



SHEPHERDS RIG WIND FARM
ABNORMAL LOAD ROUTE ASSESSMENT

JULY 2018



Prepared By:

Arcus Consultancy Services

7th Floor
145 West George Street
Glasgow
G2 2HG

T +44 (0)141 221 9997 | **E** info@arcusconsulting.co.uk
W www.arcusconsulting.co.uk

Registered in England & Wales No. 5644976

TABLE OF CONTENTS

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

APPENDIX A – VEHICLE DATA SHEET

APPENDIX B – ROUTE TO SITE

APPENDIX C – SWEPT 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 Ordnance 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
Blade	Length 57.15m

Table 2.2: Assumed delivery vehicles for Turbine Blade

	Data	Source
Blade Trailer	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 Carsphairn	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 accomodate 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

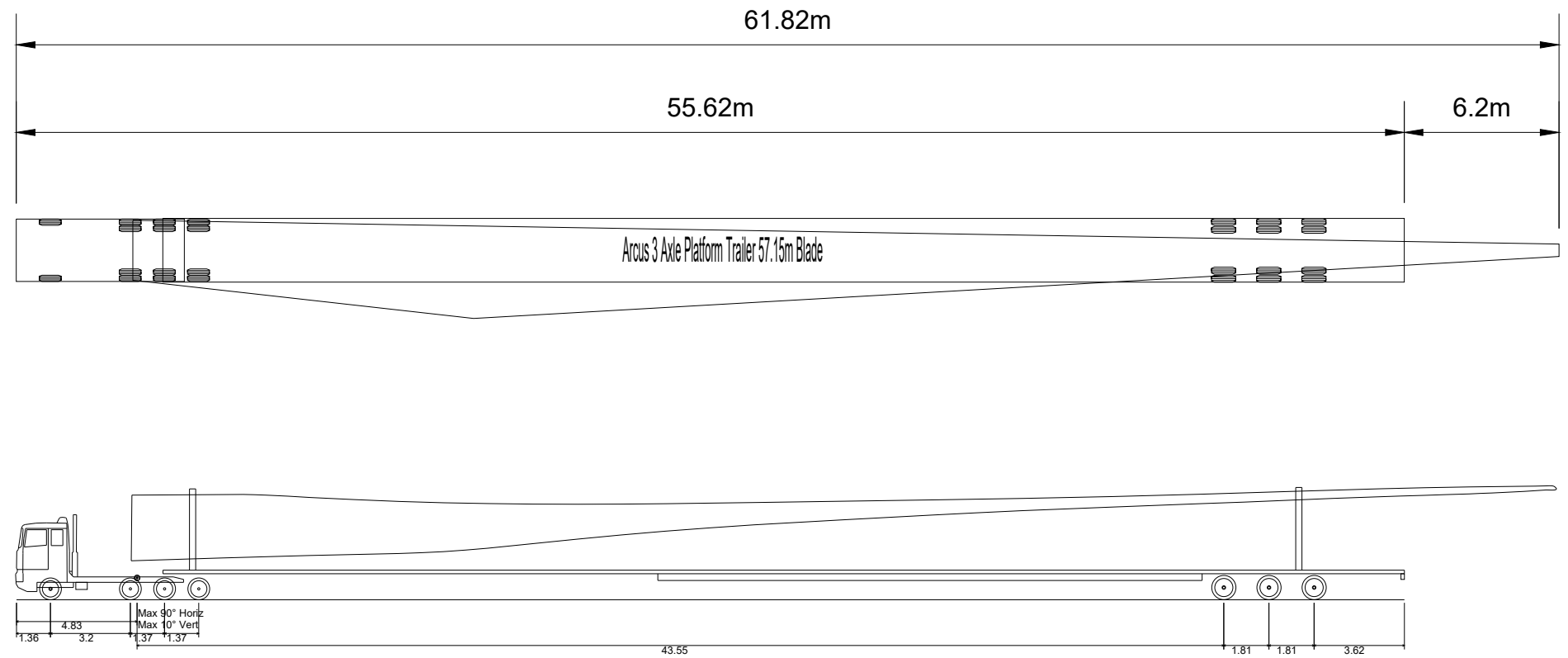
The delivery route was assessed for the candidate wind turbine blade vehicle. Fifteen pinch points were identified between the Port of Ayr and the start of the site entrance. Swept path analysis was conducted at each pinch point and details of required improvement works have are presented in the drawings.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


Plot Date : 07 August 2018 16:15:24
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001



Arcus 3 Axle Platform Trailer 57.15m Blade

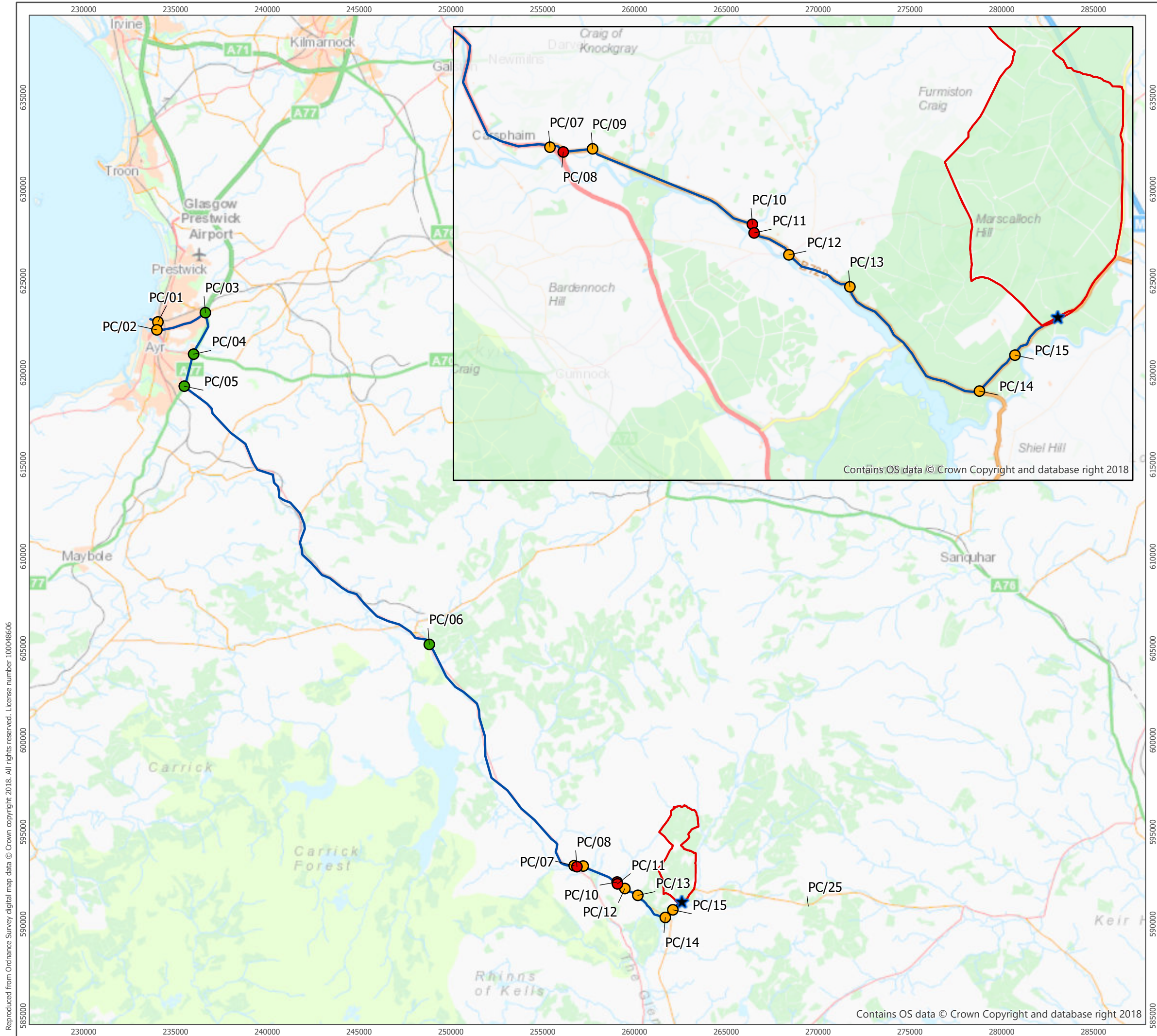
Overall Length	61.730m
Overall Width	4.000m
Overall Body Height	3.407m
Min Body Ground Clearance	0.331m
Max Track Width	2.550m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	6.600m







Project Title <div>SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</div>	Drawing Title <div>VEHICLE DATA SHEET</div>	Purpose of issue 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	
		Designed KL	Drawn KL	Checked TAT	Approved TAT		
		Arcus Internal Project No. 2966		Date 31/07/18		Drawing Number 2966_SK_P_0001	Rev -
		Scale @ A3 1:250					
Client <div>INFENERGY</div>		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					

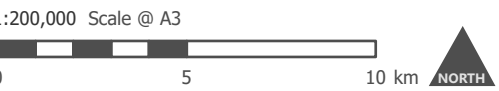

ARCUS



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



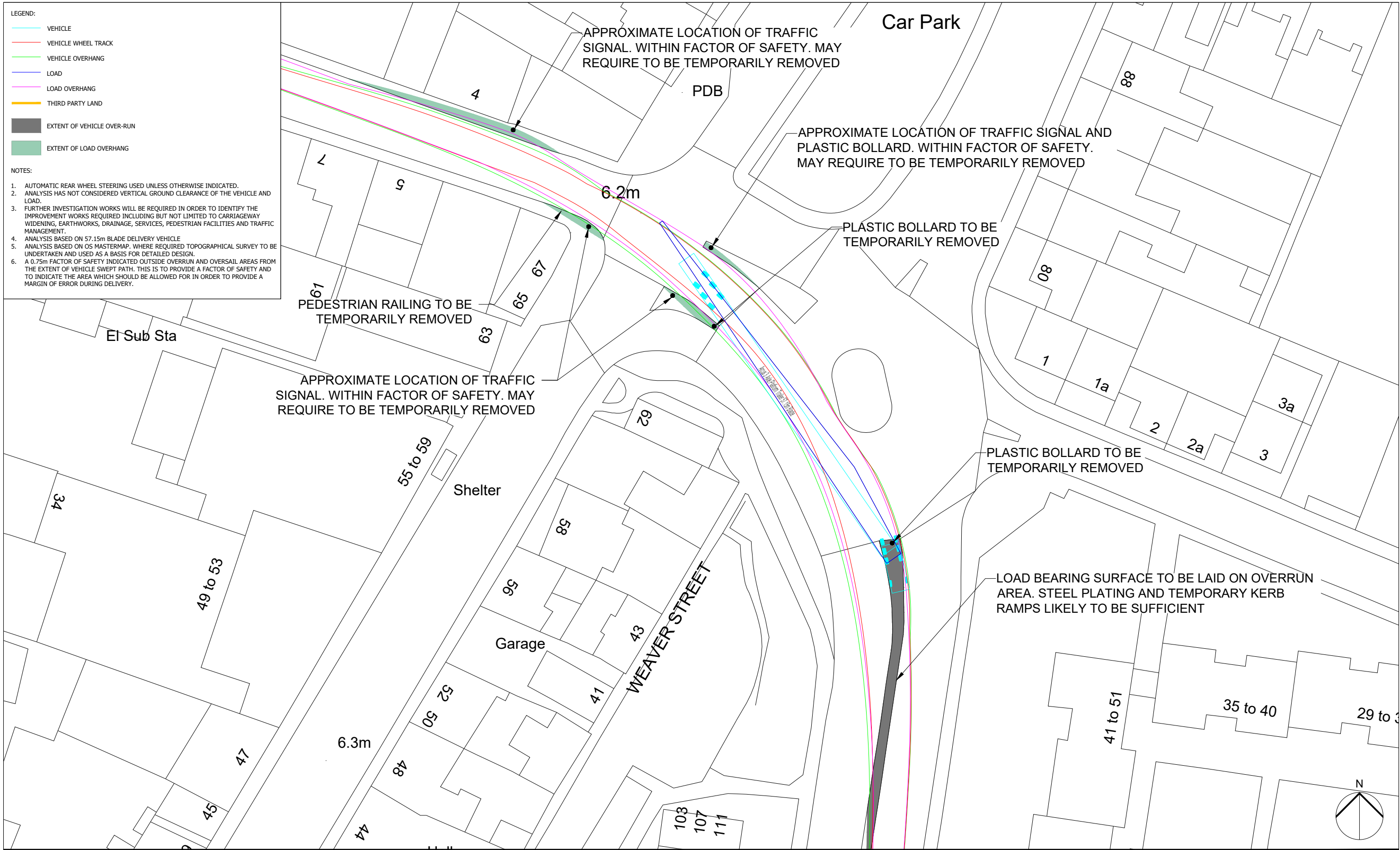
Produced By: KL	Ref: 2966-REP-013
Checked By: SC	Date: 01/08/2018

Pinch Point Locations

Shepherds Rig Wind Farm

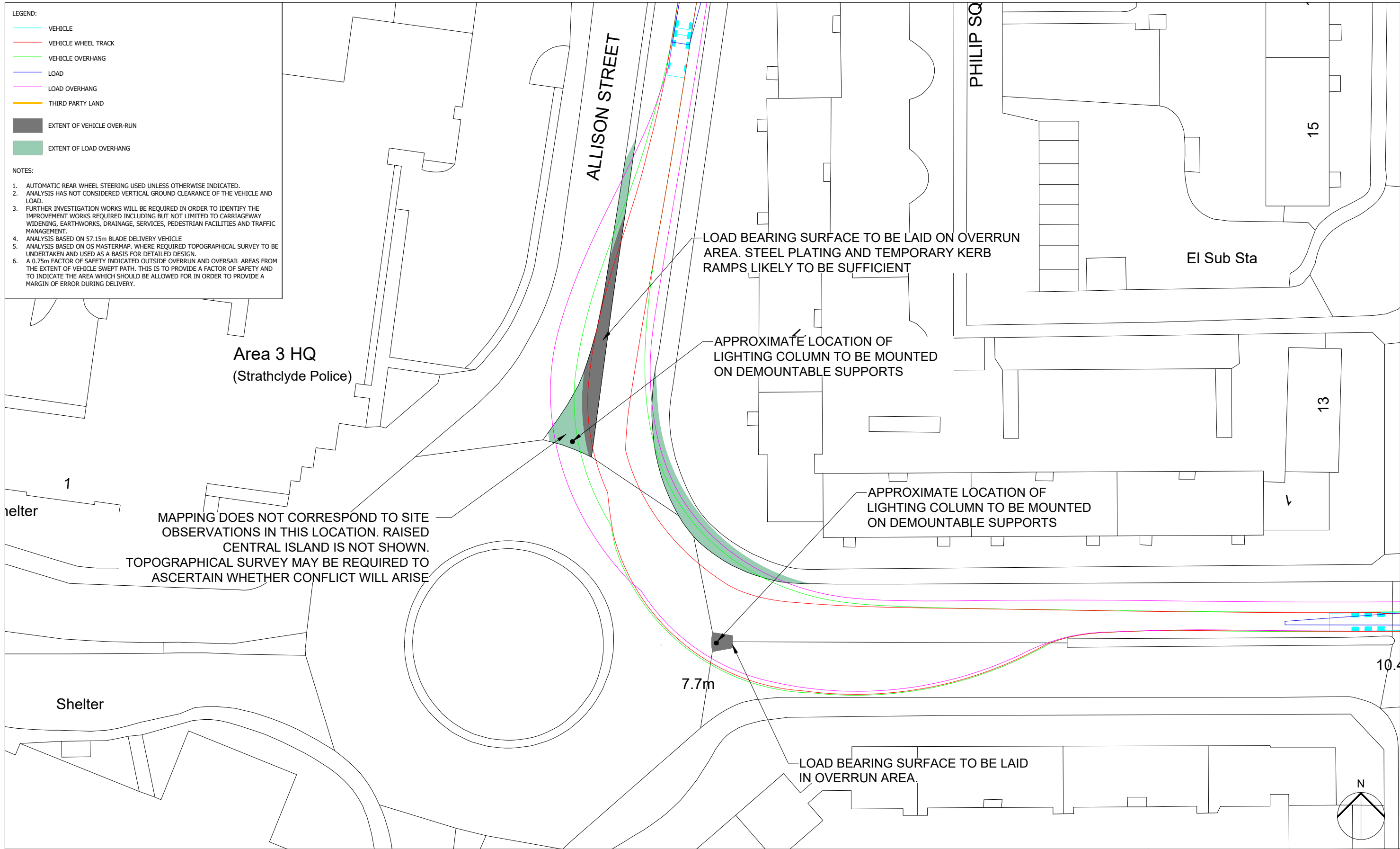
APPENDIX C – SWEPT PATH ANALYSIS DRAWINGS

Plot Date : 07 August 2018 16:10:31
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001



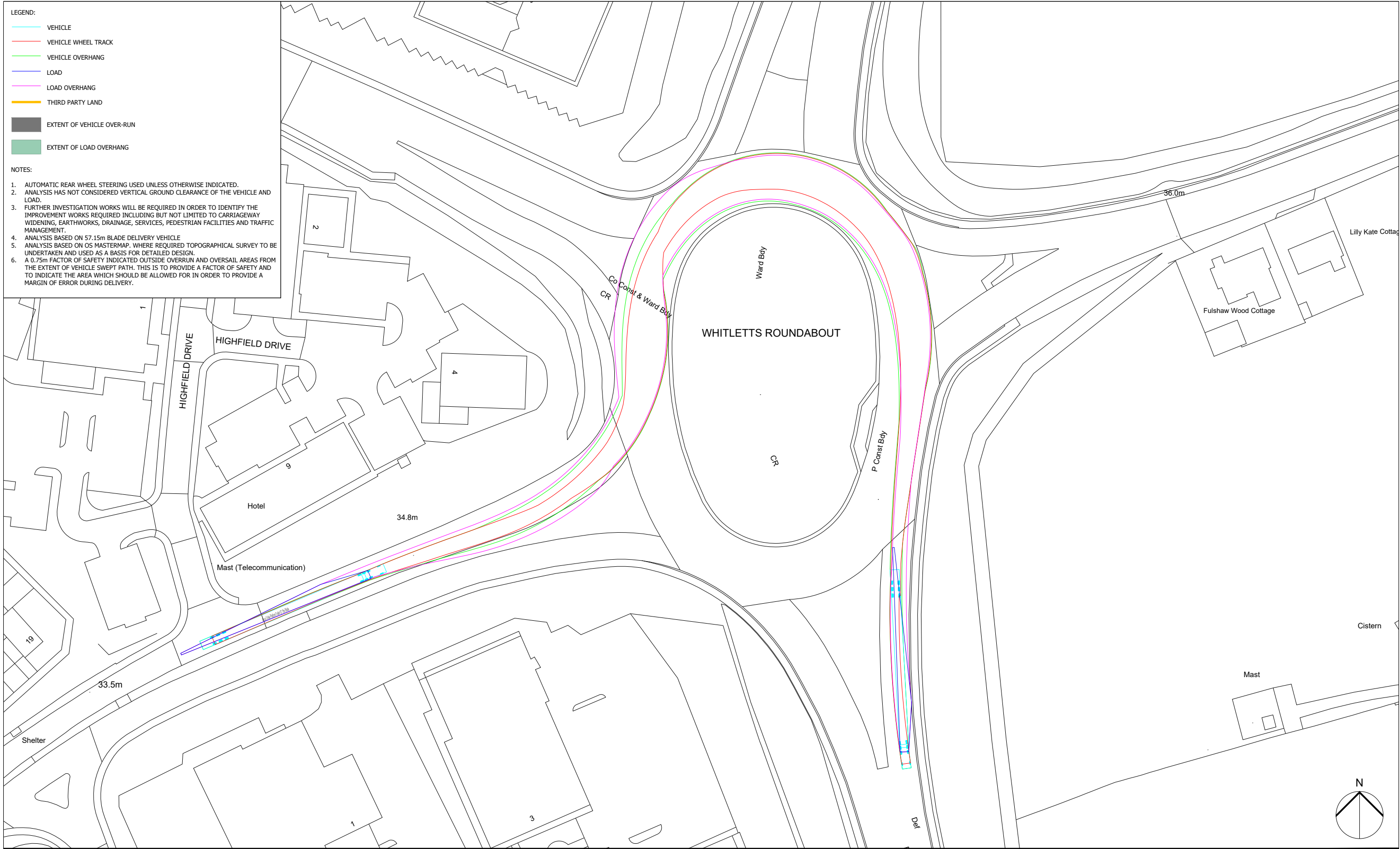
Project Title SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		Drawing Title PC/01 WAGGON ROAD / ALLISON STREET ROUNABOUT, AYR		Purpose of Issue FOR INFORMATION		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT 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		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	
Client INFENERGY				Designed KL	Drawn KL	Checked TAT	Approved TAT	Drawing Number 2966_ALR_P_0001	
				Arcus Internal Project No. 2966		Date 30/07/2018		Rev -	
				Scale @ A3 1:500					

Plot Date : 07 August 2018 16:10:41
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001



Project Title SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		Drawing Title PC/02 ALLISON STREET / WHITLETTS ROAD ROUNABOUT, AYR		Purpose of issue 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		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	
Client INFENERGY				Designed KL	Drawn KL	Checked TAT	Approved TAT	Drawing Number 2966_ALR_P_0002	
				Arcus Internal Project No. 2966		Date 30/07/2018		Rev -	
				Scale @ A3 1:500					

Plot Date : 07 August 2018 16:10:51
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001

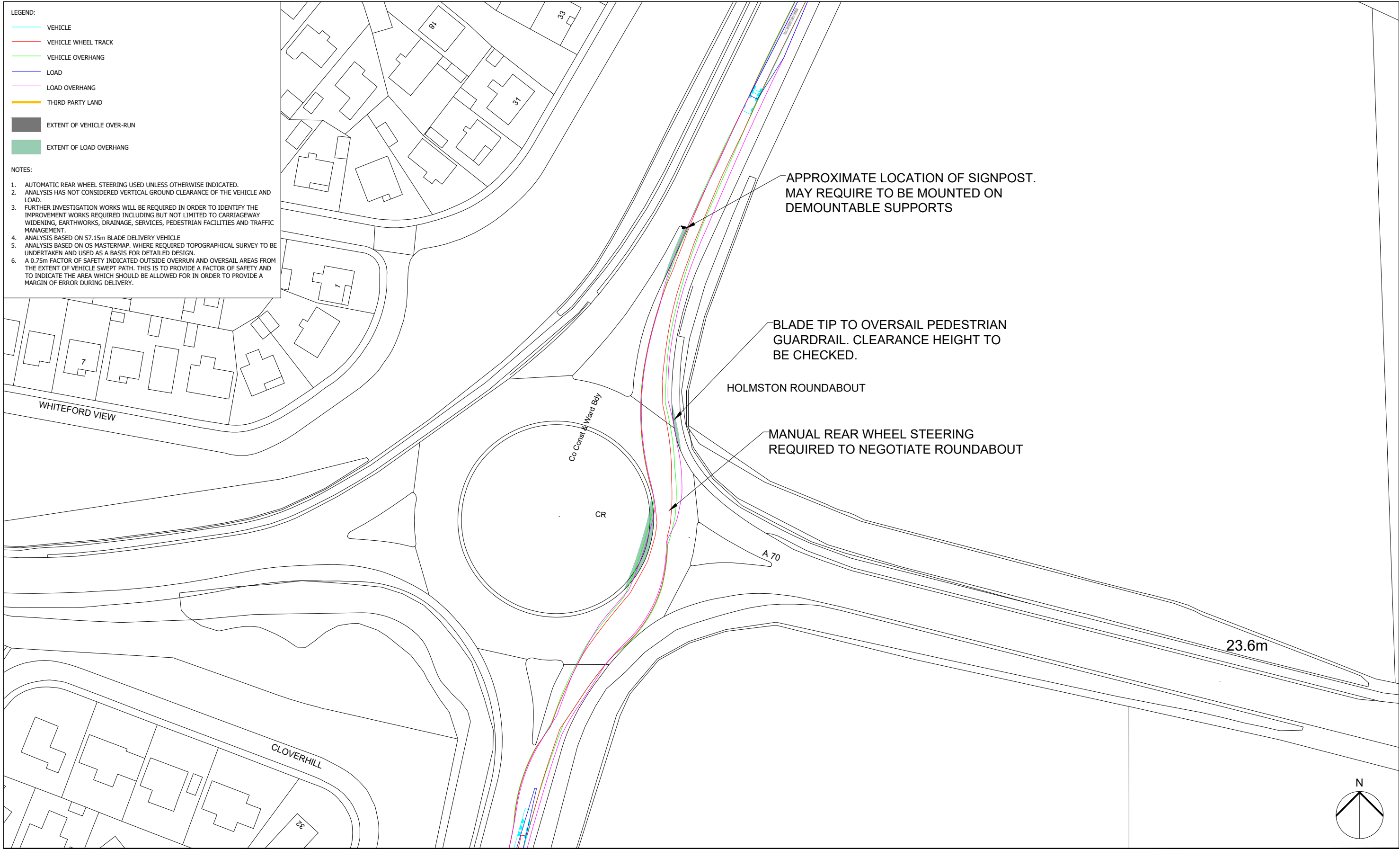


Project Title SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		Drawing Title PC/03 WHITLETTS ROUNDABOUT ROUNDAABOUT, AYR		Purpose of Issue FOR INFORMATION		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. 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	
Client INFENERGY				Designed KL	Drawn KL	Checked TAT	Approved TAT
				Arcus Internal Project No. 2966		Date 30/07/2018	
				Scale @ A3 1:500		Drawing Number 2966_ALR_P_0003	
						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

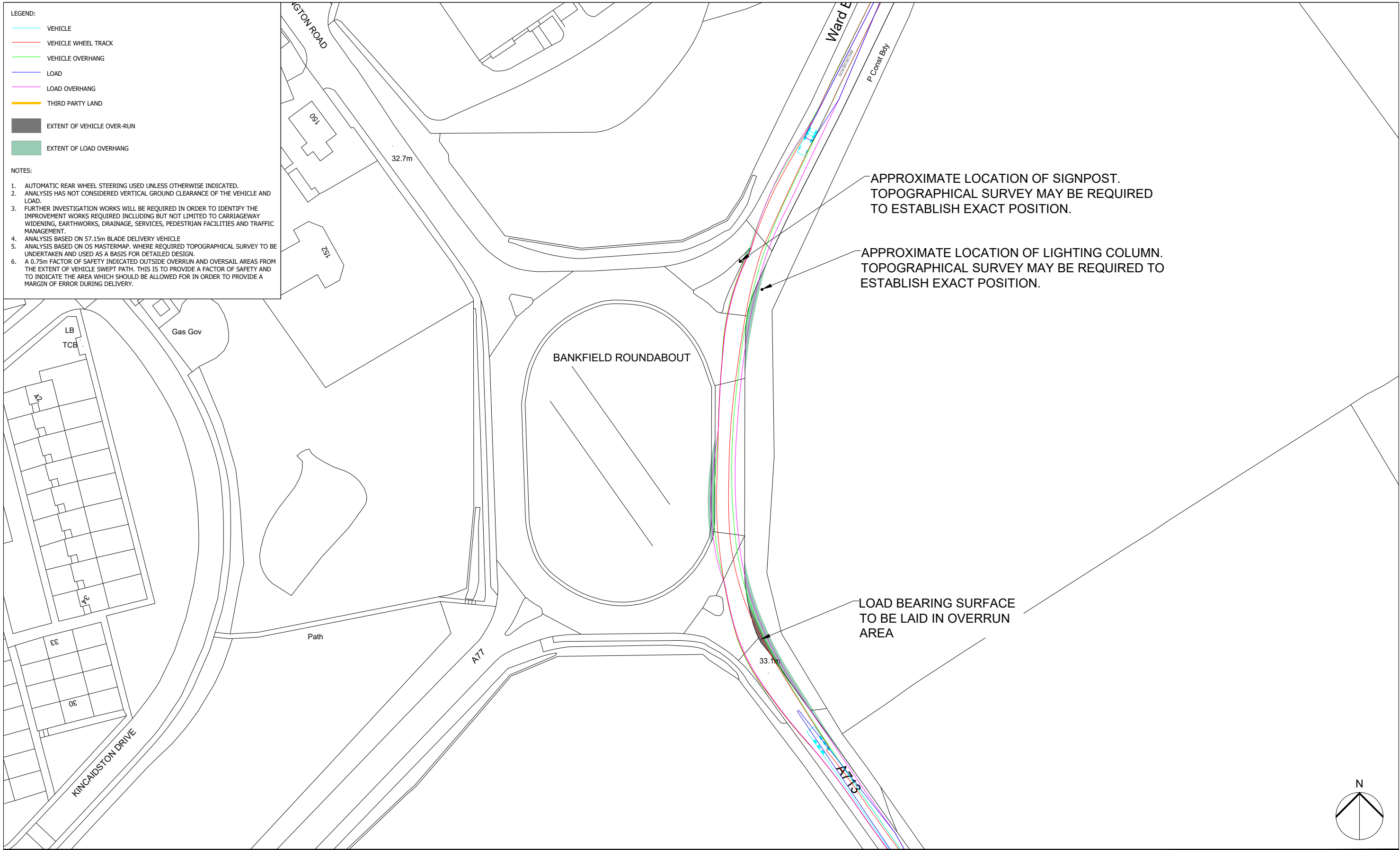


Plot Date : 07 August 2018 16:11:01
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001

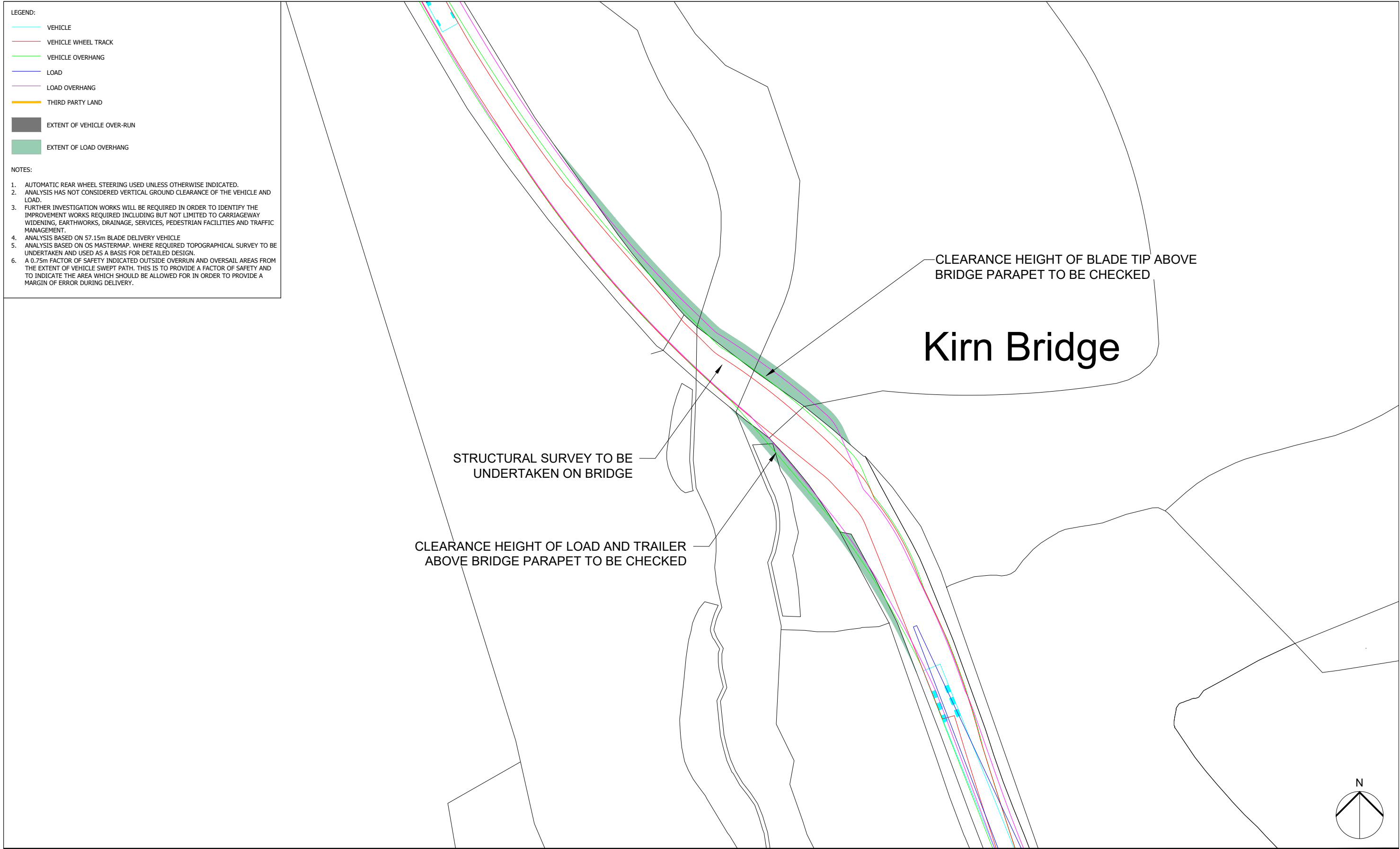


Project Title SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		Drawing Title PC/04 HOLMSTON ROUNDABOUT		Purpose of issue FOR INFORMATION		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. ARCUS ACCEPTS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

Plot Date : 07 August 2018 16:11:11
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001




Plot Date : 07 August 2018 16:11:21
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001

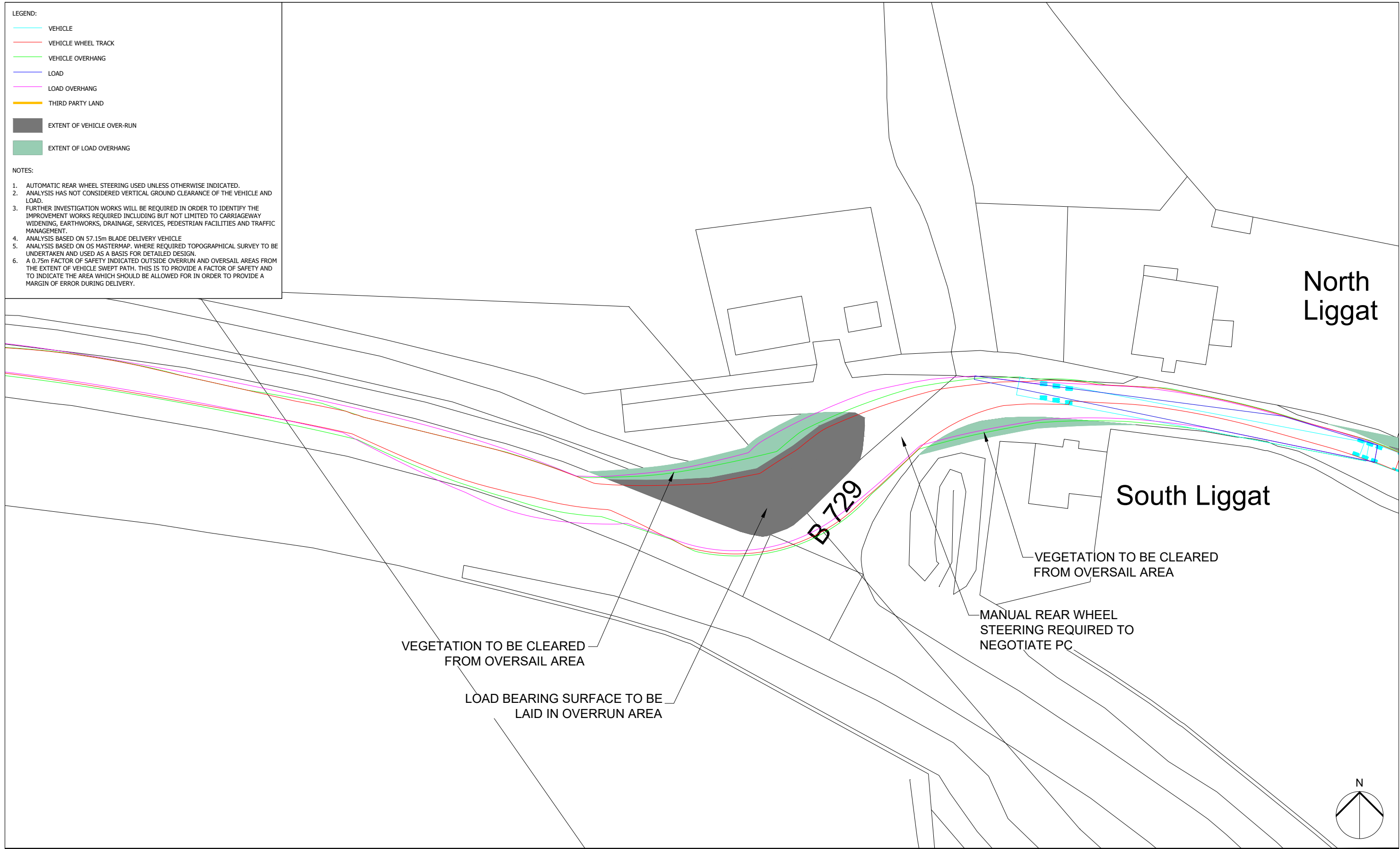


Project Title <div>SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</div>	Drawing Title <div>PC/06 KIRN BRIDGE</div>	Purpose of issue FOR INFORMATION				THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. 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	
		Designed KL	Drawn KL	Checked TAT	Approved TAT		
Client <div>INFINERGY</div>		Arcus Internal Project No. 2966		Date <div>31/07/2018</div>		<div>Drawing Number 2966_ALR_P_0006</div> <div>Rev -</div>	
		Scale @ A3 1:500					

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


ARCUS


Plot Date : 07 August 2018 16:11:31
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001



Project Title <div>SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</div>	Drawing Title <div>PC/07 A713/B729 JUNCTION</div>	Purpose of issue 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	
		Designed KL	Drawn KL	Checked TAT	Approved TAT		
		Client <div>INFINERGY</div>	Arcus Internal Project No. 2966	Date 31/07/18		Drawing Number 2966_ALR_P_0007	
		Scale @ A3 1:500					

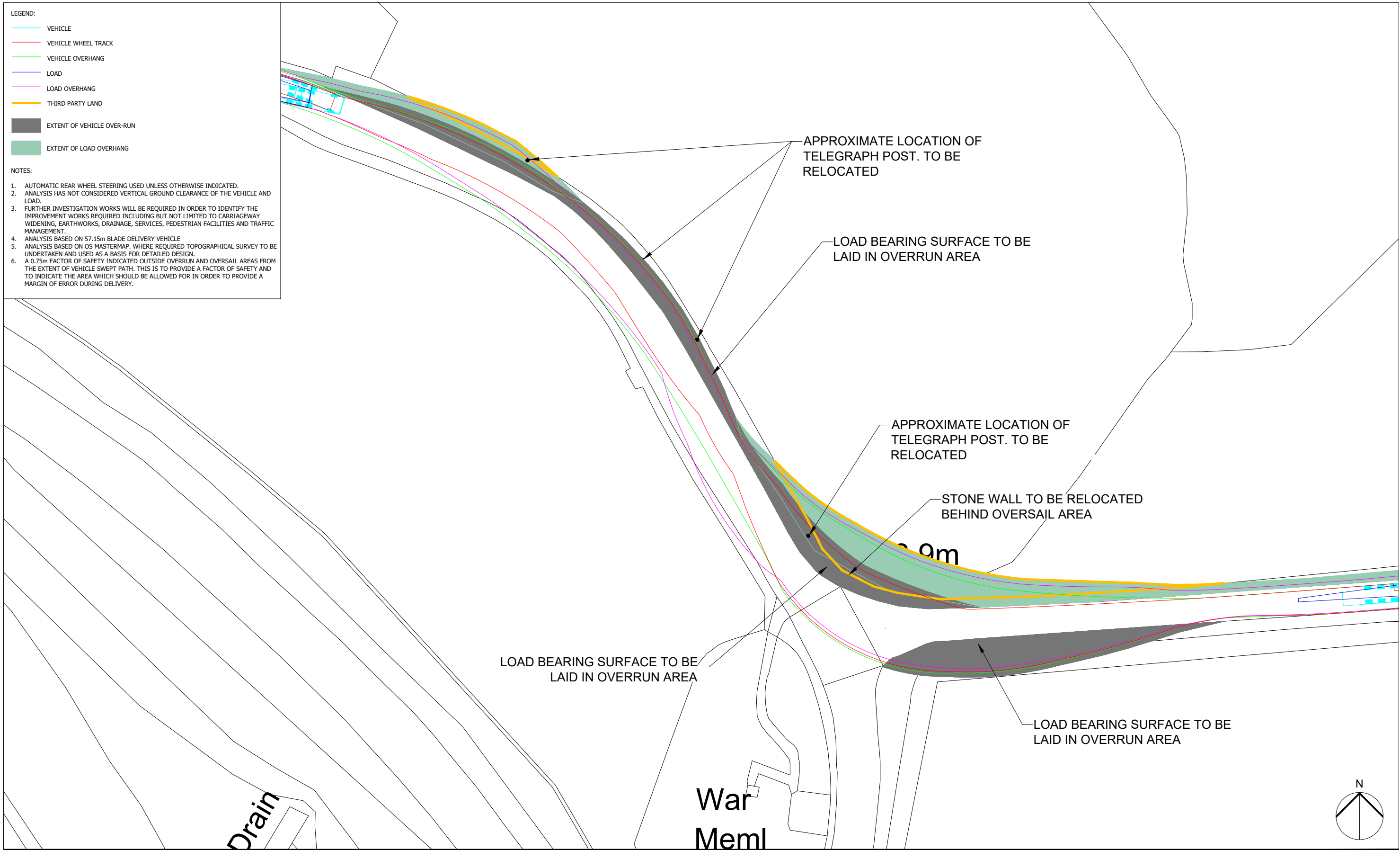
Arcus Consultancy Services

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



ARCUS


Plot Date : 07 August 2018 16:11:41
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001



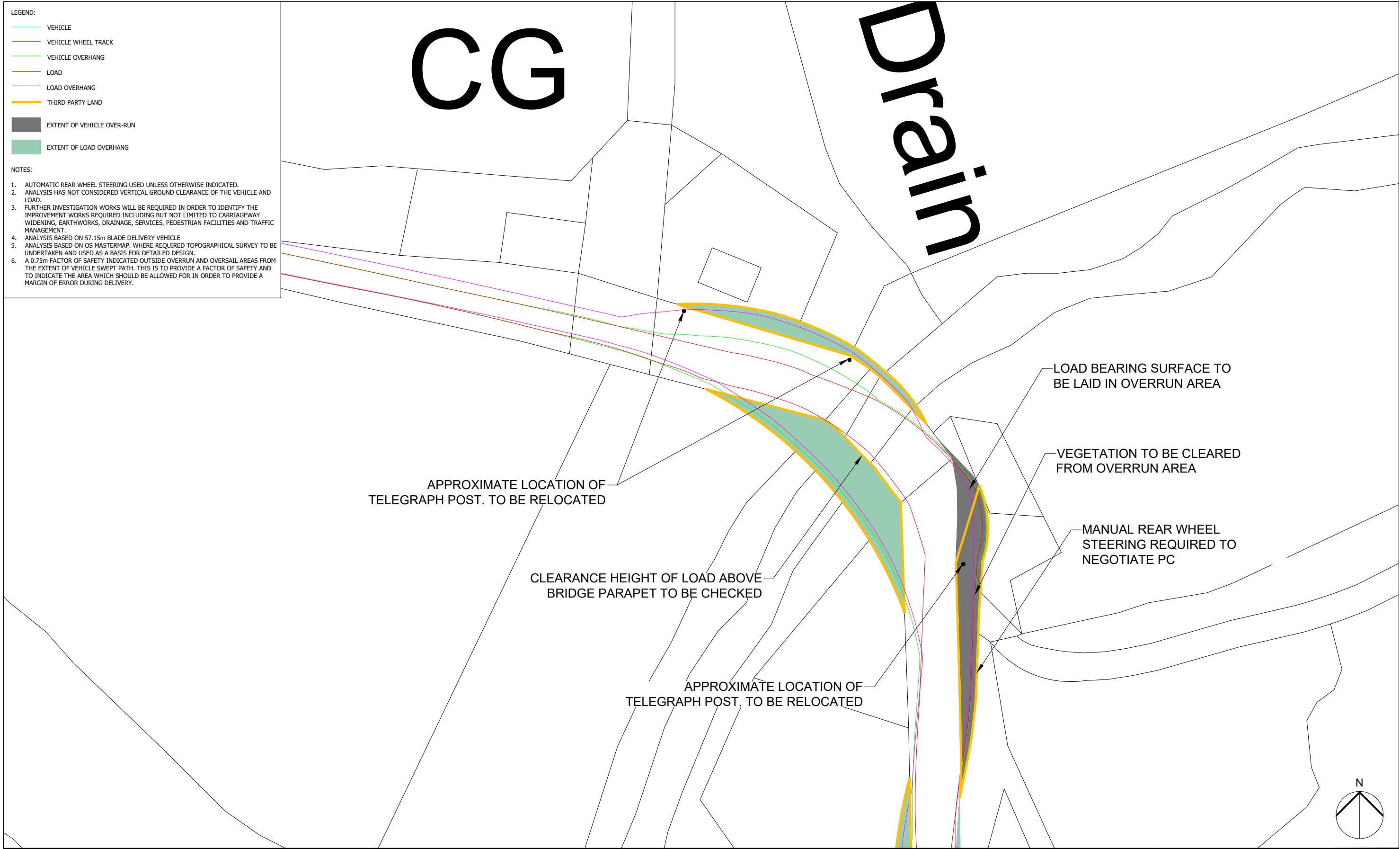
Project Title SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		Drawing Title PC/08 B729 JUNCTION AT WAR MEMORIAL		Purpose of issue FOR INFORMATION		THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. 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		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	
Client INFENERGY				Drafted KL	Drawn KL	Checked TAT	Approved TAT		
				Arcus Internal Project No. 2966	Date 31/07/18				
				Scale @ A3 1:500				Drawing Number 2966_ARL_P_0008	Rev -


Plot Date : 07 August 2018 16:11:51
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001



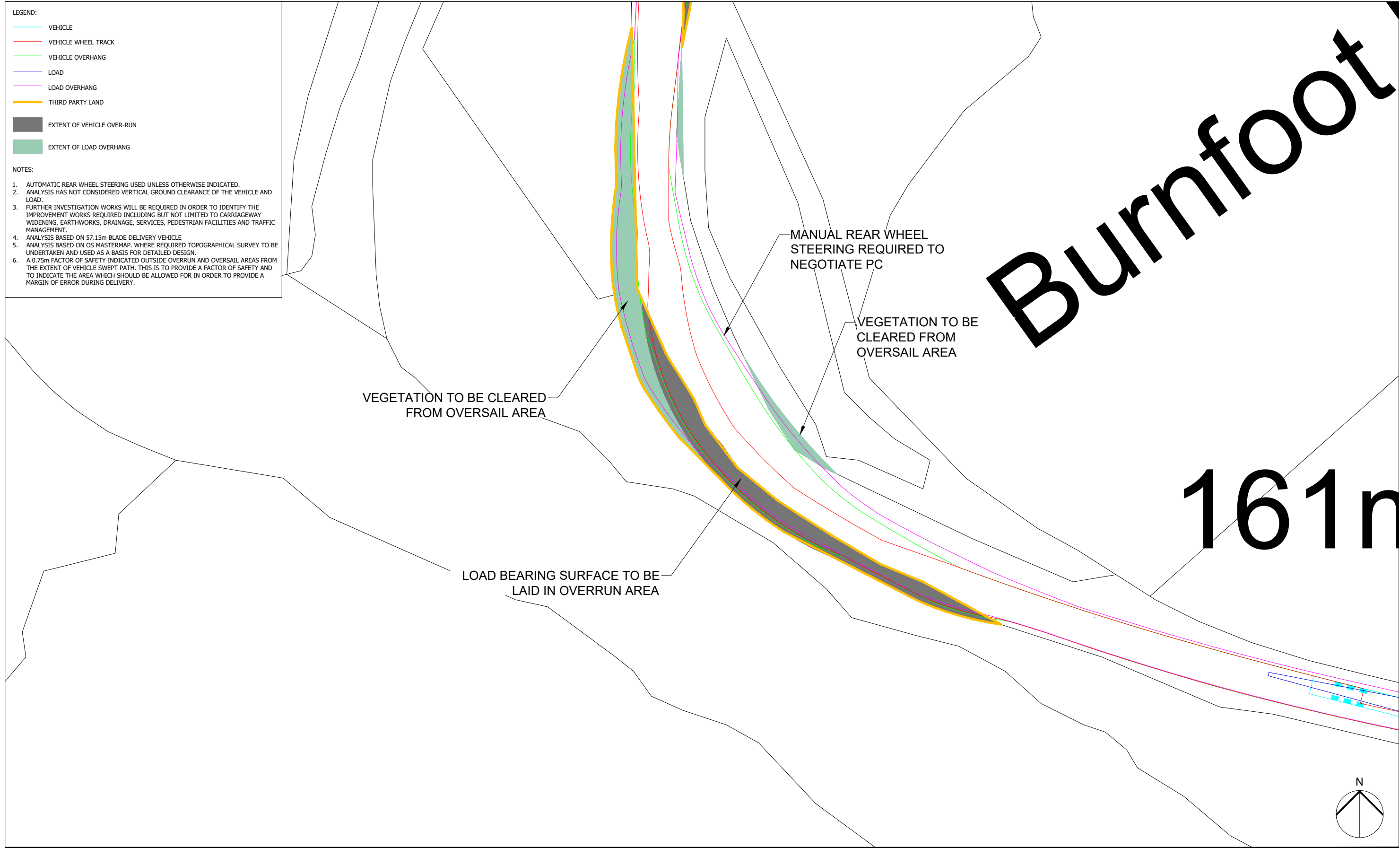
Project Title <div>SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</div>	Drawing Title <div>PC/09 B729 BEND OVER CULVERT AT DALBONNITON KNOWE</div>	Purpose of issue FOR INFORMATION				THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT 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		<div>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</div> <div></div>	
		Designed KL	Drawn KL	Checked TAT	Approved TAT				
		Client <div>INFINERGY</div>	Arcus Internal Project No. 2966	Date 31/07/18		Drawing Number 2966_ALR_P_0009	Rev -		
		Scale @ A3 1:500							

Plot Date : 07 August 2018 16:12:01
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001




<div>Project Title</div> <div>SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</div>		<div>Drawing Title</div> <div>PC/010 B729 BURNFOOT BRIDGE</div>		<div>Purpose of issue</div> <div>FOR INFORMATION</div>				<div>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</div>				<div>Arcus Consultancy Services</div> <div>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</div> <div></div>			
<div>Client</div> <div>INFENERGY</div>				Designed KL		Drawn KL									
				Arcus Internal Project No. 2966		Date 31/07/18									
				Scale @ A3 1:500											
								Drawing Number 2966_ALR_P_0010				Rev -			

Plot Date : 07 August 2018 16:12:10
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001

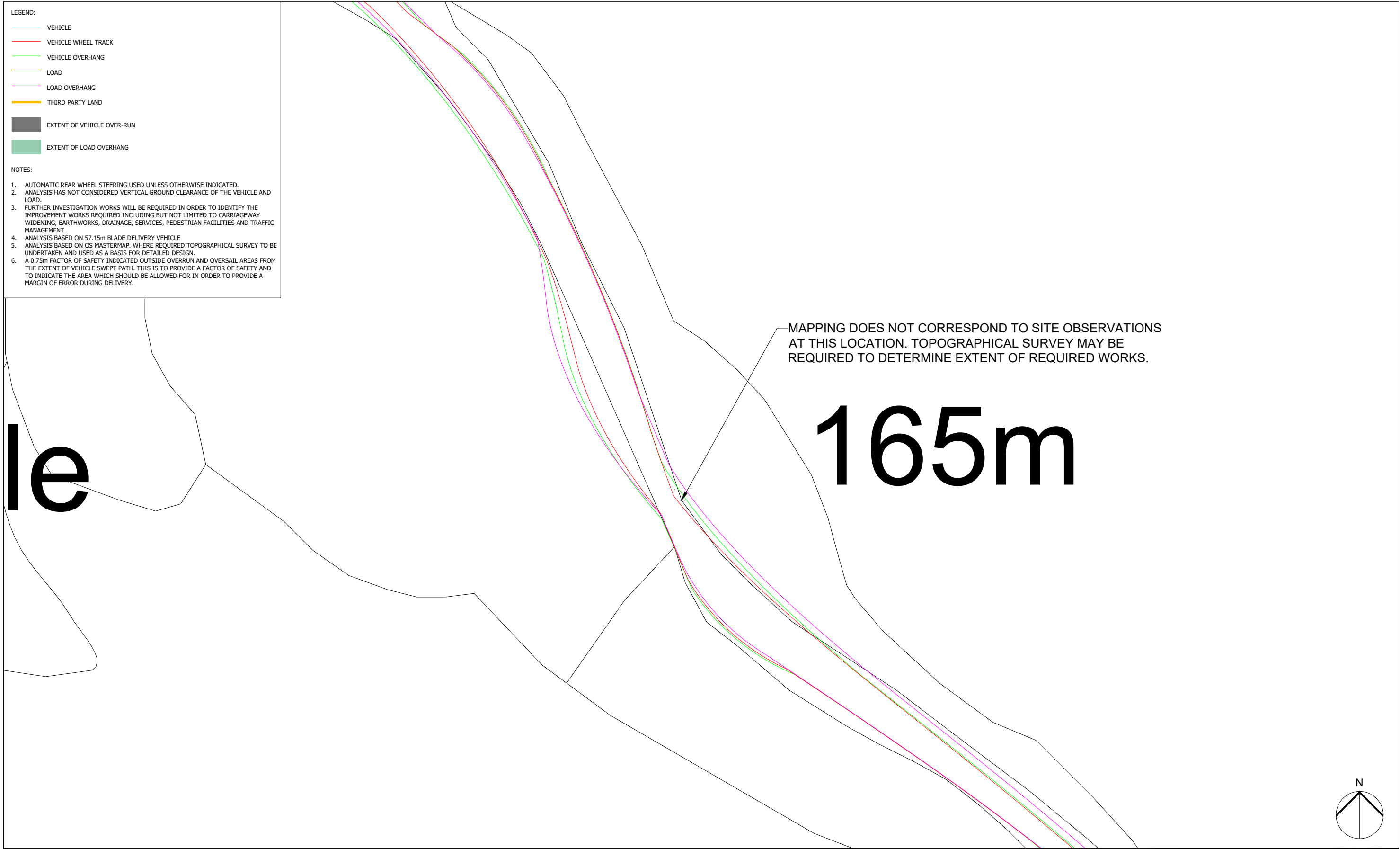


Project Title <div>SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</div>	Drawing Title <div>PC/11 B729 BEND AFTER BURNFOOT BRIDGE</div>	Purpose of issue FOR INFORMATION				THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS 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			
		Designed KL	Drawn KL	Checked TAT	Approved TAT				
Client <div>INFENERGY</div>		Arcus Internal Project No. 2966		Date 31/07/18		Drawing Number 2966_ALR_P_0011		Rev -	
		Scale @ A3 1:500							

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


ARCUS

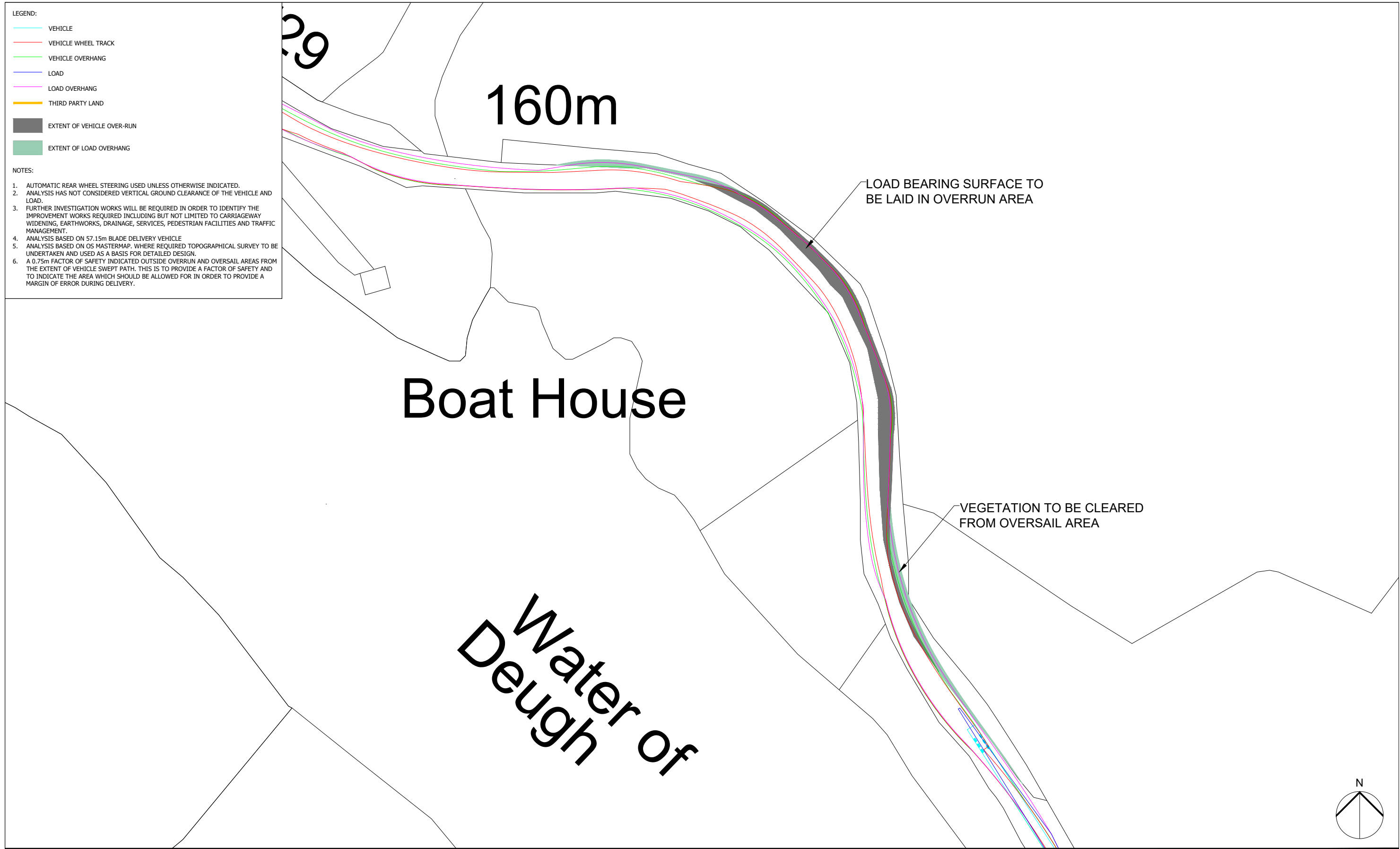
Plot Date : 07 August 2018 16:12:20
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001



Project Title SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT	Drawing Title PC/12 B729 BEND AT KENSGLEN	Purpose of issue 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	
		Designed KL	Drawn KL	Checked TAT	Approved TAT		
		Arcus Internal Project No. 2966		Date 31/07/18		Drawing Number 2966_ALR_P_0012	Rev -
Client INFINERGY		Scale @ A3 1:500					
						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	




Plot Date : 07 August 2018 16:12:29
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001

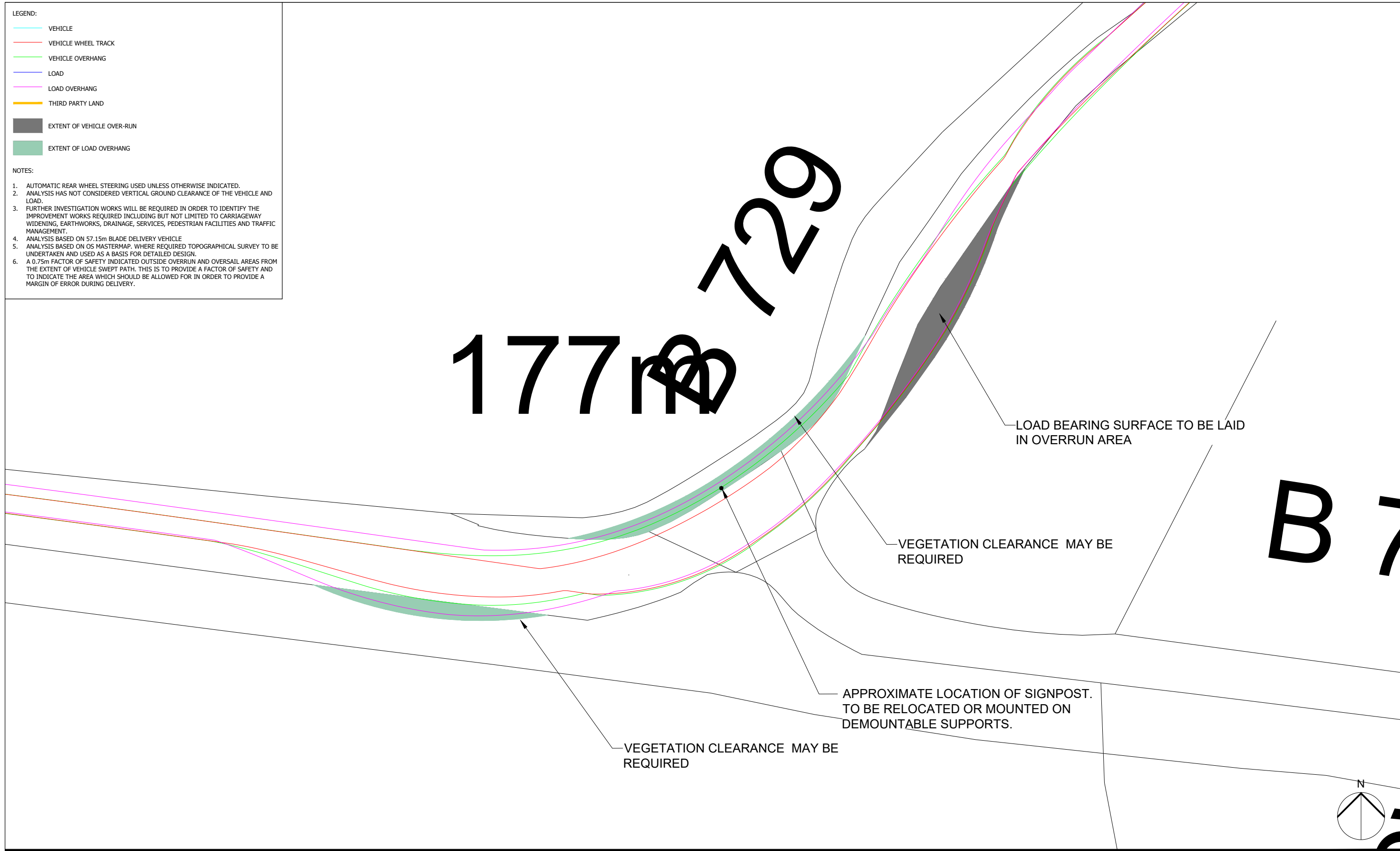


Project Title <div>SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT</div>	Drawing Title <div>PC/13 B729 BEND AT NETHER LOSKIE</div>	Purpose of issue FOR INFORMATION				THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS 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	
		Designed KL	Drawn KL	Checked TAT	Approved TAT		
Client <div>INFINERGY</div>		Arcus Internal Project No. 2966		Date <div>12/07/18</div>		<div>Drawing Number 2966_ALR_P_0013</div> <div>Rev -</div>	
		Scale @ A3 1:1000					

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


ARCUS

Plot Date : 07 August 2018 16:12:39
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001

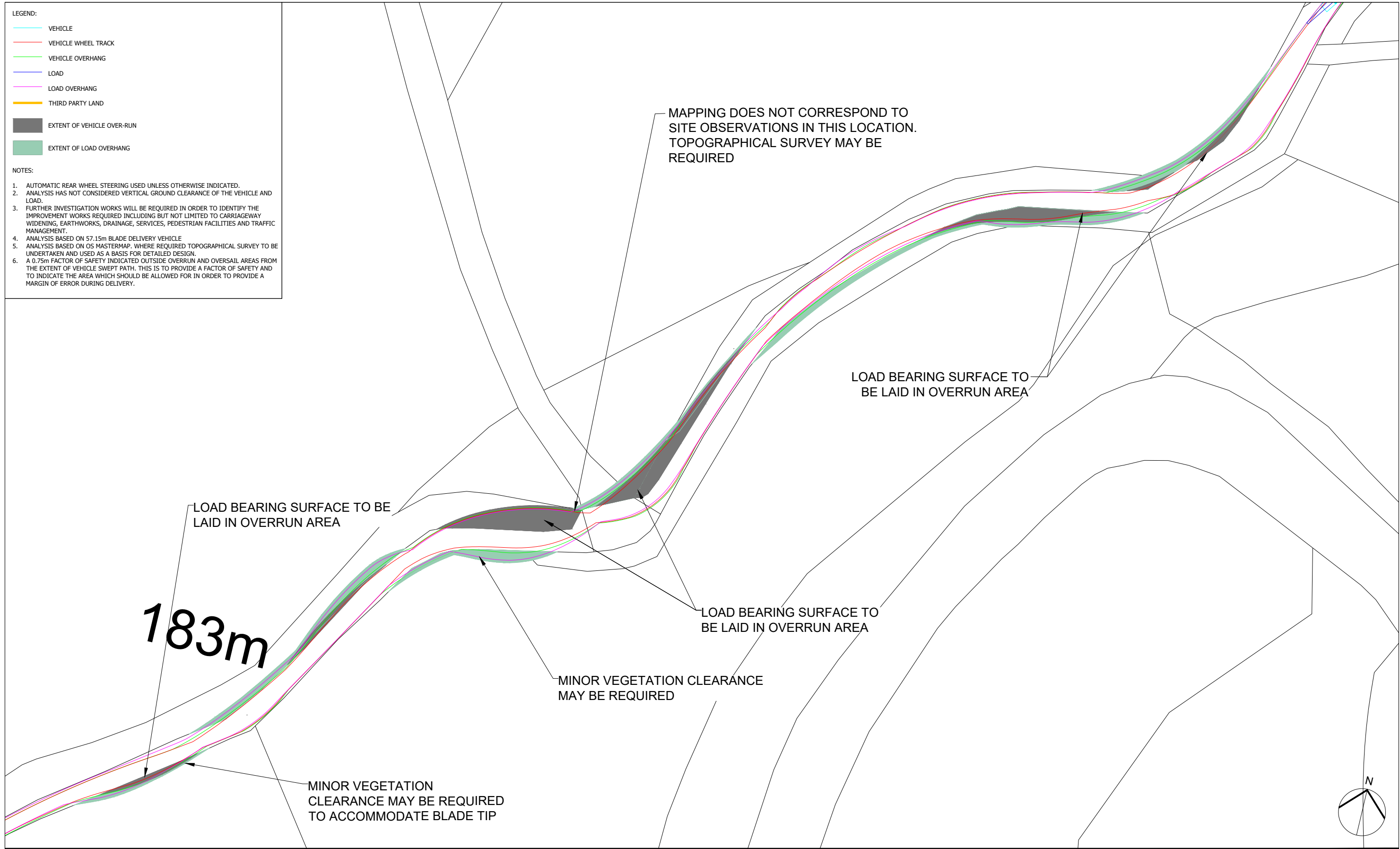



Project Title SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT	Drawing Title PC/14 BEND AT B729/B7000 JUNCTION	Purpose of issue FOR INFORMATION				THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF ARCUS' APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. 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	
		Designed KL	Drawn KL	Checked TAT	Approved TAT		
		Arcus Internal Project No. 2966		Date 31/07/18		Drawing Number 2966_ALR_P_0014	Rev -
Client INFENERGY		Scale @ A3 1:500					

Reproduced from Ordnance Survey digital map data © Crown copyright 2018. All rights reserved. License number 100048606

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

Plot Date : 07 August 2018 16:12:48
File Name P:\PROJECTS\2966 SHEPHERDS RIG\CAD\01-WORKING\01_01-DRAWINGS\2966-DR-ALR-0001



Project Title SHEPHERDS RIG WIND FARM ABNORMAL LOAD ROUTE ASSESSMENT		Drawing Title PC/15 B729 BEND AT MUIRDROCHWOOD		Purpose of issue 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		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	
Client INFINERGY				Designed KL	Drawn KL	Checked TAT	Approved TAT		
				Arcus Internal Project No. 2966	Scale @ A3 1:1000	Date 31/07/18			
				Drawing Number 2966_ALR_P_0015				Rev -	