table 2.1: Turbine Blade Data**

	Data Used in Assessment
<b>Blade</b>	Length 57.15m

**Table 2.2: Assumed delivery vehicles for Turbine Blade**

	Data	Source
<b>Blade Trailer</b>	Vehicle length – 55.6m Blade overhang – 6.2m	Volvo Cab / TSR Trailer

### 2.4 Route to Site and Site Entrance Location

The port of delivery specified for turbine components is the Port of Ayr. Figure 1, included in Appendix B, indicates the assessed abnormal load route from the Port of Ayr to the site entrance and indicates all of the identified points of constraint (PCs) on this route.

The proposed site entrance location was provided by Infinergy and is indicated on Figure 1, included in Appendix B.

## **2.5 Assumptions**

In order to keep the results of assessment as concise as possible, the following assumptions have been made at each PC:

- During transit, delivery vehicles will be accompanied by an escort vehicle and a police escort if required.
- At all locations where the delivery vehicle occupies the full road width, or is required to contraflow a junction, appropriate traffic management procedures will be implemented by the escort. This will usually involve temporary closure of the road or junction whilst the vehicle passes.
- A detailed traffic management plan will be prepared prior to delivery to inform all relevant stakeholders of road closures and other procedures to be implemented during delivery.

## **3 RESULTS OF ASSESSMENT**

Based on swept path analysis of all PCs identified on the proposed delivery route, outcomes and mitigation requirements have been defined and are summarised in Table 3.1.



**Table 3.1: Assessment of Constraints**

Ref	Location	Assessment Outcome	Mitigation	Risk
PC/01	Waggon Road / Allison Street Roundabout, Ayr	Roundabout to be contraflowed. Blade tip to oversail north of Waggon Road and pass within factor of safety of traffic signal. Load to oversail inside bend south of Waggon Road and conflict with pedestrian guardrail and pass within factor of safety of traffic signal. Trailer and blade tip to oversail islands and conflict with plastic bollards and to pass within factor of safety of traffic signals. Vehicle to overrun central reservation on Allison Street and conflict with plastic bollard.	Topographical survey may be required to locate exact position of traffic signals, alternatively dry run could be undertaken to determine if temporary removal of signals will be required. Pedestrian railing to be temporarily removed. Plastic bollards to be temporarily removed. Load bearing surface to be laid in overrun area in central reservation, steel plating and temporary kerb ramps are likely to be sufficient.	Medium
PC/02	Allison Street / Whitletts Road Roundabout, Ayr	Vehicle to overrun central reservation of Allison Street, mapping does not correspond to site observations in this location; raised central island with lighting column not shown on mapping. Blade tip to conflict with lighting column on Allison Street central reservation. Vehicle to overrun Whitletts Road central island and conflict with lighting column.	Load bearing surface to be laid in overrun areas on central reservations, steel plating and kerb ramps are likely to be sufficient. Topographical survey may be required to establish if conflict with central island is likely to occur. Lighting columns to be mounted on demountable supports.	Medium
PC/03	Whitletts Roundabout	Vehicle can navigate PC with no conflict.	No specific mitigation required.	Low
PC/04	Holmston Roundabout	Blade tip to conflict with sign on approach arm island. Blade tip to oversail pedestrian guardrail on outside of roundabout. Load to oversail roundabout central island.	Sign on approach arm island to be mounted on demountable support. Clearance height of blade tip above pedestrian guardrail to be checked.	Low
PC/05	Bankfield Roundabout	Load and blade tip to oversail approach arm and roundabout islands and inside bend to the north of A713. A signpost and lighting column are located nearby to the extent of oversail.	Topographical survey may be required to precisely locate sign and lighting column. If required these should be mounted on demountable supports.	Low

Ref	Location	Assessment Outcome	Mitigation	Risk
PC/06	Kirn Bridge	Blade tip and middle of trailer to oversail bridge parapets.	Clearance height of blade tip and trailer above bridge parapets to be checked. Structural survey to be undertaken on bridge structure.	Low
PC/07	A713/B729 Junction at Carsphalim	Trailer to overrun inside bend of junction within public land adjacent to Scottish Water facility. Load to oversail inside of right bend beyond junction.	Manual RWS required to negotiate bend. Load bearing surface to be laid in overrun area within public land on inside bend. Vegetation to be cleared from all oversail areas.	Medium
PC/08	B729 Junction at War Memorial	Vehicle to overrun inside bend and conflict with telegraph posts and stone wall within third party land.	Telegraph posts to be relocated outside of overrun and oversail areas. Load bearing surface to be laid in overrun areas in third party land. Stone wall to be relocated.	High
PC/09	Bend on B729 over culvert at Dalbonniton Knowe	Load to oversail inside bend above bridge parapet, possibly into third party land.	Clearance height of load above bridge parapet to be checked, site observations would suggest this is unlikely to be an issue. Structural survey to be undertaken on culvert structure. Landownership of oversail area to be established.	Medium
PC/10	B729 Burnfoot Bridge	Blade tip to oversail outside bend over third party land in private garden and conflict with telegraph posts. Load to oversail inside bend in third party land over bridge parapet. Vehicle to overrun outside bend east of bridge in third party land and conflict with telegraph posts.	Oversail permission for private garden required. Clearance height of load over bridge parapet to be checked. Telegraph posts to be relocated. Vegetation to be cleared from oversail areas. Load bearing surface to be laid in overrun area in third party land. Structural survey of bridge to be undertaken.	High
PC/11	B729 Bend Beyond Burnfoot Bridge	Vehicle to overrun outside bend in third party land, blade tip to oversail outside bend in third party land.	Load bearing surface to be laid in overrun area in third party land. Vegetation to be cleared from oversail area.	High
PC/12	B729 Bend at Kensglen	Mapping does not correspond to site observations.	Topographical survey required to determine mitigation requirements. Likley to require widening works.	Medium

Ref	Location	Assessment Outcome	Mitigation	Risk
PC/13	B729 Bend at Nether Loskie	Vehicle to overrun outside bend on east side of road.	Load bearing surface to be laid in overrun area. Vegetation to be cleared from overrun and oversail areas.	Medium
PC/14	Bend at B729/B7000 Junction	Blade tip to oversail outside bend to south. Vehicle to overrun outside bend to east. Load to oversail inside bend and conflict with sign.	Vegetation to be cleared from oversail areas. Load bearing surface to be laid in overrun area. Third party land may be required subject to verge confirmation. Road sign to be relocated or mounted on demountable supports.	Medium
PC/15	B729 Bend at Muirdrochwood	Oversail and overrun at various locations on inside and outside of series of bends. Inconsistencies noted between mapping and on site observations.	Vegetation clearance may be required to accommodate vehicle and blade tip oversail. Overrun areas to be constructed. Third party land may be required subject to verge confirmation. Topographical survey may be required.	Medium



## **4 CONCLUSION**

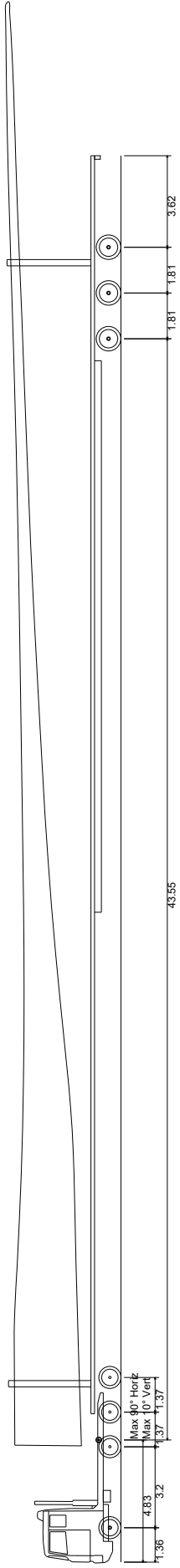
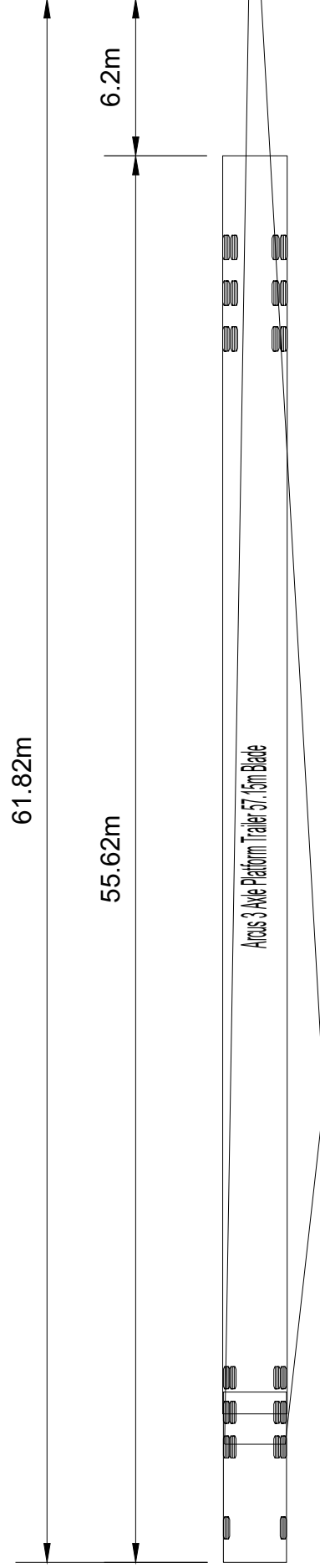
### **4.1 Summary**

The delivery route was assessed for the candidate wind turbine blade vehicle. Fifteen pinch points were identified between the Port of Ayr and the start of the site entrance. Swept path analysis was conducted at each pinch point and details of required improvement works have are presented in the drawings. There are a number of junctions where improvement works will be required to permit delivery.

### **4.2 Recommendations for Further Work**

Structural surveys may need to be undertaken along the route in order to establish weight limits. An abnormal indivisible loads application should be submitted to the relevant authority which will initiate consultations with all relevant parties and identify areas where further review is required.

**APPENDIX A – VEHICLE DATA SHEET**



- Arcus 3 Axle Platform Trailer 57.15m Blade**
- Overall Length 61.730m
  - Overall Width 4.000m
  - Overall Body Height 3.407m
  - Min Body Ground Clearance 0.331m
  - Max Track Width 2.550m
  - Lock to lock time 6.00s
  - Kerb to Kerb Turning Radius 6.600m

Project Title  
**SHEPHERDS RIG WIND FARM  
 ABNORMAL LOAD  
 ROUTE ASSESSMENT**

Client  
**INFENERGY**

Drawing Title  
**VEHICLE DATA SHEET**

Purpose of Issue		FOR INFORMATION	
Designed KL	Drawn KL	Checked TAT	Approved TAT
Arcus Internal Project No. 2966		Date 31/07/18	
Scale @ A3 1:250			

THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED

Drawing Number <b>2966_SK_P_0001</b>	Rev -
---	----------

**Arcus Consultancy Services**  
 7th Floor  
 144 West George Street  
 Glasgow, G2 2HG  
 Tel: +44 (0)141 221 9997  
 Fax: +44 (0)141 221 5610  
[www.arcusconsulting.co.uk](http://www.arcusconsulting.co.uk)



**APPENDIX B – ROUTE TO SITE**



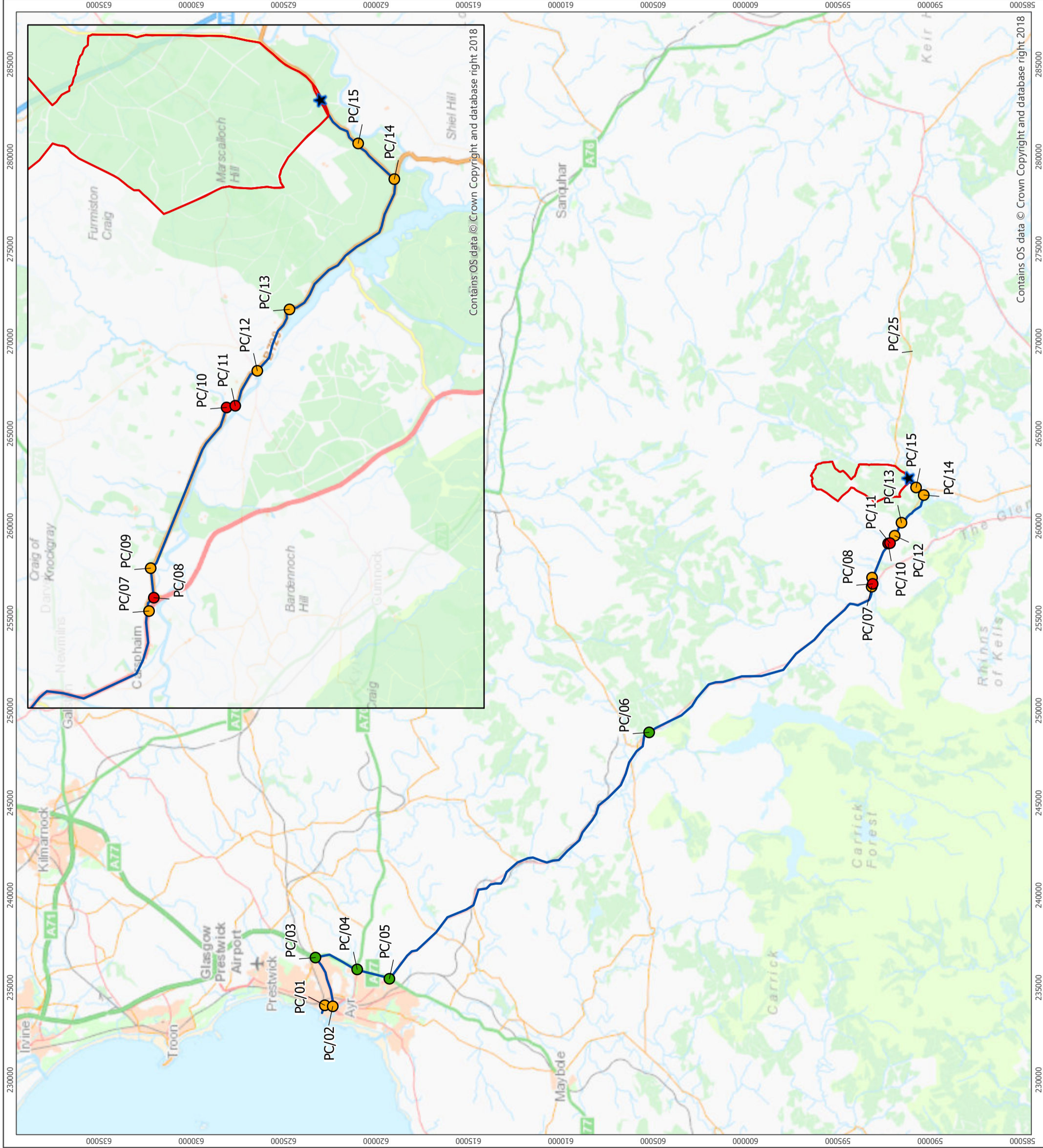
- Site Entrance Location
- Site Boundary
- Abnormal Load Route
- Low Risk Pinch Point
- Medium Risk Pinch Point
- High Risk Pinch Point



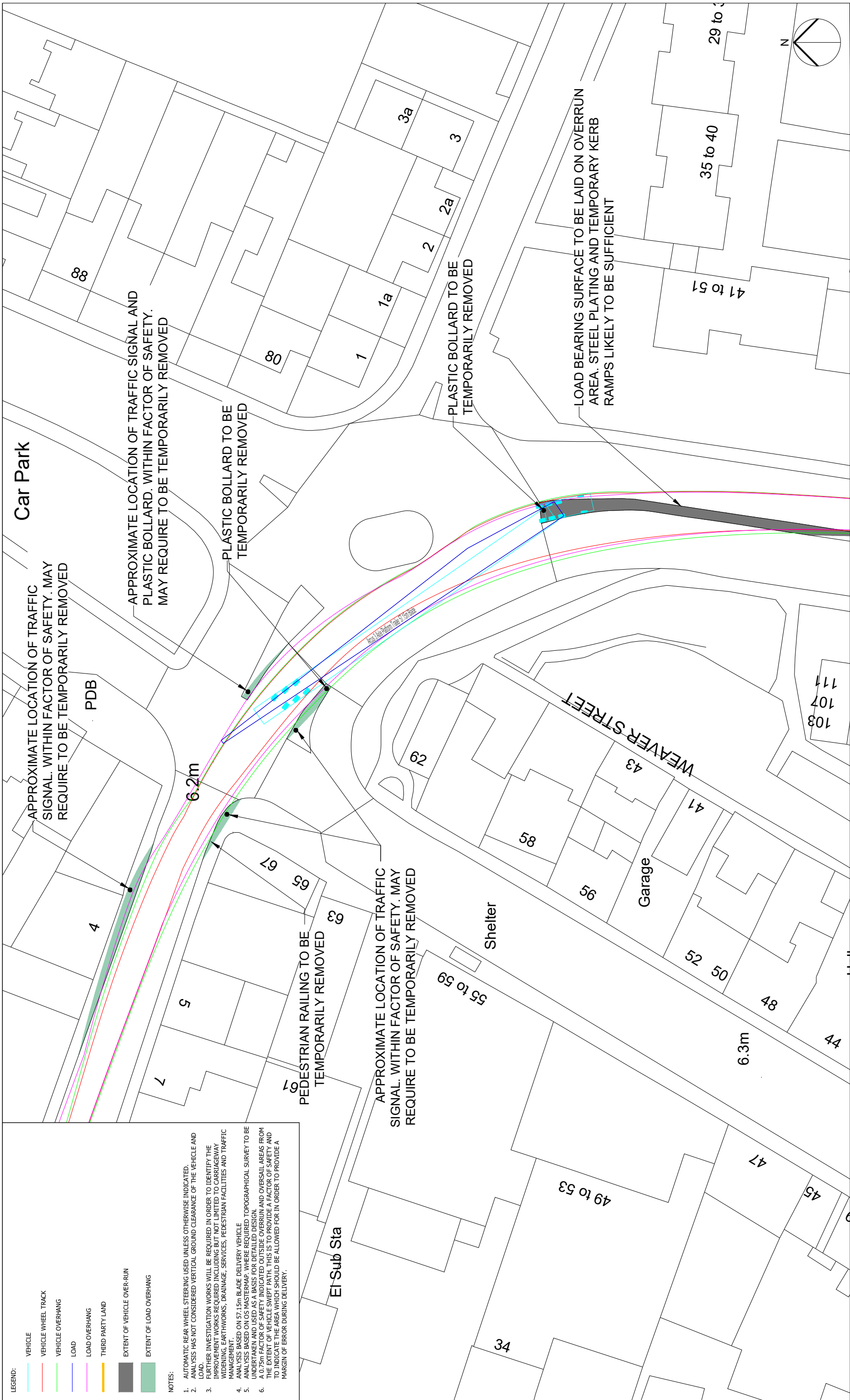
Produced By: KL	Ref: 2966-REP-013
Checked By: SC	Date: 01/08/2018

**Figure 1: Pinch Point Location**

**Shepherds Rig Wind Farm**



## **APPENDIX C – SWEPT PATH ANALYSIS DRAWINGS**



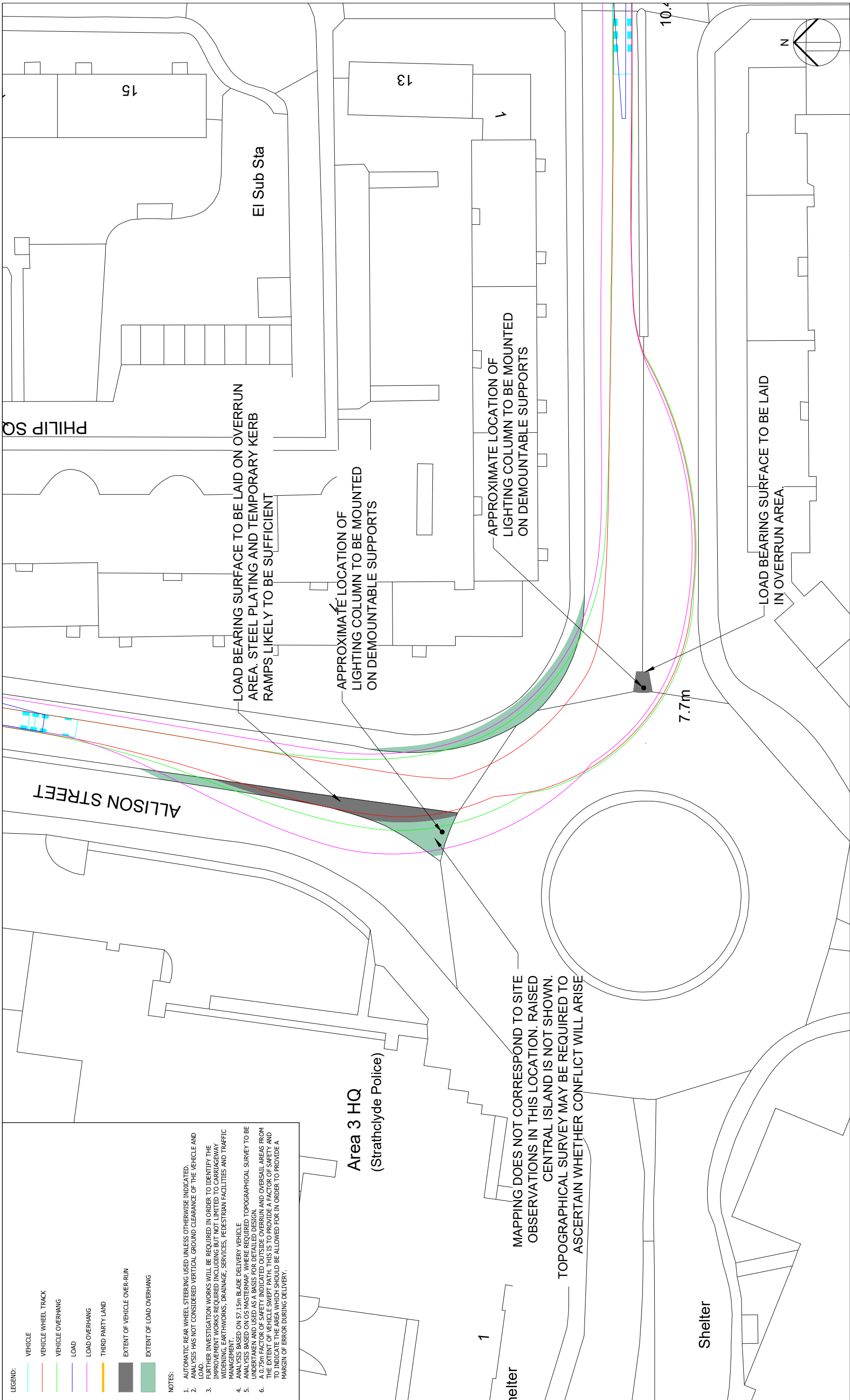
**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
2. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
3. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE. TOPOGRAPHICAL SURVEY TO BE CONDUCTED TO IDENTIFY ANY OBSTACLES AND OVERSAIL AREAS FROM A 0.75m FACTOR OF SAFETY INDICATED OUTSIDE OVERRUN AND OVERSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

<b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		<b>Drawing Title</b> WAGGON ROAD / ALLISON STREET ROUNDABOUT, AYR		<b>FOR INFORMATION</b>		<b>ARCUS</b> Arcus Consultancy Services 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 <a href="http://www.arcusconsulting.co.uk">www.arcusconsulting.co.uk</a>	
<b>Client</b> INFENERGY	PC/01 WAGGON ROAD / ALLISON STREET ROUNDABOUT, AYR	Designed KL	Drawn KL	Checked TAT	Approved TAT	Date 30/07/2018	Drawing Number 2966_ALR_P_0001
Purpose of issue		Arcus Internal Project No. 2966		Scale @ A3 1:500		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED	
File Name: P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001		Plot Date: 07 August 2018 16:10:31		Reproduced from Ordnance Survey digital map data © Crown copyright 2018. All rights reserved. License number 100048606		Rev -	



**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED.
2. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
3. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
4. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE.
5. ANALYSIS BASED ON 105 METERS CLEARANCE HEIGHT REQUIRED.
6. A 0.75m FACTOR OF SAFETY INDICATED OUTSIDE OVERRUN AND OVERSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

**Area 3 HQ**  
(Strathclyde Police)

**Shelter**

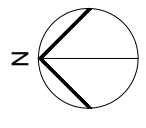
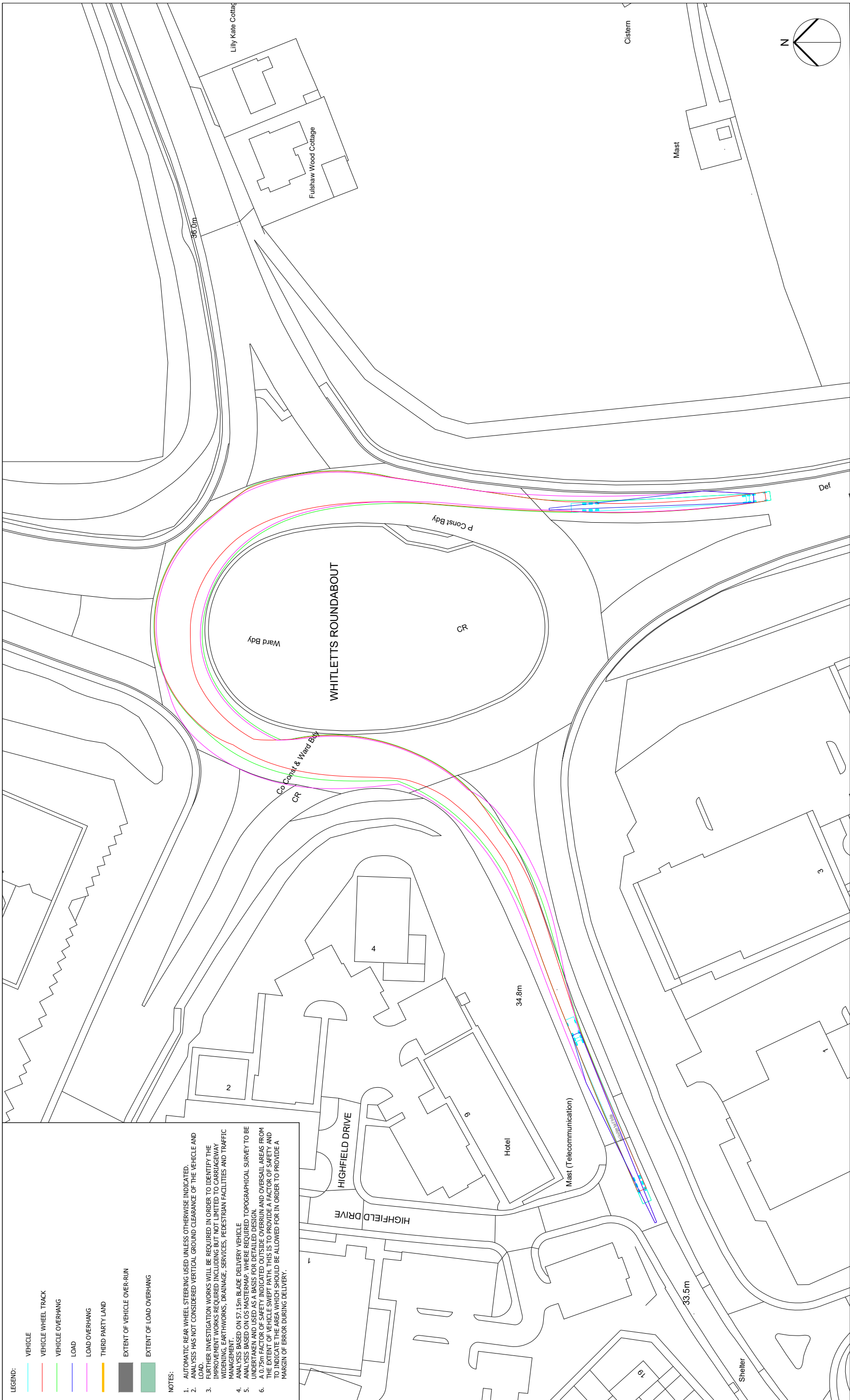
**Shelter**

MAPPING DOES NOT CORRESPOND TO SITE OBSERVATIONS IN THIS LOCATION. RAISED CENTRAL ISLAND IS NOT SHOWN. TOPOGRAPHICAL SURVEY MAY BE REQUIRED TO ASCERTAIN WHETHER CONFLICT WILL ARISE

<b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		<b>Drawing Title</b> PC/02 ALLISON STREET / WHITLETTS ROAD ROUNDABOUT, AYR		<b>Purpose of Issue</b> FOR INFORMATION	
Client	INFENERGY	Designed	KL	Drawn	KL
		Checked	TAT	Approved	TAT
		Date		30/07/2018	
		Arcus Internal Project No.		2966	
		Scale @ A3		1:500	
THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED		Drawing Number 2966_ALR_P_0002		Rev -	

**ARCUS**

**Arcus Consultancy Services**  
 7th Floor  
 144 West George Street  
 Glasgow, G2 2HG  
 Tel: +44 (0)141 221 9997  
 Fax: +44 (0)141 221 5610  
 www.arcusconsulting.co.uk



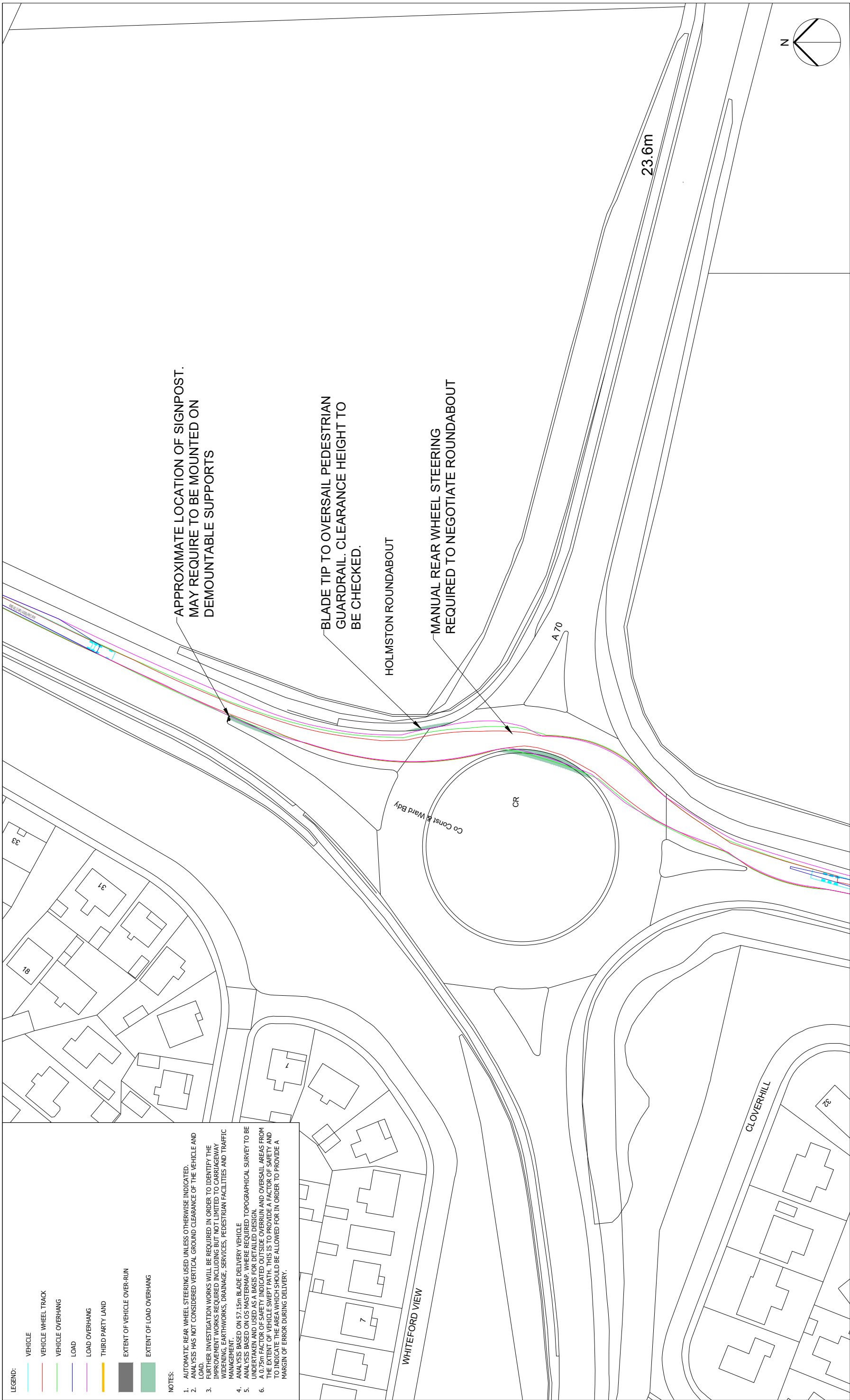
- LEGEND:**
- VEHICLE
  - VEHICLE WHEEL TRACK
  - VEHICLE OVERHANG
  - LOAD
  - LOAD OVERHANG
  - THIRD PARTY LAND
  - EXTENT OF VEHICLE OVER-RUN
  - EXTENT OF LOAD OVERHANG

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED.
2. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
3. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
4. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE TOPOGRAPHICAL SURVEY TO BE UNDERTAKEN ON THE VEHICLE TRACKS WHERE REQUIRED.
5. A 0.75m FACTOR OF SAFETY INDICATED OUTSIDE OVERHANG AND OVERSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

<p><b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</p> <p><b>Client</b> INFENERGY</p>	<p><b>Drawing Title</b> PC/03 WHITLETTS ROUNDABOUT ROUNDABOUT, AYR</p>	<p><b>Purpose of Issue</b> FOR INFORMATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Designed KL</td> <td>Drawn KL</td> <td>Checked TAT</td> <td>Approved TAT</td> </tr> <tr> <td colspan="3">Arcus Internal Project No. 2966</td> <td>Date 30/07/2018</td> </tr> <tr> <td colspan="3">Scale @ A3 1:500</td> <td></td> </tr> </table>	Designed KL	Drawn KL	Checked TAT	Approved TAT	Arcus Internal Project No. 2966			Date 30/07/2018	Scale @ A3 1:500				<p><b>THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED</b></p> <p>Drawing Number <b>2966_ALR_P_0003</b></p> <p>Rev -</p>
Designed KL	Drawn KL	Checked TAT	Approved TAT												
Arcus Internal Project No. 2966			Date 30/07/2018												
Scale @ A3 1:500															
<p><b>Arcus Consultancy Services</b> 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 <a href="http://www.arcusconsulting.co.uk">www.arcusconsulting.co.uk</a></p>															





**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
2. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
3. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE TOPOGRAPHICAL SURVEY TO BE USED TO IDENTIFY AREAS WHERE IMPROVEMENTS ARE REQUIRED. OVERSAIL AREAS FROM A 0.75 FACTOR OF SAFETY INDICATED OUTSIDE OVERHANG AND OVERSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

APPROXIMATE LOCATION OF SIGNPOST. MAY REQUIRE TO BE MOUNTED ON DEMOUNTABLE SUPPORTS

BLADE TIP TO OVERSAIL PEDESTRIAN GUARDRAIL. CLEARANCE HEIGHT TO BE CHECKED.

HOLMSTON ROUNDABOUT

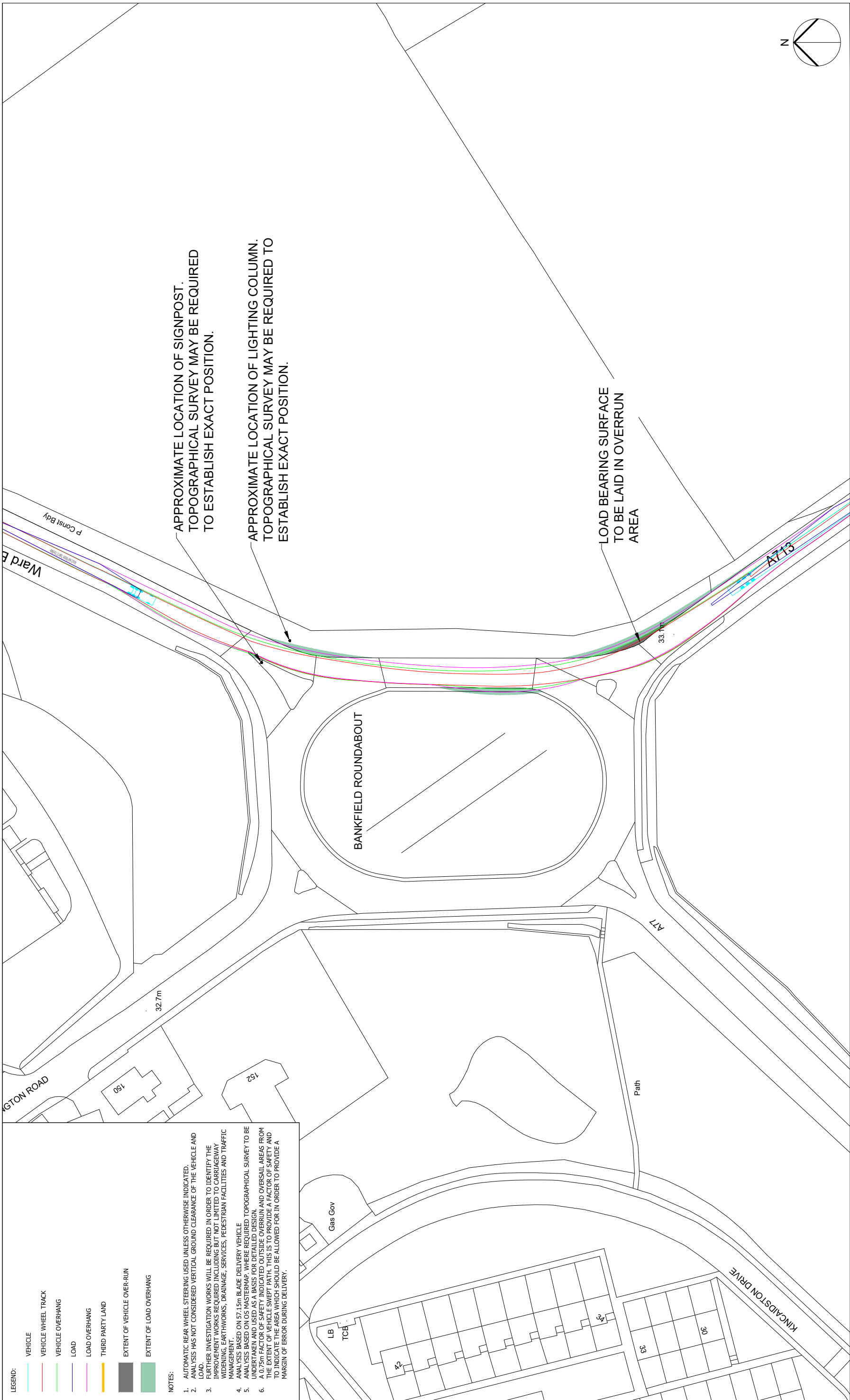
MANUAL REAR WHEEL STEERING REQUIRED TO NEGOTIATE ROUNDABOUT

<b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		<b>Drawing Title</b> PC/04 HOLMSTON ROUNDABOUT		<b>Purpose of issue</b> FOR INFORMATION	
<b>Client</b> INFENERGY		Designed KL		Checked TAT	
Approved TAT		Drawn KL		Date 30/07/2018	
Arcus Internal Project No. 2966		Scale @ A3 1:1000		Drawing Number 2966_ALR_P_0004	
Rev -		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED			

**Arcus Consultancy Services**

7th Floor  
 144 West George Street  
 Glasgow, G2 2HG

Tel: +44 (0)141 221 9997  
 Fax: +44 (0)141 221 5610  
[www.arcusconsulting.co.uk](http://www.arcusconsulting.co.uk)



**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
2. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
3. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE.
4. ANALYSIS BASED ON 0.5m WHEELSPACING WHERE REQUIRED. TOPOGRAPHICAL SURVEY TO BE PROVIDED TO IDENTIFY EXACT POSITION OF WHEEL TRACKS AND OVERSAIL AREAS FROM A 0.75m FACTOR OF SAFETY INDICATED OUTSIDE OVERRUN AND OVERSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

APPROXIMATE LOCATION OF SIGNPOST. TOPOGRAPHICAL SURVEY MAY BE REQUIRED TO ESTABLISH EXACT POSITION.

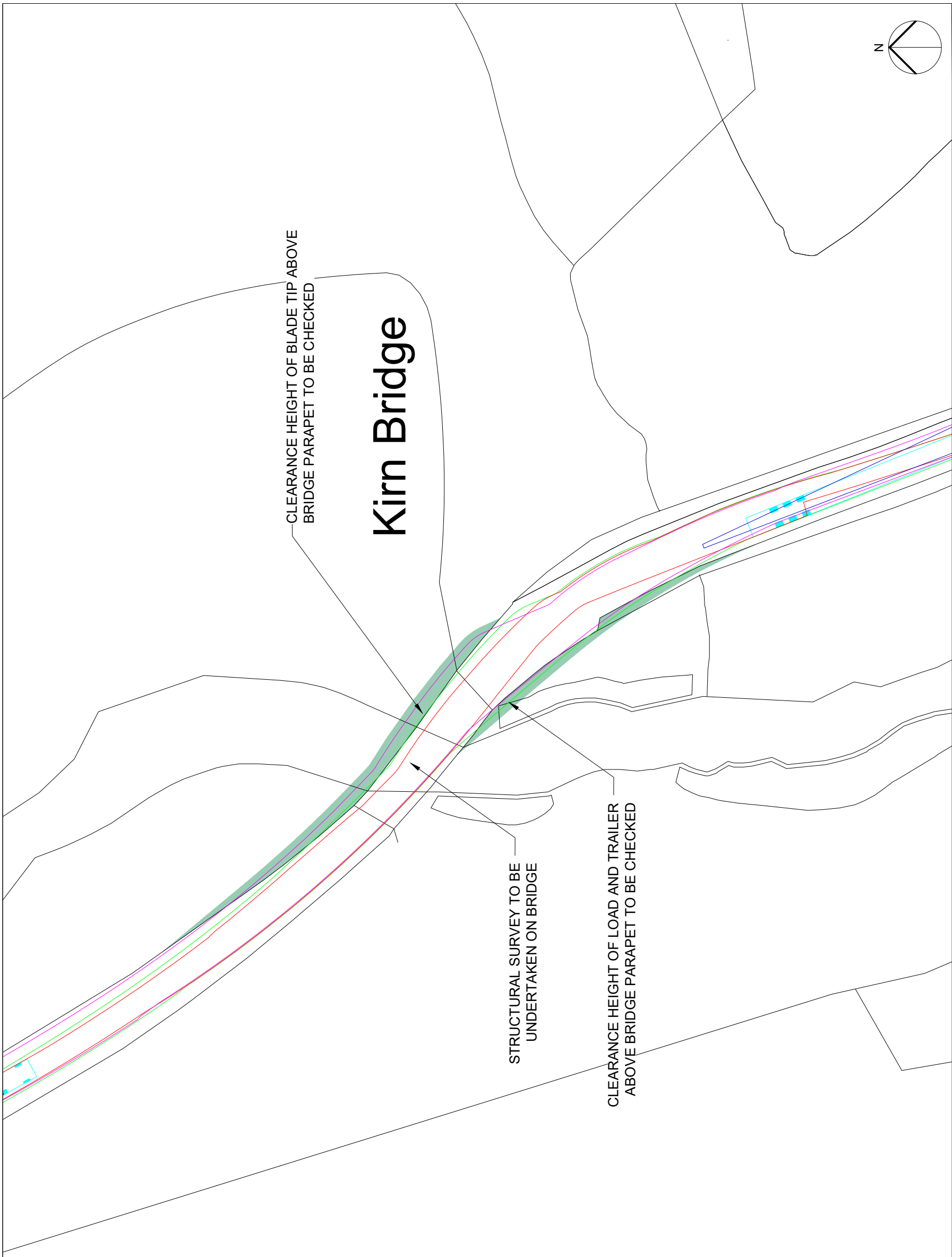
APPROXIMATE LOCATION OF LIGHTING COLUMN. TOPOGRAPHICAL SURVEY MAY BE REQUIRED TO ESTABLISH EXACT POSITION.

LOAD BEARING SURFACE TO BE LAID IN OVERRUN AREA

<b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		<b>Drawing Title</b> PC/05 BANKFIELD ROUNDABOUT		<b>Purpose of Issue</b> FOR INFORMATION	
<b>Client</b> INFENERGY		Designed KL		Drawn KL	
Arcus Internal Project No. 2966		Checked TAT		Approved TAT	
Scale @ A3 1:1000		Date 30/07/2018		Drawing Number 2966_ALR_P_0005	
Rev -		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED			



**Arcus Consultancy Services**  
 7th Floor  
 144 West George Street  
 Glasgow, G2 2HG  
 Tel: +44 (0)141 221 9997  
 Fax: +44 (0)141 221 5610  
[www.arcusconsulting.co.uk](http://www.arcusconsulting.co.uk)



**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
2. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
3. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE TOPOGRAPHICAL SURVEY TO BE UNDERTAKEN ON THE BRIDGE AND APPROACHES TO IDENTIFY ANY AREAS WHERE REQUIRED TO PROVIDE A MARGIN OF SAFETY. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.
4. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE TOPOGRAPHICAL SURVEY TO BE UNDERTAKEN ON THE BRIDGE AND APPROACHES TO IDENTIFY ANY AREAS WHERE REQUIRED TO PROVIDE A MARGIN OF SAFETY. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.
5. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE TOPOGRAPHICAL SURVEY TO BE UNDERTAKEN ON THE BRIDGE AND APPROACHES TO IDENTIFY ANY AREAS WHERE REQUIRED TO PROVIDE A MARGIN OF SAFETY. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.
6. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE TOPOGRAPHICAL SURVEY TO BE UNDERTAKEN ON THE BRIDGE AND APPROACHES TO IDENTIFY ANY AREAS WHERE REQUIRED TO PROVIDE A MARGIN OF SAFETY. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

<p><b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</p> <p><b>Client</b> INFENERGY</p>	<p><b>Drawing Title</b> PC/06 KIRN BRIDGE</p>	<p><b>Purpose of Issue</b> FOR INFORMATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Designed KL</td> <td>Drawn KL</td> <td>Checked TAT</td> <td>Approved TAT</td> </tr> <tr> <td colspan="3">Arcus Internal Project No. 2966</td> <td>Date 31/07/2018</td> </tr> <tr> <td colspan="3">Scale @ A3 1:500</td> <td></td> </tr> </table>	Designed KL	Drawn KL	Checked TAT	Approved TAT	Arcus Internal Project No. 2966			Date 31/07/2018	Scale @ A3 1:500				<p>THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED</p> <p>Drawing Number 2966_ALR_P_0006</p> <p>Rev -</p>
Designed KL	Drawn KL	Checked TAT	Approved TAT												
Arcus Internal Project No. 2966			Date 31/07/2018												
Scale @ A3 1:500															
<p><b>Arcus Consultancy Services</b> 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 <a href="http://www.arcusconsulting.co.uk">www.arcusconsulting.co.uk</a></p>															



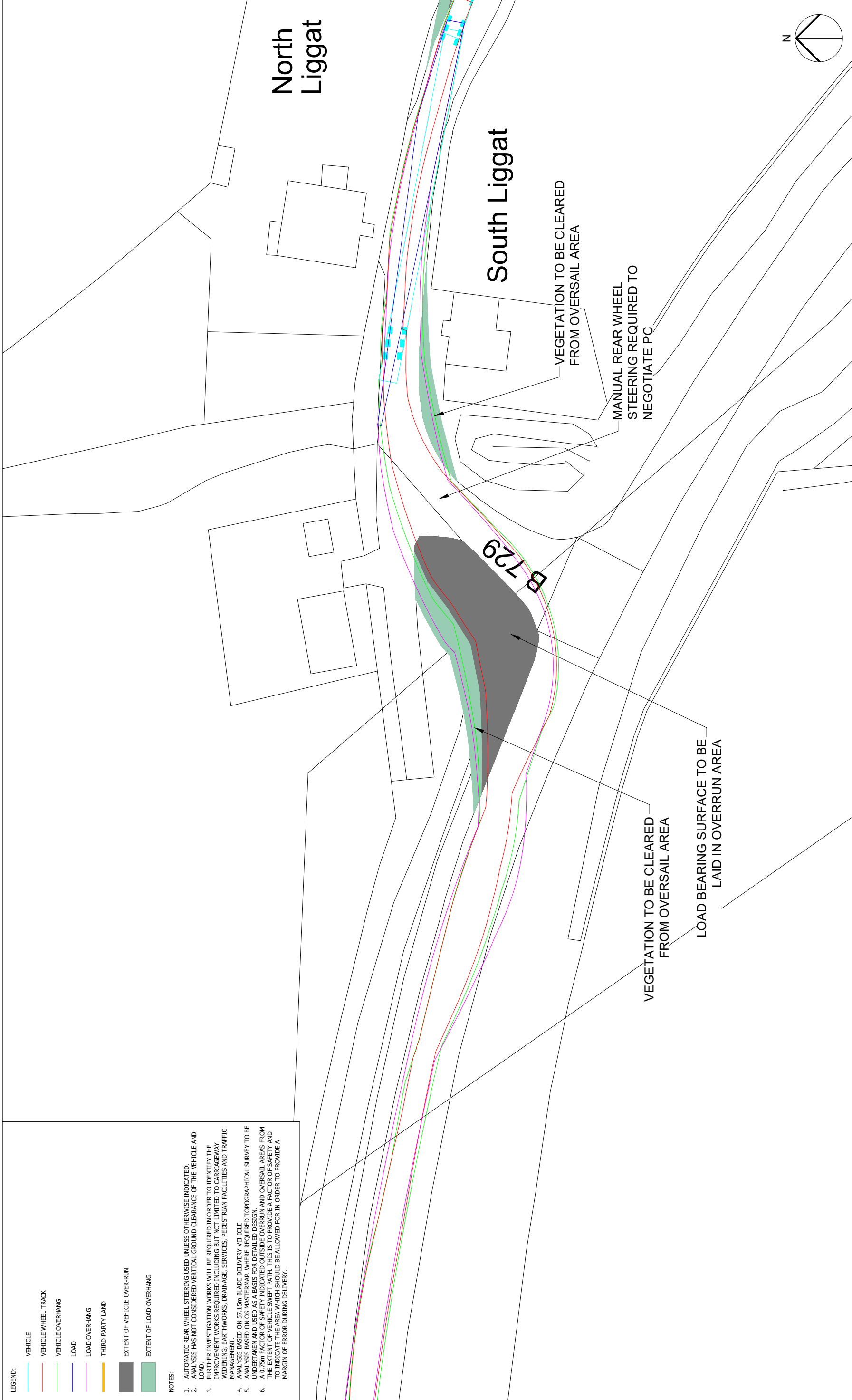


LEGEND:

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

NOTES:


1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED.
2. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
3. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
4. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE
5. ANALYSIS BASED ON 105 METRE WHEEL SPACING
6. A 0.75m FACTOR OF SAFETY INDICATED OUTSIDE OVER-RUN AND OVERSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

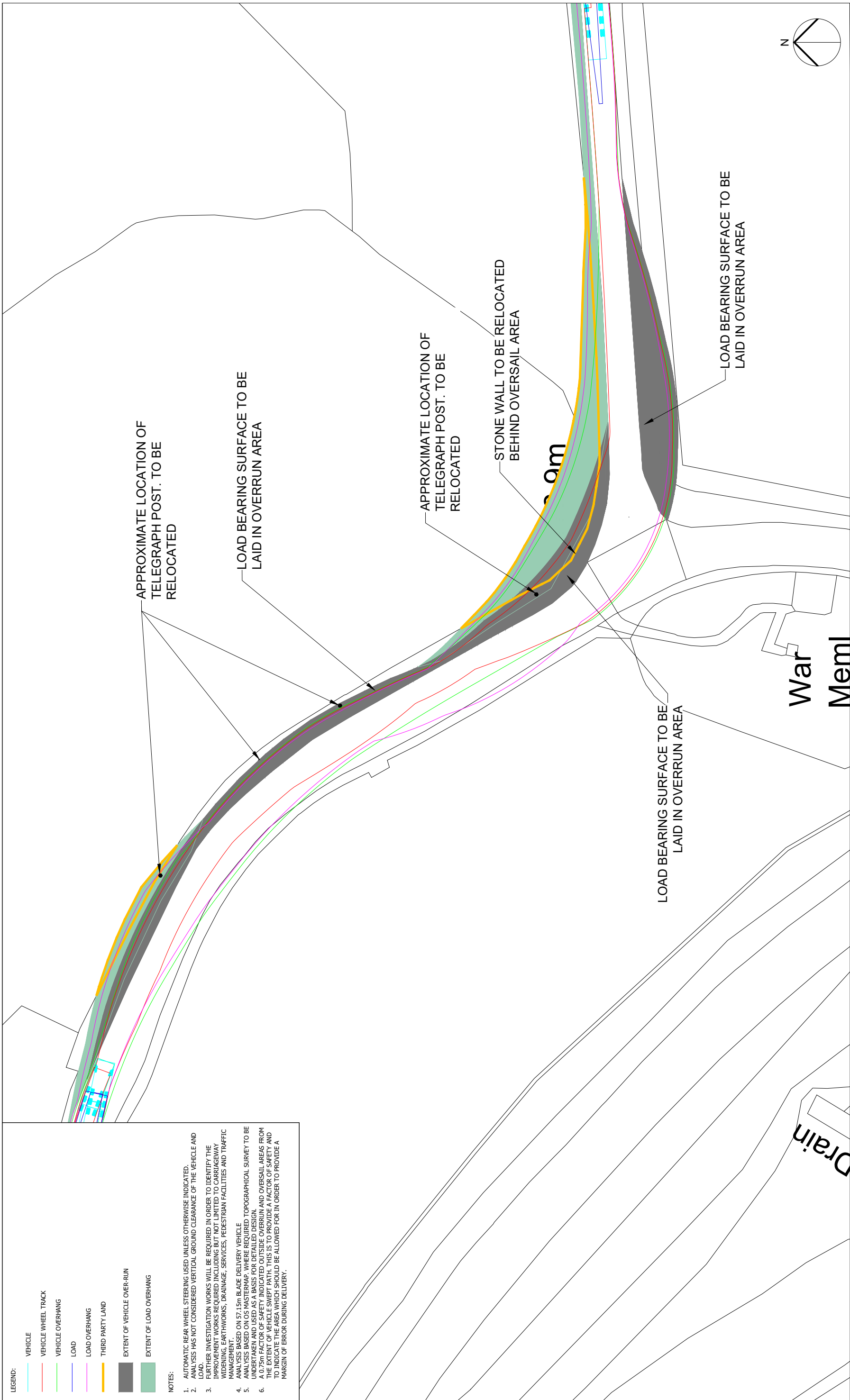


Project Title	SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT	
Client	INFENERGY	

Drawing Title	PC/07 A713/B729 JUNCTION	
Purpose of issue	FOR INFORMATION	
Designed	Drawn	Checked
KL	KL	TAT
Arcus Internal Project No.	Date	
2966	31/07/18	
Scale @ A3	1:500	

THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED	
Drawing Number	Rev
2966_ALR_P_0007	-


  
**ARCUS**  
 Arcus Consultancy Services  
 7th Floor  
 144 West George Street  
 Glasgow, G2 2HG  
 Tel: +44 (0)141 221 9997  
 Fax: +44 (0)141 221 5610  
[www.arcusconsulting.co.uk](http://www.arcusconsulting.co.uk)



**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERRANG
- LOAD
- LOAD OVERRANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVERRUN
- EXTENT OF LOAD OVERRANG

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
2. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
3. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE TOPOGRAPHICAL SURVEY TO BE UNDERTAKEN TO IDENTIFY THE AREAS WHERE REQUIRED CLEARANCE IS NOT MET.
4. A 0.75m FACTOR OF SAFETY INDICATED OUTSIDE OVERRUN AND OVERRUN AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

<b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		<b>Drawing Title</b> PC/08 B729 JUNCTION AT WAR MEMORIAL		<b>FOR INFORMATION</b>		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED		<b>Arcus Consultancy Services</b> 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 <a href="http://www.arcusconsulting.co.uk">www.arcusconsulting.co.uk</a>	
<b>Client</b> INFENERGY		Arcus Internal Project No. 2966		Checked TAT		Approved TAT		Drawing Number 2966_ARL_P_0008	
Scale @ A3 1:500		Date 31/07/18		Rev -					



LEGEND:

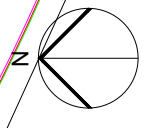
- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

NOTES:

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
2. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
3. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE.
4. ANALYSIS BASED ON 25 METER SWEEP WHERE REQUIRED. TOPOGRAPHICAL SURVEY TO BE CONDUCTED TO IDENTIFY EXISTING OBSTACLES AND OVERSAIL AREAS FROM A 0.75% FACTOR OF SAFETY INDICATED OUTSIDE OVER-RUN AND OVERSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

# 185m

CLEARANCE HEIGHT OF LOAD ABOVE STONE WALL TO BE CHECKED



Project Title  
**SHEPHERDS RIG WIND FARM  
 ABNORMAL LOAD  
 ROUTE ASSESSMENT**

Client  
**INFENERGY**

Drawing Title

**PC/09  
 B729 BEND OVER CULVERT  
 AT DALBONNITON KNOWE**

Purpose of issue

**FOR INFORMATION**

Designed KL	Drawn KL	Checked TAT	Approved TAT
Arcus Internal Project No. 2966		Date 31/07/18	
Scale @ A3 1:500			

THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED

Drawing Number  
**2966\_ALR\_P\_0009**

Rev

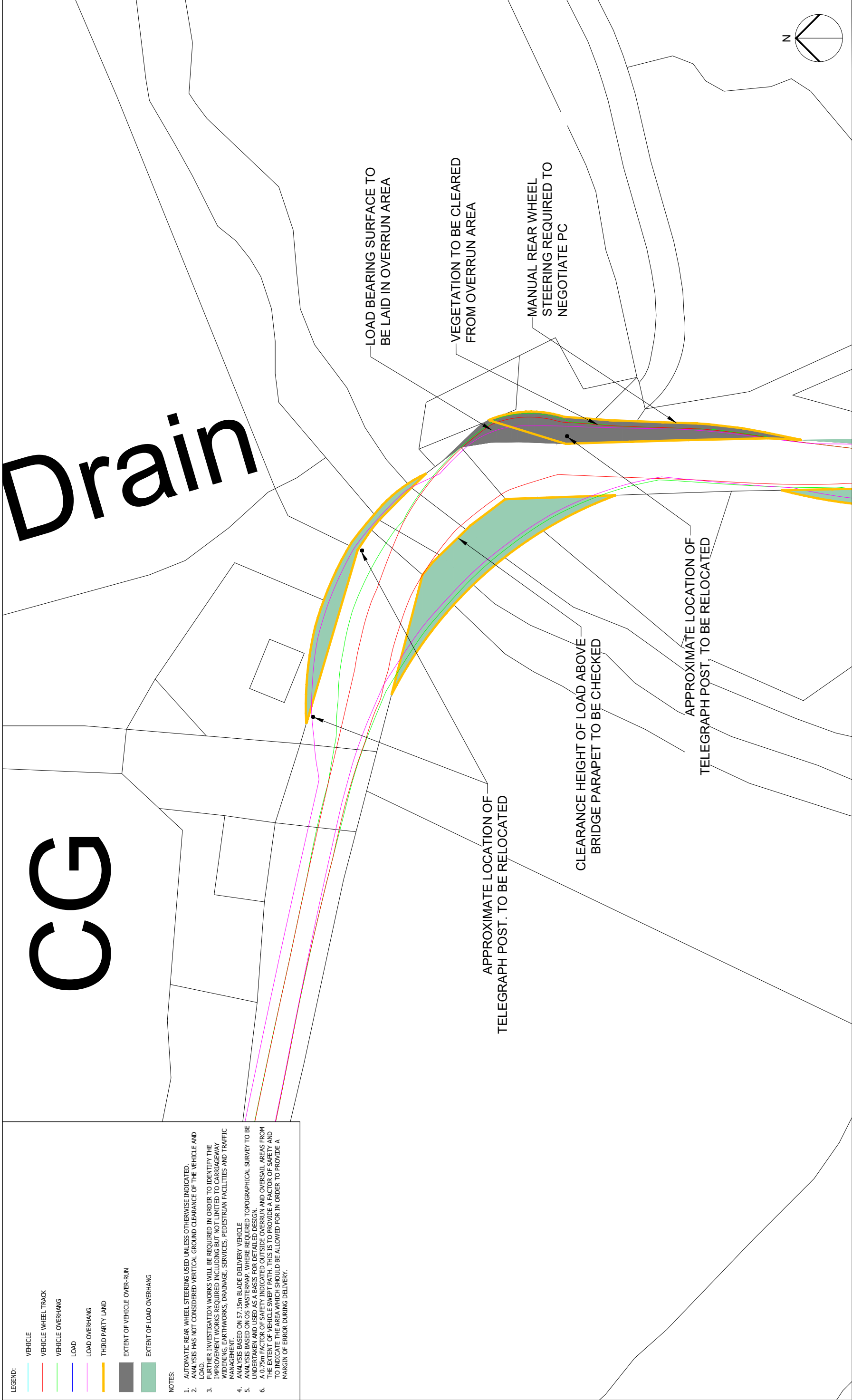
-

**Arcus Consultancy Services**

7th Floor  
 144 West George Street  
 Glasgow, G2 2HG  
 Tel: +44 (0)141 221 9997  
 Fax: +44 (0)141 221 5610  
[www.arcusconsulting.co.uk](http://www.arcusconsulting.co.uk)



**ARCUS**



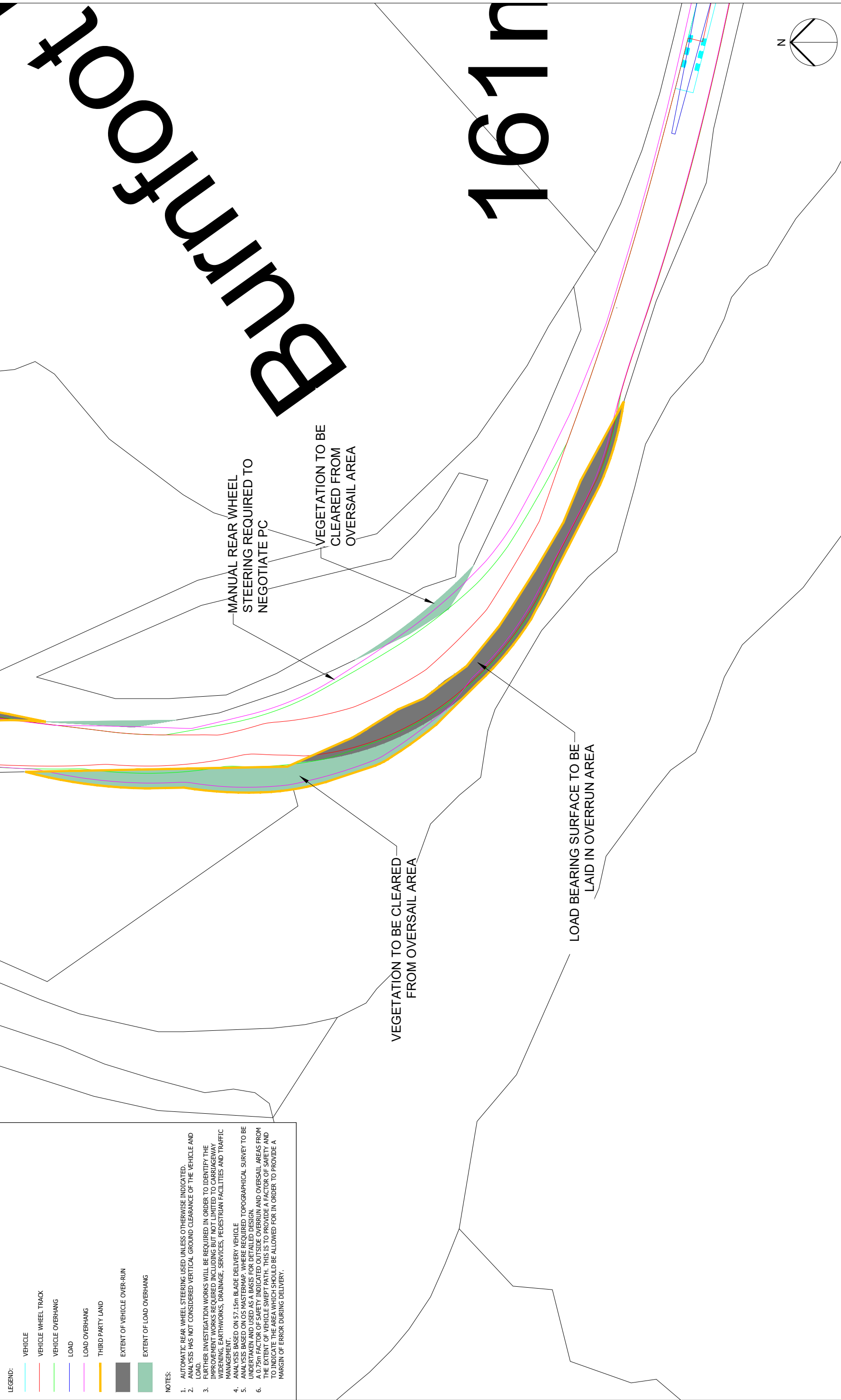
**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERRUN
- LOAD
- LOAD OVERRUN
- THIRD-PARTY LAND
- EXTENT OF VEHICLE OVERRUN
- EXTENT OF LOAD OVERRUN

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED.
2. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
3. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
4. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE.
5. ANALYSIS BASED ON 10.5m WHEEL PARAPET HEIGHT REQUIRED TO OVERSAIL AREAS FROM A 0.75% FACTOR OF SAFETY INDICATED OUTSIDE OVERRUN AND OVERRUN AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.
- 6.

<p><b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</p> <p><b>Client</b> INFENERGY</p>	<p><b>Drawing Title</b> PC/010 B729 BURNFOOT BRIDGE</p>	<p><b>Purpose of issue</b> FOR INFORMATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Designed KL</td> <td>Drawn KL</td> <td>Checked TAT</td> <td>Approved TAT</td> </tr> <tr> <td colspan="3">Arcus Internal Project No. 2966</td> <td>Date 31/07/18</td> </tr> <tr> <td colspan="3">Scale @ A3 1:500</td> <td></td> </tr> </table>	Designed KL	Drawn KL	Checked TAT	Approved TAT	Arcus Internal Project No. 2966			Date 31/07/18	Scale @ A3 1:500				<p><b>THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED</b></p> <p>Drawing Number 2966_ALR_P_0010</p> <p>Rev -</p>
Designed KL	Drawn KL	Checked TAT	Approved TAT												
Arcus Internal Project No. 2966			Date 31/07/18												
Scale @ A3 1:500															
<p>ARCUS CONSULTANCY SERVICES 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 <a href="http://www.arcusconsulting.co.uk">www.arcusconsulting.co.uk</a></p>															



**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD-PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
2. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
3. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE. TOPOGRAPHICAL SURVEY TO BE CONDUCTED TO IDENTIFY AREAS WHERE REQUIRED TO OVERSAIL AREAS FROM A 0.75% FACTOR OF SAFETY. INDICATED OUTSIDE OVERRUN AND OVERSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

<p><b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</p> <p><b>Client</b> INFENERGY</p>	<p><b>Drawing Title</b> PC/11 B729 BEND AFTER BURNFOOT BRIDGE</p>	<p><b>Purpose of Issue</b> FOR INFORMATION</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Designed KL</td> <td>Drawn KL</td> <td>Checked TAT</td> <td>Approved TAT</td> </tr> <tr> <td colspan="3">Arcus Internal Project No. 2966</td> <td>Date 31/07/18</td> </tr> <tr> <td colspan="3">Scale @ A3 1:500</td> <td></td> </tr> </table>	Designed KL	Drawn KL	Checked TAT	Approved TAT	Arcus Internal Project No. 2966			Date 31/07/18	Scale @ A3 1:500				<p><b>THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED</b></p> <p>Drawing Number 2966_ALR_P_0011</p> <p>Rev -</p>
Designed KL	Drawn KL	Checked TAT	Approved TAT												
Arcus Internal Project No. 2966			Date 31/07/18												
Scale @ A3 1:500															
<p><b>Arcus Consultancy Services</b> 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 <a href="http://www.arcusconsulting.co.uk">www.arcusconsulting.co.uk</a></p>															





**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

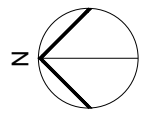
**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
2. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
3. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE.
4. ANALYSIS BASED ON 25 METER SWEEP WHERE REQUIRED. TOPOGRAPHICAL SURVEY TO BE CONDUCTED TO IDENTIFY EXACT SWEEP WIDTH AND POSITION.
5. A 0.75% FACTOR OF SAFETY INDICATED OUTSIDE OVER-RUN AND OVERSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.
- 6.

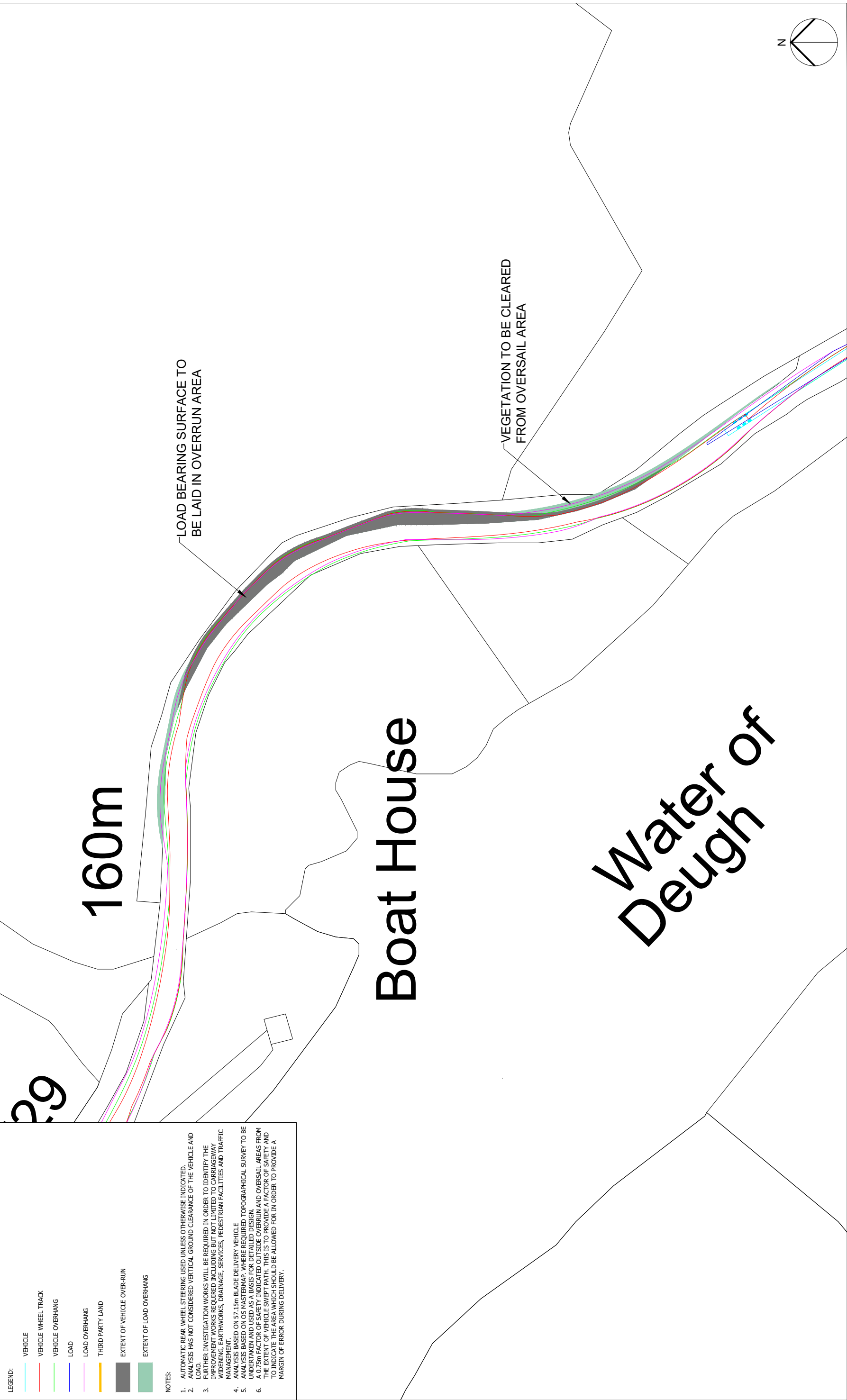
MAPPING DOES NOT CORRESPOND TO SITE OBSERVATIONS AT THIS LOCATION. TOPOGRAPHICAL SURVEY MAY BE REQUIRED TO DETERMINE EXTENT OF REQUIRED WORKS.

165m

ie



<b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		<b>Drawing Title</b> PC/12 B729 BEND AT KENSGLEN		<b>Purpose of issue</b> FOR INFORMATION		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED		<b>Arcus Consultancy Services</b> 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 <a href="http://www.arcusconsulting.co.uk">www.arcusconsulting.co.uk</a>	
<b>Client</b> INFENERGY		Arcus Internal Project No. 2966		Checked TAT		Approved TAT		Drawing Number 2966_ALR_P_0012	
Scale @ A3 1:500		Date 31/07/18		Rev -					



**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED.
2. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
3. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
4. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE.
5. ANALYSIS BASED ON 25 METER SWEEP WHERE REQUIRED. TOPOGRAPHICAL SURVEY TO BE COMPLETED TO IDENTIFY ANY OBSTACLES TO THE ROUTE.
6. A 0.75% FACTOR OF SAFETY INDICATED OUTSIDE OVSAIL AND OVSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

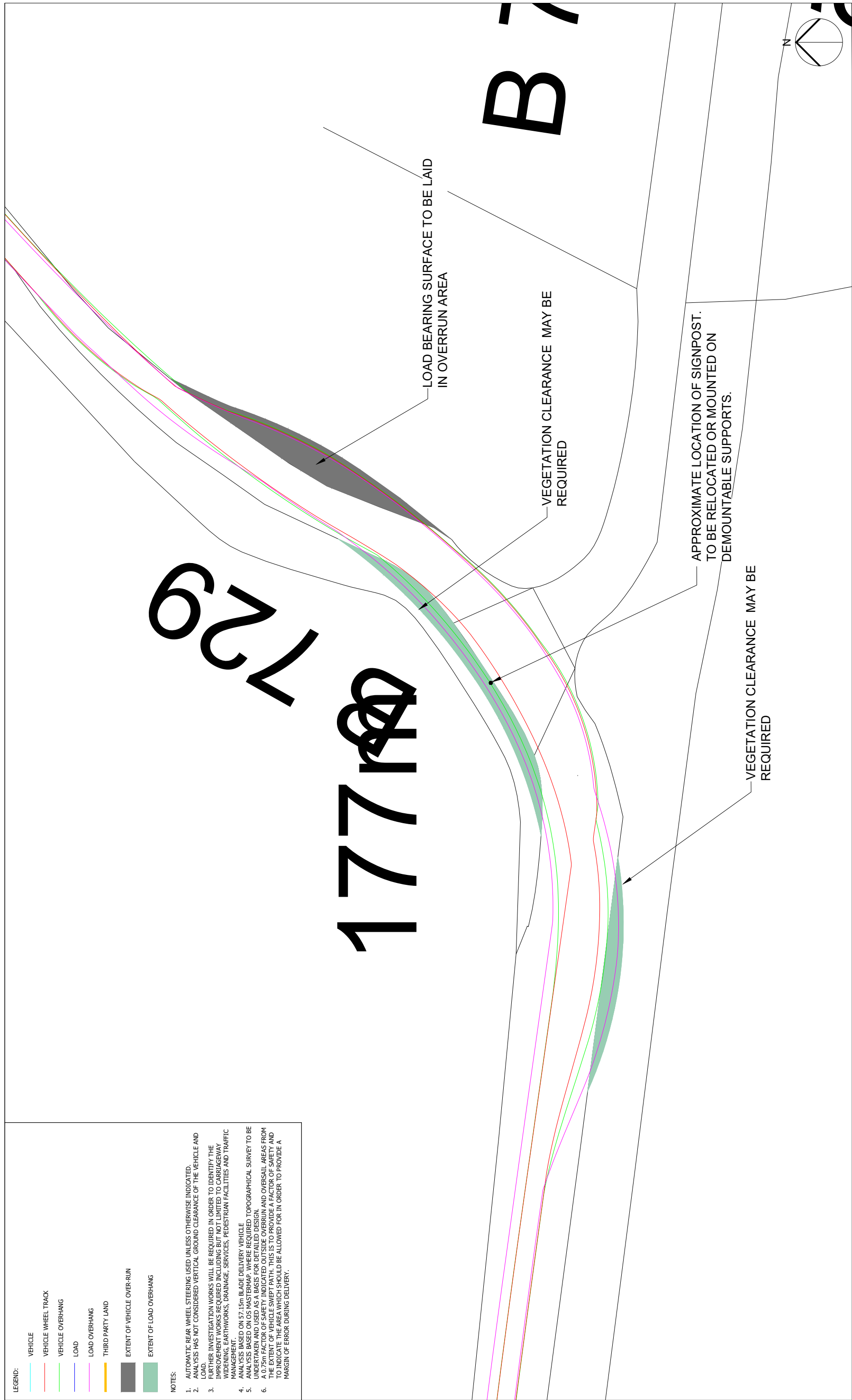
<b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		<b>Drawing Title</b> B729 BEND AT NETHER LOSKIE		<b>Purpose of issue</b> FOR INFORMATION	
<b>Client</b> INFENERGY		PC/13		Designed KL	
Arcus Internal Project No. 2966		Drawn KL		Checked TAT	
Scale @ A3 1:1000		Arcus Internal Project No. 2966		Approved TAT	
Date 12/07/18		Date 12/07/18		Date 12/07/18	
Drawing Number 2966_ALR_P_0013		Rev -		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED	
<b>Arcus Consultancy Services</b> 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 <a href="http://www.arcusconsulting.co.uk">www.arcusconsulting.co.uk</a>					

**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

**NOTES:**


1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED.
2. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
3. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
4. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE.
5. ANALYSIS BASED ON 10.5m WHEELSPACER WHERE REQUIRED. TOPOGRAPHICAL SURVEY TO BE CONDUCTED TO IDENTIFY ANY UNRECORDED OBSTACLES.
6. A 0.75% FACTOR OF SAFETY INDICATED OUTSIDE OVERRUN AND OVERSAIL AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.



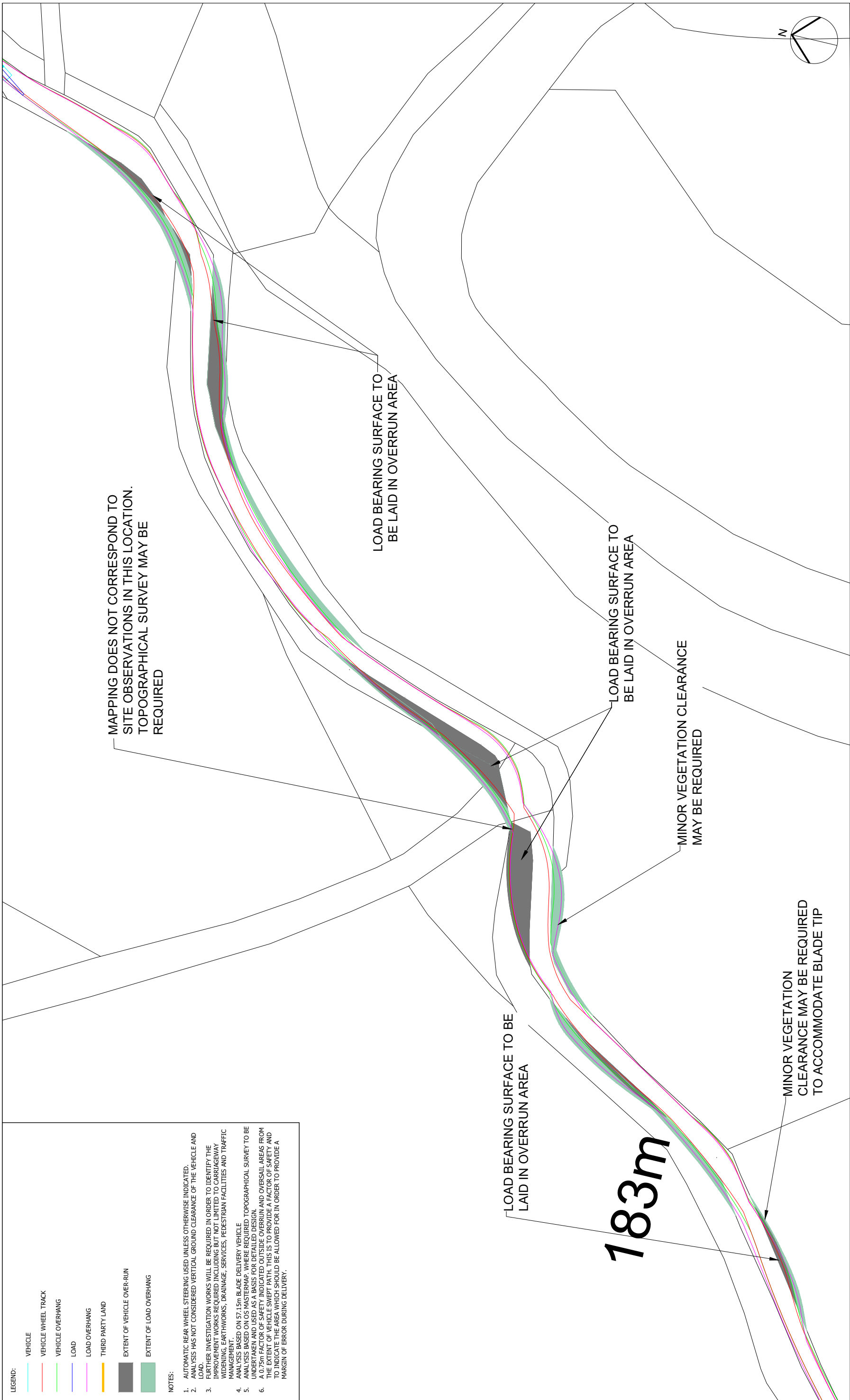
Project Title		Drawing Title	
SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		PC/14 BEND AT B729/B7000 JUNCTION	
Client	INFENERGY		

FOR INFORMATION			
Designed KL	Drawn KL	Checked TAT	Approved TAT
Arcus Internal Project No. 2966		Date 31/07/18	
Scale @ A3 1:500			

THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED	
Drawing Number 2966_ALR_P_0014	Rev -


**ARCUS**  
 Arcus Consultancy Services  
 7th Floor  
 144 West George Street  
 Glasgow, G2 2HG  
 Tel: +44 (0)141 221 9997  
 Fax: +44 (0)141 221 5610  
[www.arcusconsulting.co.uk](http://www.arcusconsulting.co.uk)





**LEGEND:**

- VEHICLE
- VEHICLE WHEEL TRACK
- VEHICLE OVERHANG
- LOAD
- LOAD OVERHANG
- THIRD PARTY LAND
- EXTENT OF VEHICLE OVER-RUN
- EXTENT OF LOAD OVERHANG

**NOTES:**

1. AUTOMATIC REAR WHEEL STEERING USED UNLESS OTHERWISE INDICATED.
2. ANALYSIS HAS NOT CONSIDERED VERTICAL GROUND CLEARANCE OF THE VEHICLE AND LOAD.
3. FURTHER INVESTIGATION WORKS WILL BE REQUIRED IN ORDER TO IDENTIFY THE IMPROVEMENT WORKS REQUIRED INCLUDING BUT NOT LIMITED TO CARRIAGEWAY WIDENING, EARTHWORKS, DRAINAGE, SERVICES, PEDESTRIAN FACILITIES AND TRAFFIC MANAGEMENT.
4. ANALYSIS BASED ON 57.15m BLADE DELIVERY VEHICLE.
5. ANALYSIS BASED ON 105 METRE BLADES WHICH ARE REQUIRED FOR THIS LOAD.
6. A 0.75m FACTOR OF SAFETY INDICATED OUTSIDE OVERRUN AND OVERRUN AREAS FROM THE EXTENT OF VEHICLE SWEEP PATH. THIS IS TO PROVIDE A FACTOR OF SAFETY AND TO INDICATE THE AREA WHICH SHOULD BE ALLOWED FOR IN ORDER TO PROVIDE A MARGIN OF ERROR DURING DELIVERY.

<b>Project Title</b> SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		<b>Drawing Title</b> B729 BEND AT MUIRDROCHWOOD PC/15		<b>Purpose of Issue</b> FOR INFORMATION	
Client	INFINERGY	Designed	KL	Drawn	KL
		Checked	TAT	Approved	TAT
		Arcus Internal Project No.		Date	
		2966		31/07/18	
		Scale @ A3		Rev	
		1:1000		-	
<b>Project Information</b> Arcus Consulting Services 7th Floor 144 West George Street Glasgow, G2 2HG Tel: +44 (0)141 221 9997 Fax: +44 (0)141 221 5610 <a href="http://www.arcusconsulting.co.uk">www.arcusconsulting.co.uk</a>		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED			

