HORIZON NUCLEAR POWER

WYLFA NEWYDD

ENERGY WORKING FOR BRITAIN

Wylfa Newydd Project

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Logistics Centre External Layout

Horizon Nuclear Power Wylfa Limited

Stage 1 Road Safety Audit

60PO8077-TAT-REP-016

WN0902-JAC-PAC-REP-00041

Audit reference number **CA307/1424|2.0**

February 2018

Parc Cybi Logistics Centre External Layout

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File name:	WN0902-JAC-PAC-REP-00041

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Document history and status

Revision	Date	Description	Author	Checked	Reviewer	Approved
1.0	17/07/2017	Stage 1 Road Safety Audit	[redacted]			
2.0	09/08/2017	Stage 1 Road Safety Audit				
3.0	10/02/18	Minor updates to descriptions and design responses added	GE/KL	SEL	SEL	

Document history and status

Revision	Issue Approved	Date Issued	Issued to	Comments
1.0	17/07/2017	17/07/2017	Stephen Lamb/Gerald Evans	
2.0	09/08/2017	09/08/2017	Charlotte Palmer	
3.0	10/02/18	13/02/18	HNP	

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Appendices

1 Introduction

1.1 Scope of report

1.1.1 Jacobs U.K. Limited has been commissioned by Horizon Nuclear Power Wylfa Limited (Horizon) to carry out a Stage 1 Road Safety Audit (RSA) on the proposed External Layout of the Logistics Centre which would be located near to Holyhead and to the south of Junction 2 of the A55. RSAs should be undertaken at each design stage and at the completion of the construction. This report describes the issues raised during the RSA which was performed on-site and at the Shrewsbury office of Jacobs and provides a description of the concerns raised along with the recommendations.

1.1.2 This is the first RSA carried out on this scheme.

1.2 Legislative context

1.2.1 The RSA has been based on the principles contained within the Highway Advice Note HD 19/15 (Road Safety Audit) of the Highways Agency's Design Manual for Roads and Bridges, Volume 5 Section 2. The Auditors have only examined and reported on the road safety implications of those aspects of the scheme detailed in the drawings/documentation listed above. The scheme has not been examined or verified with regard to the compliance of the design with any other criteria; however, to explain a particular problem/recommendation the Auditors may have occasionally referred to design standards. This should not be considered to be a technical audit. The absence of comments should not be taken to imply compliance.

1.2.2 The objective of this RSA is to encourage consideration of the needs of all road users with regard to highway improvements associated with the proposed Logistics Centre.

1.2.3 This RSA is a means of documenting the design decisions in a formal and consistent manner.

1.2.4 It is expected that the design team would have given consideration to both national and local design guidance with respect to all road users in the development of this scheme.

1.2.5 All of the problems identified are considered to be of sufficient importance to require action.

1.2.6 In addition to safety related concerns a section has been included for general observations.

1.3 Logistics Centre background

1.3.1 The proposed site is located in the north east of the wider Parc Cybi employment area. The site is bounded by the A55 to the north, the Parc Cybi service road to the south, a substation to the west and open countryside to the east.

1.3.2 The proposed development consists of:

- an office/welfare building;
- Information and security kiosks (at the entrance/exit of site);
- Vehicle scanner;
- Inspection tent; and
- parking zones (100 parking bays for Heavy Goods Vehicle (HGV), Medium Goods Vehicle (MGV) and Light goods Vehicle (LGV), 12 staff parking bays (including one disabled space)).

1.3.3 The proposed Logistics Centre is an integral component of Horizon's Integrated Traffic and Transport Strategy (ITTS), serving as a temporary secure facility from which deliveries to the Power Station Site would be managed during the construction of Power Station, reducing traffic impacts to the local road network.

1.3.4 It is anticipated that construction of the proposed development would commence in Quarter 3 2019 and last for approximately 15 months. It is anticipated that the Logistics Centre would be operated between Quarter 1 2020 and Quarter 4 2024.

1.3.5 The Logistics Centre would have an operational workforce of 14 staff. The facility would be operational 24 hours per day. It would have 24 hour manned security presence. The security guards would monitor access points, Closed Circuit Television and carry out patrols of the facility.

1.3.6 It is proposed that the Logistics Centre will be illuminated by post mounted lighting units. It would be designed to minimise light spill into the surrounding area. It is proposed that it would be restricted to the office/welfare building and information / security kiosks and adjacent to the parking area at night.

1.3.7 The office/welfare building would be a single storey facility comprising modular units to provide the area of accommodation space required. The kiosk at the entrance will be a small single storey building to provide weather protection to the security staff. The kiosk on the entrance road will be elevated to bring staff to the same level as HGV drivers. In addition to the buildings a tent structure is proposed to provide a covered area for the inspection of HGVs. A vehicle scanner will be located to the south of the welfare/security building.

1.3.8 All surface water flowing from the Logistics Centre will be passed through an oil-interceptor and be collected in an attenuation tank before being discharged into a local water course.

2 Background

2.1 Description of the work

2.1.1 Des Greaves and Paul Bartley carried out site visits during the week commencing 19 June 2017 over a period of two days. The weather conditions were dry with sunny periods and the road surface was also dry. The ambient air temperature was between 20° and 21° centigrade during the site visits. Traffic conditions were free flowing. Figure 2.1 indicates the extent of the scheme.

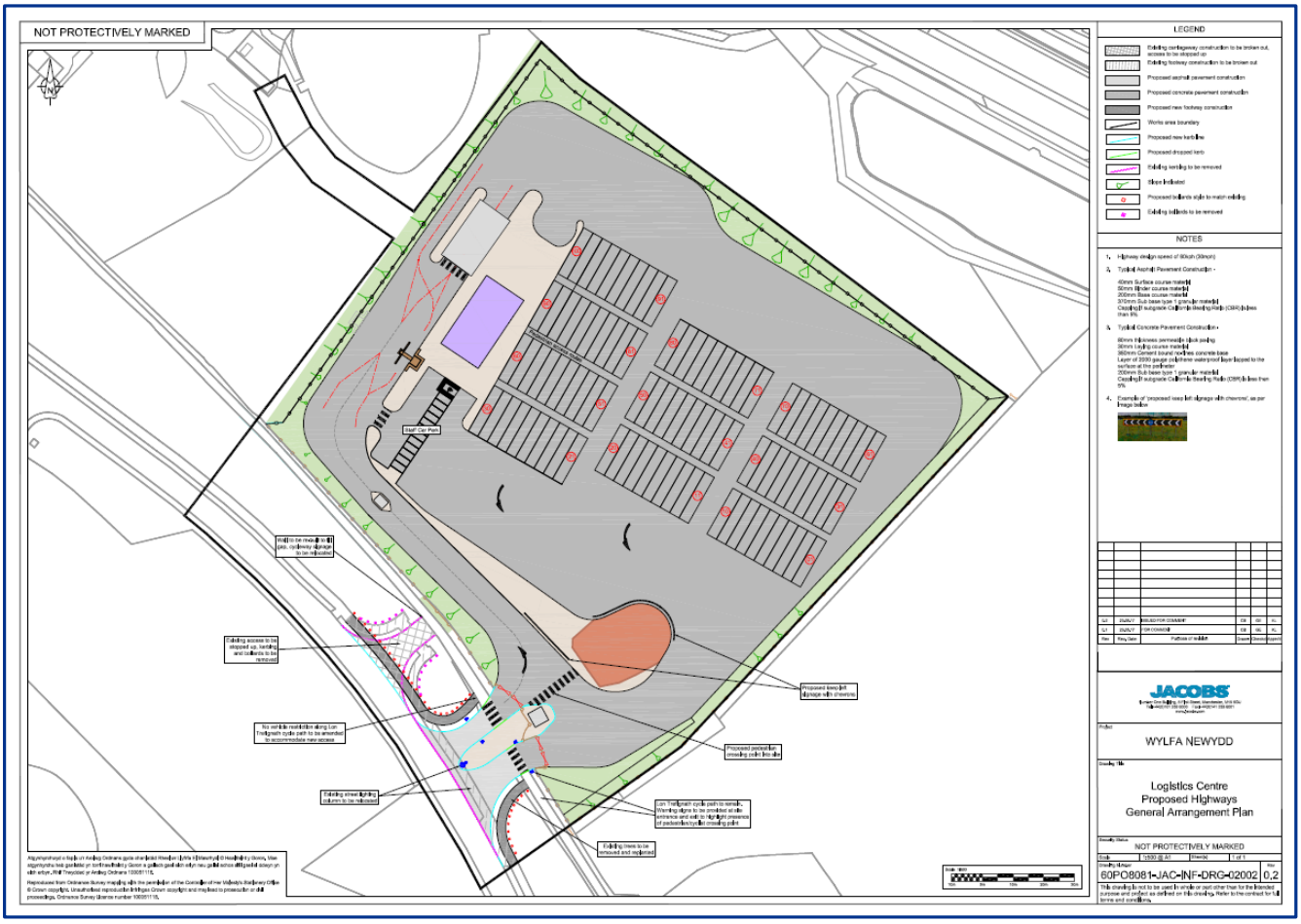

Figure 2.1: Extents of the proposed Logistics Centre

2.1.2 The proposed site of the Logistics Centre is located to the south of Junction 2 of the A55 near to Holyhead.

2.1.3 A review of the existing collision data in the vicinity of the proposed Logistics Centre did not identify any discernible pattern of collisions.

2.2 The Road Safety Audit

2.2.1 The RSA was undertaken in accordance with the audit brief and consisted an examination of drawings/documents produced by Jacobs and indicated in Table 2.1.

2.2.2 All signs and road markings are referenced in accordance with the 'Traffic Signs Regulations and General Directions 2016 (TSRGD)'. Also relevant chapters of the 'Traffic Signs Manual (TSM)'. Tactile paving is referenced in accordance with the Department of the Environment, Transport and Regions (D.E.T.R) 1998. 'Guidelines on the use of tactile paving surfaces' and the Department for Transport 'Inclusive Mobility'. Cycle guidance is referenced in accordance with 'Sustrans Design Manual – Handbook for cycle-friendly design, 2014'.

2.2.3 The Audit took place On-Site and at the Shrewsbury office of Jacobs. The RSA was carried out by:

- Des Greaves, RSA Team Leader, Jacobs, Shrewsbury (Audit Team Leader)
- Paul Bartley, RSA Team Member, Jacobs, Shrewsbury (Audit Team Member)
- Matt Bloor, Highway Design Team, Jacobs, Shrewsbury (Specialist Input)

2.3 Certificate of Competence (CoC)

2.3.1 Certificate of Competence (CoC), both members of the Audit Team hold a Road Safety Certificate of Compentance (CoC) which meets the requirements of the European Directive 2008/96/EC and HD19/15 Annex J.

Drawing Number		Drawing Title
1	**60PO8081-JAC-INF-DRG-02002 Rev 0.2**	Logistics Centre - Proposed Highways General arrangement Plan (Latest issue date 23/06/2017).
2	**60PO8081-JAC-INF-DRG-02001 Rev 0.2**	Logistics Centre - Proposed External Lighting (Latest issue date 23/06/2017).

Table 2.1: Drawings/documents examined during the RSA

3 Concerns

3.1 Road Safety Audit comment

Drawing

60PO8077-JAC-INF-DRG-02002 Rev 0.2

Location

Proposed access track.

Summary

Concern that vehicles may be driven along the Lon Trefignath cycleway in order to reach the proposed access track on the eastern side of the facility endangering cyclists.

Description of the problem

It is proposed to install a gated entrance to an access track leading to another gate at the north eastern corner of the facility. This gate would lead onto the Lon Trefignath cycleway. The reason for this access track is not indicated on the drawing. If vehicular access is required this proposed entrance would conflict with users of the cycleway, as a designated access off the highway has not been proposed.

Recommendation

If the scheme is implemented it is recommended that the location of the start of the access track and gate is located to avoid the need for a vehicle to drive along the cycleway

Design Team response

The Lon Trefignath Way has a total ban on vehicle use. Any gate will open back onto the access track. Vehicles using the access track will cross the verge to gain access to the Industrial Estate road. The access to the track will be clearly identified by the proposed gap in the Lon Trefignath Way boundary walls.

3.2 Road Safety Audit comment

Drawing

60PO8077-JAC-INF-DRG-02002 Rev 0.2

Location

Proposed warning signage.

Summary

Concern that warning signs for drivers leaving the facility are poorly located. This could lead to drivers failing to see the signs or seeing them too late colliding with a cyclist.

Description of the problem

Advanced warning signs are to be provided for drivers entering the facility, approaching the existing cycleway from Parc Cybi. However, the advanced warning signs proposed for drivers leaving the facility are located too close to the cycleway and partially hidden behind the boundary fence.

Recommendation

If the scheme is implemented it is recommended that the advanced warning signs for the cycleway are located further from the cycleway and in a position that they can be clearly seen.

Design Team response

To be reviewed at next stage of design. The signs can be moved back inside the security fencing but should be in the same location or just after the exit barrier.

4 General observations

4.1 Road Safety Audit observation

It is suggested that to aid locating the site extents, a location plan is inserted into the drawing at detailed design stage to confirm the exact location of the Logistics Centre.

Design Team response

Site location is indicated on other design drawings.

5 Value+ and Sustainability

5.1 Value+ and Sustainability comment

It is unclear why the existing access has not been utilised for this proposal. In order to reduce construction costs it is suggested that the existing entrance is retained and a new exit constructed.

6 Audit Team Statement

The problems identified have been noted in this report together with associated safety improvement suggestions that we recommend should be studied for implementation. No one on the Audit Team has been involved with the scheme design.

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Others Involved: See Introduction

See introduction

Distribution of report:

File :	✔
Client :	✔
Police :	n/a
Design Team:	✔

Appendix A. Site location plan indicating the location of the problems identified in this RSA

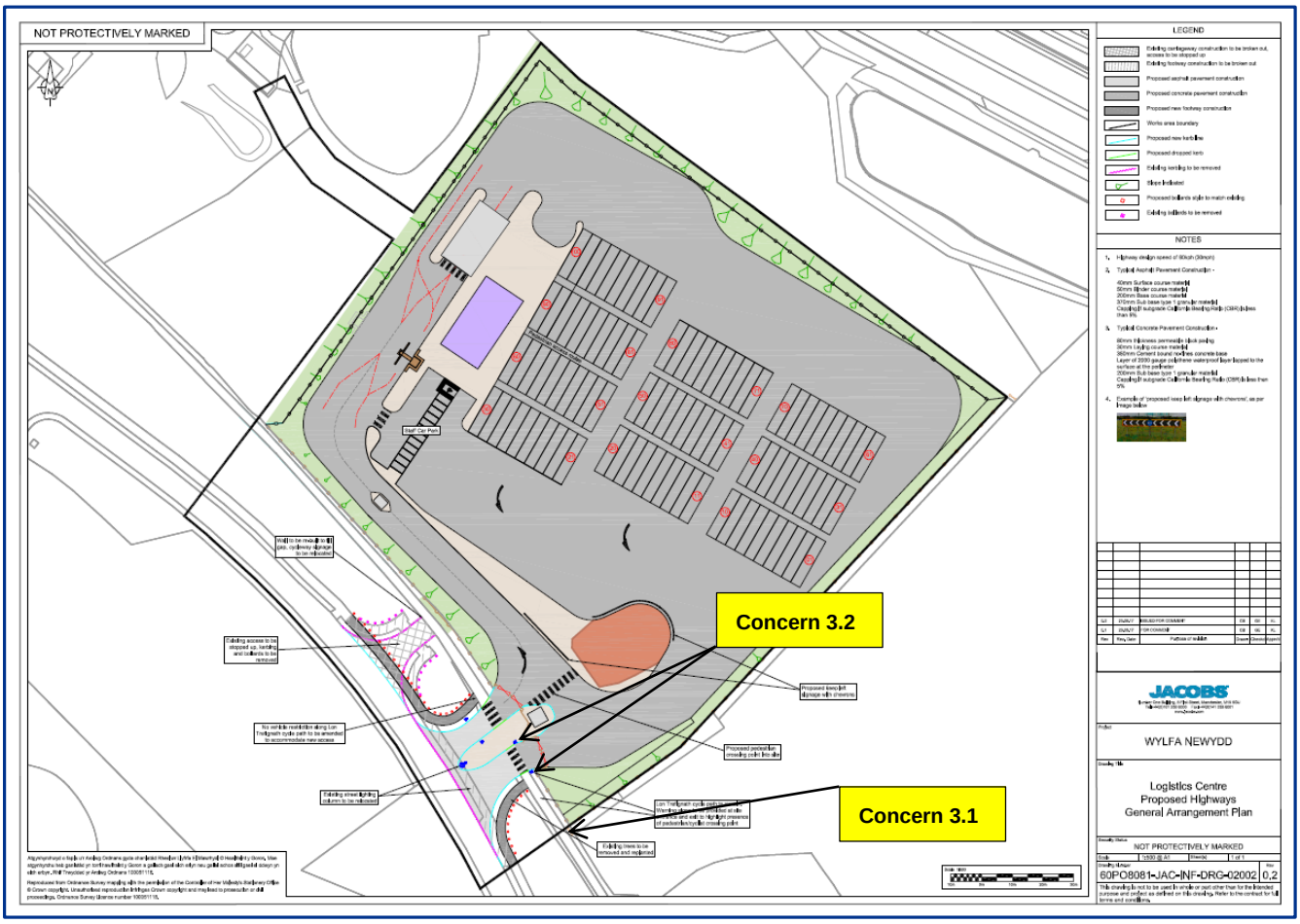

Figure A.1 – Appendix A. Site location plan indicating the location of the problems.

Off-site Power Station Facilities External Layout

Horizon Nuclear Power Wylfa Limited

Stage 1 Road Safety Audit

60PO8049-JAC-TAT-REP-00006

WN016-JAC-OS-REP-00025

Audit reference number **CA307/1361|2.0**

February 2018

Off-site Power Station Facilities External Layout

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Document history and status

Revision	Date	Description	Author	Checked	Reviewer	Approved
1.0	14/07/2016	FINAL	[redacted]			
2.0	13/02/2018	Report updated and Designers comments added				

Document history and status

Revision	Issue Approved	Date Issued	Issued to	Comments
1.0	14/07/2016	14/07/2016	Allan Clark/Gerald Evans	FINAL
2.0	13/02/2018	13/02/2018	Stephen Lamb	DESIGNER COMMENTS

Contents

List of Figures

1 Introduction

Scope of report

1.1 Jacobs U.K. Limited has been commissioned by Horizon Nuclear Power Wylfa Limited (Horizon) to carry out a Stage 1 Road Safety Audit (RSA) on the external layout of the proposed Off-site Power Station Facilities, which would be located at an existing bus depot on the A5025, just north of the village of Llanfaethlu. RSA Audits should be undertaken at each design stage and at the completion of the construction. This report describes the issues raised during the RSA which was performed on site and at the Shrewsbury office of Jacobs, and provides a description of the concerns raised along with the recommendations.

1.2 This is the first RSA carried out on this proposed scheme.

Legislative context

1.3 The RSA has been based on the principles contained within the Highway Advice Note HD 19/15 (Road Safety Audit) of the *Highways Agency's Design Manual for Roads and Bridges*, Volume 5 Section 2. The Auditors have only examined and reported on the road safety implications of those aspects of the scheme detailed in the drawings/documentation listed in Table 2.1. The scheme has not been examined or verified with regard to the compliance of the design with any other criteria; however, to explain a particular problem/recommendation the Auditors may have occasionally referred to Design Standards. This should not be considered to be a Technical Audit. The absence of comments should not be taken to imply compliance.

1.4 The objective of this RSA is to encourage consideration of the needs of all road users with regard to highway improvements associated with the proposed Off-site Power Station Facilities.

1.5 This RSA is a means of documenting the design decisions in a formal and consistent manner.

1.6 It is expected that the design team will have given consideration to both national and local design guidance with respect to all road users in the development of this scheme.

1.7 All of the problems identified are considered to be of sufficient importance to require action.

1.8 In addition to safety related concerns, a section has been included for general observations.

1.9 It has been assumed that the designer will consider the installation of passively safe street furniture during the detailed design of this scheme. In 2007 a National Annex to BS EN 12767:2007 was introduced which advises that passively safe equipment should be used on all roads and at all speed limits. With the new standard, all Highways Authorities have an obligation to provide passively safe equipment at certain locations, especially when equipment is being replaced at known cluster sites. Failure to do so may render the Authority vulnerable to claims from road users whose injuries were caused or exacerbated by such structures. Such claims have in the past been made under duties in the Highways Act 1980, the Road Traffic Act 2006 and increasingly under the more wide-ranging Human Rights Act 1998.

1.10 It is recommended that passively safe equipment is used for all new installations on both 'A' and primary roads with a speed limit of 50mph and above. For other classes of road or roads with a speed limit of 40mph or below the use of a site-specific risk assessment is required to enable the designer to make a decision on the use of passively safe equipment. In some areas, it may be felt that risk reduction is impracticable or requires action that is grossly disproportionate on certain routes due to low Annual Average Daily Traffic flows, speed limits, collision history, etc. If this is the case, then all workings need to be clearly documented within the project file.

1.11 Designers are required to have read and understood the National Annex to BS EN 12767:2007 and the review of the document in Appendix A of the Technical Note.

Off-site Power Station Facilities background

1.12 The proposed Off-site Power Station Facilities are located alongside the A5025 north of Llanfaethlu, within an area of undulating landform gently rising to the north-west. The site is bounded by the A5025 to the west, residential/storage buildings to the north, and farmland to the south and east. The proposed site is an existing bus depot. The landform falls gently from west to east across the site. The western edge along the A5025 is 55 metres above ordnance datum (mAOD) with the eastern edge at 48 mAOD. A bund 1.5m to 2.0m high is present running from west to east through the middle of the site. This bund separates the current brownfield area of the site from the farmland to the south and from a small watercourse, a tributary of the Afon Llanrhuddlad, which runs approximately to the east towards Llanfaethlu village. There is a significant drop to the south-east corner of the brownfield area. The proposed development consists of:

- An Alternative Emergency Control Centre (AECC) to provide back-up command and communications facilities that would be used to remotely manage an incident at the Power Station in the extremely unlikely event the primary facilities on the Power Station Site were untenable or if there was no access to the Power Station Site;
- An Environmental Survey Laboratory (ESL) would perform a normal operating function for environmental monitoring and, as such, would contain facilities such as radiation monitoring equipment to conduct radiological surveys in the local area;
- A Mobile Emergency Equipment Garage (MEEG) to enable Horizon to store a number of specialist vehicles and equipment at a location close to but separate from the Power Station Site, allowing them to be rapidly deployed if needed to support an incident. The MEEG could also be used as a marshalling point for support arriving on Anglesey before onward dispatch to the Power Station Site in an emergency situation;
- There would be a total of nine staff car parking spaces which would include two disabled parking spaces, and two motorcycle spaces;
- Access and delivery areas;
- Ancillary buildings, including utility and waste management; and
- Underground fuel tank to provide fuel for filling vehicles;

1.13 The proposed development forms part of the Wylfa Newydd Project to which this application for Development Consent relates. This proposed development would be used during the operation of the Power Station. The facilities are required to provide resilience against extreme events with very low probabilities.

1.14 There are twelve staff / delivery parking spaces within close proximity to the buildings, including two disabled parking bays and two motorcycle spaces. In addition, there is overspill parking for 54 vehicles to the south of the site.

1.15 There would be an operational workforce within the ESL building on a regular basis (up to three persons); however, the MEEG/AECC building would not usually be staffed. Should there be an incident, however, there could be up to 58 staff working across the buildings (MEEG- up to 16; AECC up to 30; ESL up to 12).

1.16 During normal operation of the Power Station, the AECC would be expected to be in use only once per year for an annual incident exercise. The ESL would have a day to day role for routine sampling (normal working hours only). Only in the event of an incident would both the AECC and ESL be operational 24 hours a day.

1.17 The MEEG building would have an operational workforce of up to four staff and 12 drivers during training (which would happen during normal working hours approximately once a year). During an incident, the staff would be working 24 hours per day, seven days per week. During periodic vehicle checks, typically once every six months, up to 4 people would be required on site. The facility would not be staffed at other times.

1.18 Training at the AECC building would take place at regular intervals, involving a small number of staff using the main AECC area for a limited period of time. Approximately once a month. Maintenance would need to be carried out at the facility, which may include running a back-up generator for a short period of time.

1.19 At present, it is assumed that the MEEG, AECC and ESL buildings would be decommissioned and removed from the site around the same time as decommissioning of the Power Station commences at the end of its operational life. Any alternative proposals for use of the building or the site beyond this period would need to be considered and determined as part of a future planning application at that time.

2 Background

Description of the work

2.1 Des Greaves and Paul Bartley carried out site visits during the week commencing 19th June 2017 over a period of two days. The weather conditions were dry with sunny periods and the road surface was also dry. The ambient air temperature was between 20° and 21° centigrade during the site visits. Traffic conditions were free flowing. Digital photographs were taken and have been included within this report in order to identify the issues raised.

2.2 Figure 2.1 below indicates the extent of the scheme.

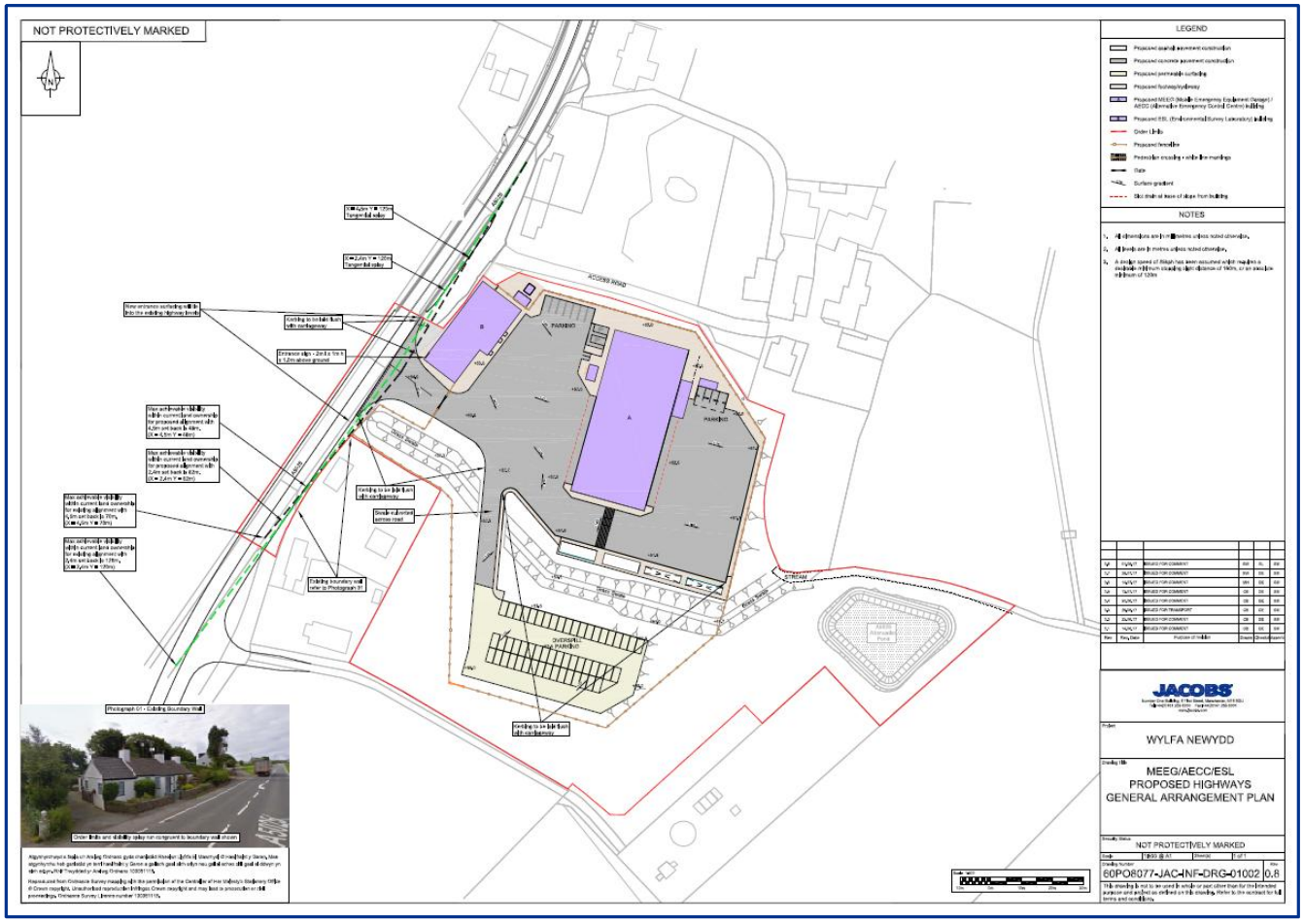

Figure 2.1: Extents of the proposed Off-site Power Station Facilities

2.3 The proposed Off-site Power Station Facilities are located just to the east of the A5025 to the north of Llanfaethlu.

2.4 A review of the collision data did not identify any discernible pattern of collisions over the extents of the proposed Off-site Power Station Facilities.

The Road Safety Audit

2.5 The RSA was undertaken in accordance with the Audit Brief and consisted of an examination of drawings/documents produced by Jacobs and indicated in Table 2.1.

2.6 All signs and road markings are referenced in accordance with the '*Traffic Signs Regulations and General Directions 2016 (TSRGD)*'. Also relevant chapters of the '*Traffic Signs Manual (TSM*)'. Tactile paving is referenced in accordance with the Department of the Environment, Transport and Regions (D.E.T.R) 1998. '*Guidelines on the use of tactile paving surfaces'* and the Department for Transport '*Inclusive Mobility*'. Cycle guidance is referenced in accordance with *'Sustrans Design Manual – Handbook for cycle-friendly design, 2014'*.

2.7 The Audit took place on site and at the Shrewsbury office of Jacobs. The RSA was carried out by:

- Des Greaves, RSA Team Leader, Jacobs, Shrewsbury.
- Paul Bartley, RSA Assistant, Jacobs, Shrewsbury.

Jacobs Drawing Number		Drawing Title
1	60PO8077-JAC-INF-DRG-01002 Rev 0.8	MEEG/AECC/ESL General Arrangement Plan. (Last updated 01/08/2017)
2	60PO8077-JAC-INF-DRG-01001 Rev 0.4	MEEG/AECC/ESL Proposed External Lighting. (Last updated 17/07/2017)

Table 2.1 : Drawings/documents examined during the RSA

3 Concerns

3.1 Road safety audit comment

Drawing

60PO8077-JAC-INF-DRG-01002 Rev 0.8

Location

At the location of the proposed Off-site Power Station Facilities.

Summary

The proposed visibility splays pass through the fence lines and private properties.

Description of the problem

The junction visibility splays for both the north and south of the junction are obstructed by fence lines, existing buildings or neighbouring land boundaries. The 2.4m x 120m (appropriate for a 40mph road) visibility splay to the left passes through the neighbouring property. Whilst a visibility splay of 2.4m x 62m is achievable this is below the required standard. The 2.4m x 120m visibility splay to the right pass through the retaining wall/tubular fence. Inadequate visibility could result in drivers pulling out onto the A5025 with insufficient forward visibility when it is unsafe to do so, resulting in collisions with approaching traffic or drivers on the A5025 having to take evasive action to avoid a collision. It should be noted however, that a 30mph speed limit has recently been introduced to the south of the site following the construction of a new school (Ysgol Rhyd Y Llan): **See figure 3.1 below.**

Recommendation

If the scheme is implemented, it is recommended that the appropriate junction visibility splays should be implemented and safeguarded.

Designer Response

The visibility to the south is limited on the exiting arrangement. The proposed realignment of the A5025 and potential changes to the speed limits will further impact on the visibility. Figure 2.1 indicates the impact on the visibility. HNP/IACC to review.

Figure 3.1: Image showing the view to the south of the proposed access to the Off-site Power Station Facilities along with the recently installed 30mph signage.

3.2 Road safety audit comment

Drawing

60PO8077-JAC-INF-DRG-01002 Rev 0.8

Location

At the location of the proposed Off-site Power Station Facilities.

Summary

Concern over the existing service road.

Description of problem

There may be conflict between the existing service road and the proposed Off-site Power Station Facilities access. It is not clear whether the existing service road is to be retained, as the kerb line along the northern side of the access appears to cut through the service road and priorities would be difficult to determine. This could result in collisions between drivers turning into and out of the access to the Off-site Power Station Facilities and drivers using the service road. Whilst the northern section of the service road would need to be retained for the farm access the southern section could be removed: **See figure 3.2 below.**

Recommendation

If the scheme is implemented, it is recommended that the southern section of the service road is removed and a new access installed to the farm.

Designer Response

The service road is to be retained along with the access to the existing bus facility, which will become the access point to the new site. The access along the northern boundary to the property will be retained in its current location. Vehicles entering and leaving the new site will cross the service road to the A5025 directly opposite the entrance. Vehicles using the existing property access will be able to turn north or south on the service road to access the A5025. It is not considered that this will be a conflict.

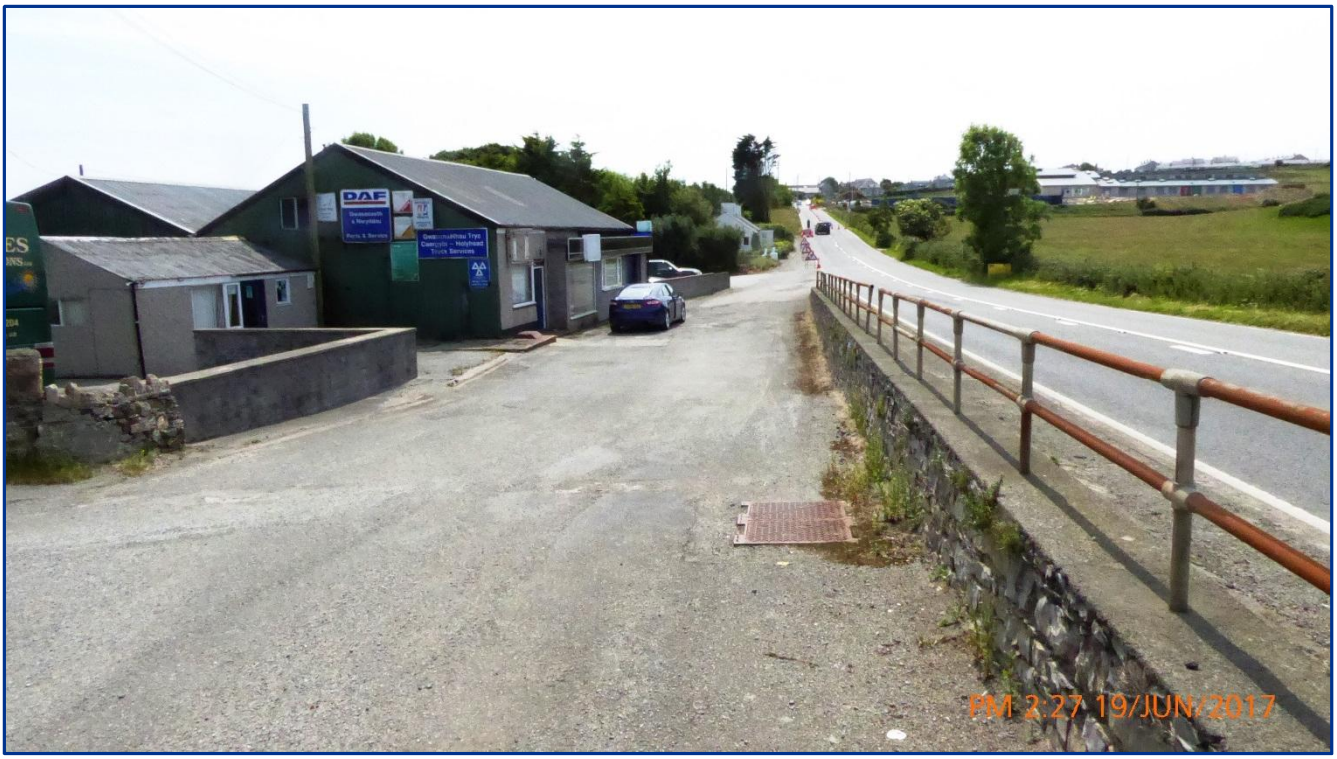

Figure 3.2: Image showing the extent of the existing service road and the proposed Off-site Power Station Facilities access.

3.3 Road safety audit comment

Drawing

60PO8077-JAC-INF-DRG-01002 Rev 0.8

Location

At the location of the proposed Off-site Power Station Facilities.

Summary

There is an existing retaining wall adjacent to the proposed Off-site Power Station Facilities.

Description of the problem

There is a retaining wall adjacent to the service road which is close to the proposed Off-site Power Station Facilities. This retaining wall results in a level difference of 0.83m between the service road and the main carriageway. There is section of rusty/damaged tubular fencing on top of this retaining wall which allows neither visibility nor an appropriate vehicular restraint system. Drivers turning out of the proposed access may fail to see a southbound vehicle and a collision could occur. This feature also falls within the 4.5 x 12m visibility splay: **See figure 3.3 below.**

Recommendation

If the scheme is implemented, it is recommended that the requirement for this retaining wall/tubular fence should be removed by lifting the service road level to that of the existing carriageway in this location.

Designer Response

The retaining wall may be removed by the A5025 online works. This issue will be reviewed at the detailed design stage.

Figure 3.3: Image showing the location of the retaining wall adjacent to the existing coach depot.

4 General Observations

4.1 Road Safety Audit Observation

It is assumed that a full swept-path analysis (using Auto Track) has been carried out for a 15.5m articulated vehicle and vehicles with fixed rigid axles, to ensure that all manoeuvres are possible without overrunning of the kerb or white line.

Designer Response

A swept path analysis has been undertaken.

4.2 Road Safety Audit Observation

It is not clear how the junction for the Off-site Power Station Facilities is to be delineated. The existing access is only identified using a broken edge line. It is suggested that further consideration is given to the road markings to ensure that the proposed markings tie-in with the existing channel/edge of carriageway markings.

Designer Response

The junction delineation will be detailed at the next stage of the design.

4.3 Road Safety Audit Observation

The drawing indicates a gated access; however, the direction of the swing of the gate(s) is not shown. The design must cater for a vehicle waiting off the carriageway (without encroaching onto the carriageway) while the gates are opened/closed.

Designer Response

The gate will open inwards.

5 Value+ and Sustainability

5.1 Value+ and Sustainability Comment

None were identified at this stage of the RSA.

6 Audit Team Statement

The problems identified have been noted in this report together with associated safety improvement suggestions that we recommend should be studied for implementation. No one on the Audit Team has been involved with the scheme design.

Audit Team Leader:

Name:	Des Greaves	Signed:	[redacted]
Position:	Senior Safety Engineer	Date:	13th February 2018
Organisation:	Jacobs U.K. Limited		
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Others Involved:

See introduction

Distribution of report:

File :	a
Client :	a
Police :	n/a
Design Team:	a

Appendix A. Site location plan indicating the location of the problems identified within in this RSA

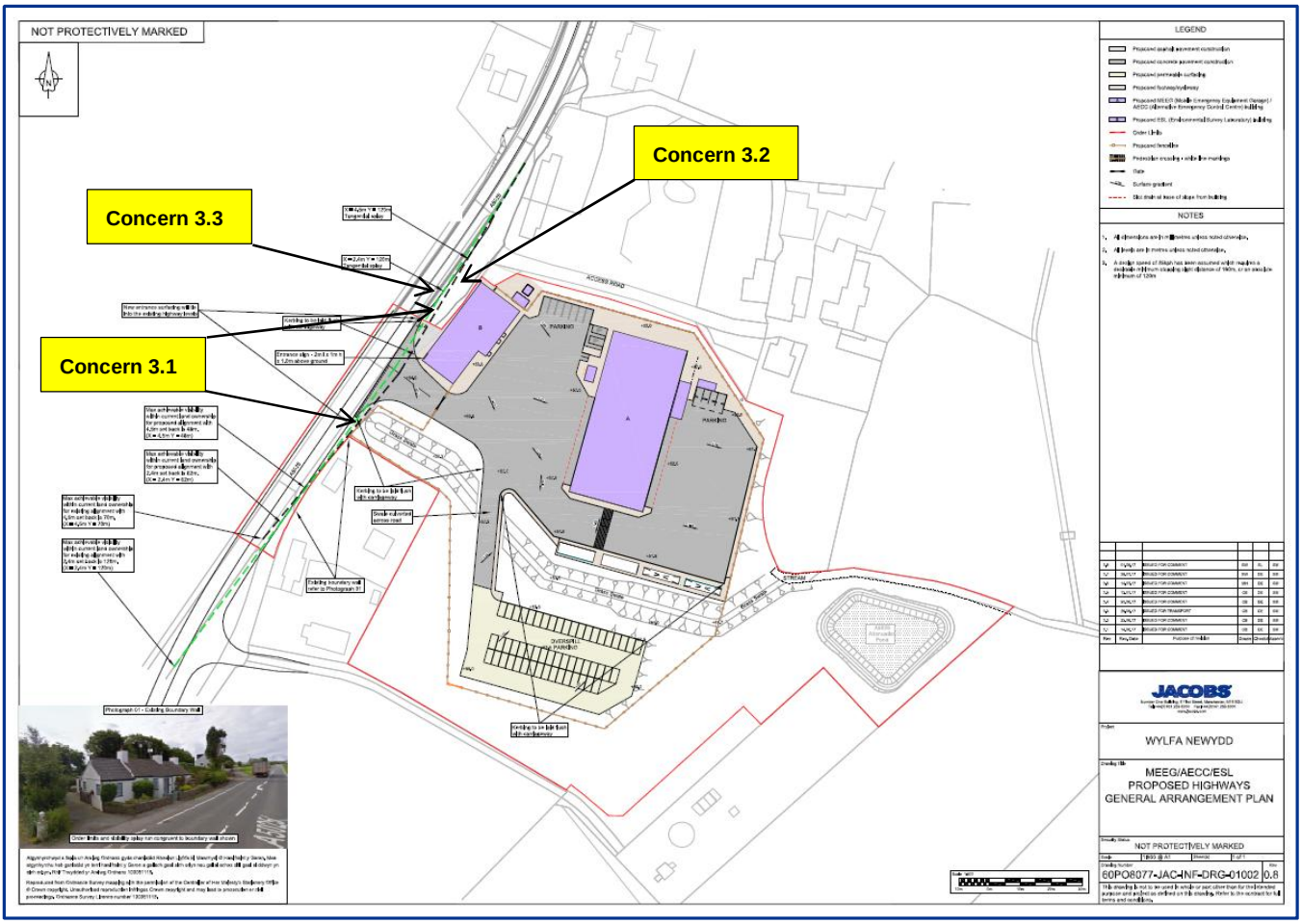

Figure 3.3 – Appendix A. Site location plan indicating the location of the problems.

JACOBS

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Park and Ride External Layout

Horizon Nuclear Power Wylfa Limited

Stage 1 Road Safety Audit

60PO8077-TAT-REP-014

WN0902-JAC-PAC-REP-00039

Audit reference number **CA307/1426|3.0**

February 2018

Park and Ride External Layout

Project no:	60PO8077
Document title:	Park and Ride External Layout Stage 1 Road Safety Audit
Document No.:	60PO8077-TAT-REP-014
Revision:	3.0
Date:	February 2018
Client name:	Horizon Nuclear Power Wylfa Limited
Client no:	WN0902-JAC-PAC-REP-00039
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Document history and status

Revision	Date	Description	Author	Checked	Review	Approved
1.0	17/07/2017	Stage 1 Road Safety Audit	[redacted]			
2.0	09/08/2017	Stage 1 Road Safety Audit				
3.0	13/02/2018	Stage 1 Road Safety Audit report updated and Designers comments added.				

Document history and status

Revision	Issue Approved	Date Issued	Issued to	Comments
1.0	17/07/2017	17/07/2017	Stephen Lamb/Gerald Evans	
2.0	09/08/2017	09/08/2017	Charlotte Palmer	
3.0	13/02/2018	13/02/2018	Stephen Lamb	Designers comments added.

Contents

List of Tables and Figures

1 Introduction

1.1 Scope of report

1.1.1 Jacobs UK Limited has been commissioned by Horizon Nuclear Power Wylfa Limited (Horizon) to carry out a Stage 1 Road Safety Audit (RSA) on the proposed External Layout of the Park and Ride facility at Dalar Hir, the access to which is located off a proposed roundabout just off the A5. RSAs should be undertaken at each design stage and at the completion of the construction. This report describes the issues raised during the RSA which was performed on site and at the Shrewsbury office of Jacobs, and provides a description of the concerns raised along with the recommendations made.

1.1.2 This is the second RSA carried out on this scheme. A previous Stage 1 RSA was carried out during September 2016 and the reference number was CA307/1357/1.0.

1.2 Legislative context

1.2.1 The RSA has been based on the principles contained within the Highway Advice Note HD 19/15 (Road Safety Audit) of the Highways Agency's Design Manual for Roads and Bridges, Volume 5 Section 2. The Auditors have only examined and reported on the road safety implications of those aspects of the scheme detailed in the drawings/documentation listed above. The scheme has not been examined or verified with regard to the compliance of the design with any other criteria; however, to explain a particular problem/recommendation the Auditors may have occasionally referred to design standards. This should not be considered to be a technical audit. The absence of comments should not be taken to imply compliance.

1.2.2 The objective of this RSA is to encourage consideration of the needs of all road users with regard to highway improvements associated with the External Layout of this proposed Park and Ride facility.

1.2.3 This RSA is a means of documenting the design decisions in a formal and consistent manner.

1.2.4 It is expected that the design team will have given consideration to both national and local design guidance with respect to all road users in the development of this scheme.

1.2.5 All of the problems identified are considered to be of sufficient importance to require action.

1.2.6 In addition to safety related concerns a section has been included for general observations.

1.3 Park and Ride background

1.3.1 The Park and Ride facility is located immediately to the northeast of Junction 4 on the A55. The proposed development consists of:

- secure parking for up to 1,900 cars which includes 10 disabled car spaces, as well as spaces for 53 minibuses, 35 motorbikes and 36 bicycles;
- a bus waiting pick up and drop off zone for up to 15 buses with additional parking for eight buses;
- a bus transport facility building to provide transport information, welfare facilities, a bus driver canteen and management office facilities;
- access via a new roundabout located near the existing A55-A5 junction (Junction 4);
- landscaping and screen planting for visual mitigation;
- other ancillary development, including a cycle store, substation, signage, fencing, lighting, Closed Circuit Television and utilities; and
- a crossing at the east end of the facility.

1.3.2 The proposed development forms part of the Wylfa Newydd Project to which this application for a Development Consent Order relates. This proposed development would be used during the construction phase of the Power Station to transport and manage the flow of some of the construction workforce to and from the Power Station. The proposed development would mainly attract those workers living on the island and on the mainland. It would also attract visitor traffic from further afield.

1.3.3 It is anticipated that construction of the proposed development would commence in Quarter 3 2019 and last for approximately 18 months. It is anticipated that the Park and Ride facility would be operated between Quarter 1 2020 and Quarter 4 2026.

1.3.4 The Park and Ride facility would have an operational workforce of 15 bus drivers and 10 members of staff, with staff split between security, control room, and management. The facility would be operational 24 hours.

1.3.5 The assessment for the facility has been undertaken on the basis of up to 1,900 spaces being required for the Park and Ride. This includes spaces for workers who will travel daily and also those who will park at the facility and get a bus to stay at the Site Campus.

2 Background

2.1 Description of the work

2.1.1 Des Greaves and Paul Bartley carried out site visits during the week commencing 19 June 2017 over a period of two days. The weather conditions were dry with sunny periods and the road surface was also dry. The ambient air temperature was between 20° and 21° centigrade during the site visits. Traffic conditions were free flowing. Digital photographs were taken and have been included within this report in order to identify the issues raised.

2.1.2 Figure 2.1 indicates the extent of the scheme.

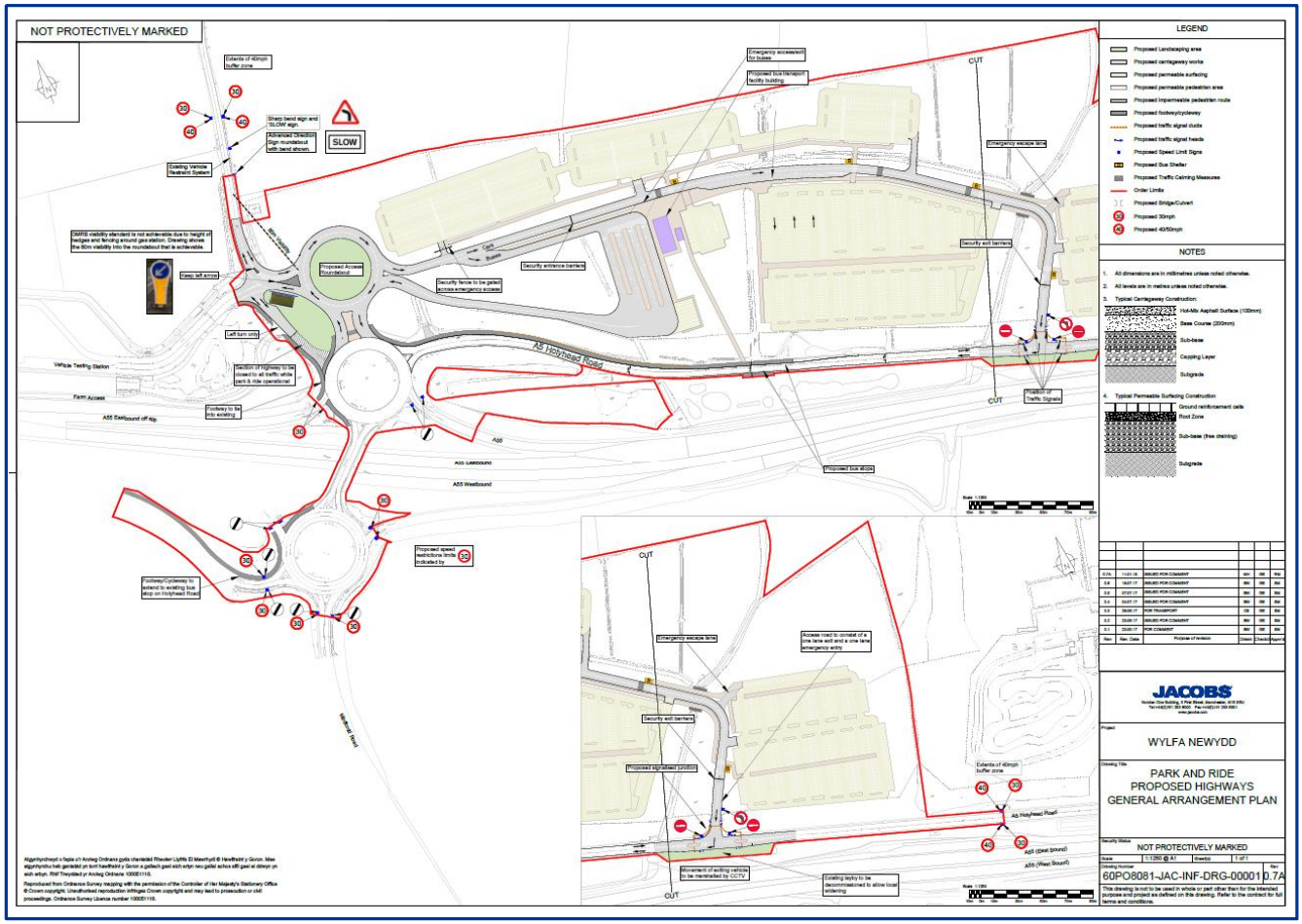

Figure 2.1 : Indicates the extent of the proposed Park and Ride scheme.

2.1.3 The proposed Park and Ride facility is located to the north of the A55 (North Wales Expressway) and adjacent to the A5 (Holyhead Road).

2.1.4 The proposal includes the installation of a new traffic signal junction on the A5 which will provide an additional exit from the car park only.

2.1.5 A review of the existing collision data in the vicinity of the proposed Park and Ride facility did not identify any discernible pattern of collisions.

2.2 The Road Safety Audit

2.2.1 The RSA was undertaken in accordance with the audit brief and consisted of an examination of drawings/documents produced by Jacobs and indicated in Table 2.1 : Drawings/documents examined during the RSA1.

2.2.2 All signs and road markings are referenced in accordance with the 'Traffic Signs Regulations and General Directions 2016 (TSRGD). Also relevant chapters of the Traffic Signs Manual (TSM). Tactile paving is referenced in accordance with the Department of the Environment, Transport and Regions (D.E.T.R) 1998. 'Guidelines on the use of tactile paving surfaces' and the Department for Transport 'Inclusive Mobility'. Cycle guidance is referenced in accordance with Sustrans Design Manual – Handbook for cycle-friendly design, April 2014.

2.2.3 The Audit took place on site and at the Shrewsbury office of Jacobs. The RSA was carried out by:

- Des Greaves, RSA Team Leader, Jacobs, Shrewsbury (Audit Team Leader)
- Paul Bartley, RSA Team Member, Jacobs, Shrewsbury (Audit Team Member)
- Matt Bloor, Highways Engineer, Jacobs, Shrewsbury (Specialist Input)

2.3 Certificate of Competence (CoC)

2.3.1 Certificate of Competence (CoC), both members of the Audit Team hold a Road Safety Certificate of Competence (CoC) which meets the requirements of the European Directive 2008/96/EC and HD19/15 Annex J.

Drawing Number		Drawing Title
1	60PO8081-JAC-INF-DRG-00001 Rev 0.7A	Park and Ride Proposed Highways General Arrangement Plan (last updated 11/01/2018).
2	60PO8077-JAC-INF-DRG-00002 Rev 0.7	Park and Ride Proposed External Lighting (last updated 22/12/2017).

Table 2.1 : Drawings/documents examined during the RSA

3 Concerns

3.1 Road Safety Audit comment

Drawing

60PO8081-JAC-INF-DRG-00001 Rev 0.7A

Location

At the location of the proposed roundabout.

Summary

There is insufficient forward visibility (Stopping Site Distance (SSD)) available on the London Road (southbound approach) towards the proposed roundabout. Inadequate forward visibility could result in 'rear-end shunt' type collisions as drivers may not appreciate the location of the roundabout Give Way point.

Description of the Problem

There is insufficient forward visibility available on the London Road (southbound approach) towards the proposed roundabout. Approach curvature should follow the '*horizontal radii recommended in TD 9/93 Link Design*' (as recommended in paragraph 7.60 TD 16/07 Geometric Design of Roundabouts). As the centreline radius is approximately 30m at this location, drivers may not anticipate the severity of the turn, especially as the visibility is below standard. The drawing provided refers to sketch 01 and 02 which references the removal of the existing boundary hedge but it would still appear that an SSD of 90m to the roundabout Give Way will be obstructed by the existing gas compound and security fencing.

Recommendation

If the scheme is implemented, it is recommended that an SSD of 90m is provided (for a 30mph limit) over a distance of 135m in advance of the Give Way point in accordance with TD 9/93 Link Design paragraph 1.26b. Any existing obstructions such as hedges or the electricity substation should be removed. The severity of the radius should also be lessened. Vehicle Activated Signs (VAS) and reflective road studs have been proposed, however, these would normally only be installed at an existing collision site.

Designer Response

It is acknowledged that there is a visibility issue and a departure from standards will need to be agreed with the local highways authority (current layout responds to feedback from local highways authority). This is to be dealt with at the next stage of design with VAS being considered and/or improvements to visibility through the cutting of the hedge. It is understood that the gas compound on the corner cannot be removed.

3.2 Road Safety Audit comment

Drawing

60PO8081-JAC-INF-DRG-00001 Rev 0.7A

Location

At the exit from the existing vehicle testing station.

Summary

The revised carriageway alignment may result in long vehicles exiting the testing station straddling the northbound lane.

Description of the Problem

The revised carriageway alignment may result in right-turning Heavy Goods Vehicles (HGV) exiting the testing station straddling the northbound lane, while the vehicle gives way to southbound vehicles entering the proposed roundabout. This could result in northbound drivers colliding with the side of a stationary HGV.

Recommendation

If the scheme is implemented, it is recommended that the scheme would be redesigned so that vehicles from the testing station should be free flowing and not hinder northbound vehicles, once they have negotiated the Give Way at the exit from the junction.

Designer Response

The volume of traffic expected at this junction is very low. Options for signage and road marking are to be reviewed at the next stage of design.

3.3 Road Safety Audit comment

Drawing

60PO8081-JAC-INF-DRG-00001 Rev 0.7A

Location

At the location of the proposed signalised junction.

Summary

It would be proposed to install a traffic signal junction on the A5 at the location of an existing layby.

Description of the Problem

It is proposed to install a traffic signal junction on the A5 at the location of an existing layby. The removal of such a vital asset could result in increased driver fatigue and motor vehicle collisions.

Recommendation

If the scheme is implemented, it would be recommended that a new layby would be installed further east.

Designer Response

The layby has been removed at the request of the local highways authority and to improve the right turn out of the site. Use of the A5 in this area is very limited, and we disagree that there is a need for a place for drivers to stop for a rest this close to Holyhead. Adequate stopping is provided on the A55.

3.4 Road Safety Audit comment

Drawing

60PO8081-JAC-INF-DRG-00001 Rev 0.7A

Location

At the location of proposed traffic signal junction on the A5.

Summary

It is proposed to install a traffic signal junction on the A5; however, there is a crest on the westbound approach.

Description of the problem

The A5 at this location is very straight and it is anticipated that vehicle speeds approaching the proposed traffic signal junction could be in excess of the speed limit. Additionally, there is a crest on the westbound approach just ahead of the proposed location of the stop line. This could result in drivers colliding with the rear of stationary traffic resulting in 'rear-end' shunt type collisions. **See Figure 3.1 below.**

Recommendation

If the scheme is implemented, an assessment of forward visibility should be carried out and high-mast traffic signal poles implemented if required.

Designer Response

We are not convinced that this is an issue. Figure 3.1 looks very misleading when you compare it to standing at the point where the junction will be located. Forward visibility exercise has been undertaken by Jacobs highways team. Further assessment can be undertaken to confirm if high-mast traffic poles are required.

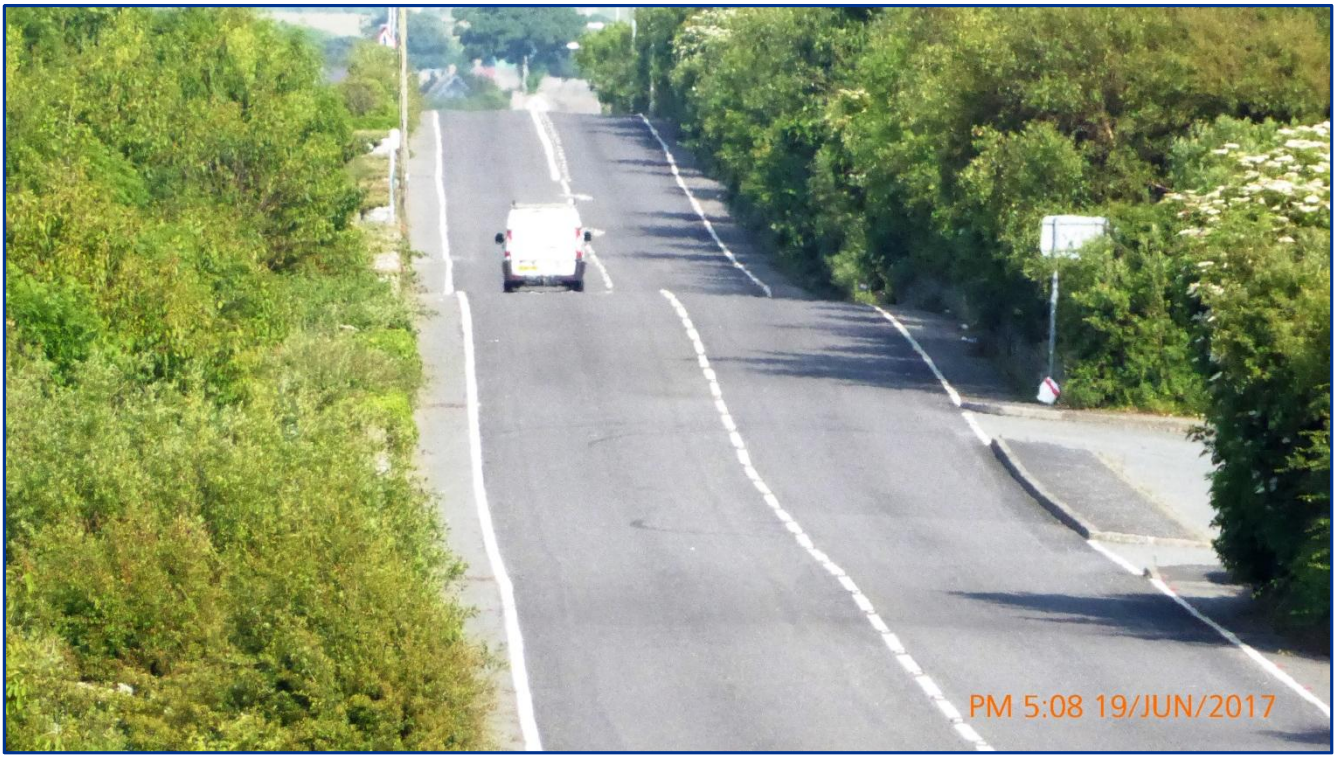

Figure 3.1 - Image showing that there is a 'crest' in the carriageway (A5) on the westbound approach to the proposed traffic signals.

3.5 Road Safety Audit comment

Drawing

60PO8081-JAC-INF-DRG-00001 Rev 0.7A

Location

Westbound approach to the proposed roundabout.

Summary

The exit from the bus apron onto the proposed roundabout is indicated as being two lanes wide.

Description of Problem

The exit from the bus stand onto the proposed roundabout is indicated as being two lanes wide. However, it is considered unlikely that buses will enter the roundabout in two lanes as the bridge over the A55 is only single lane. However, as this will be the main route to the A55/A5025 this could result in 'side swipe' type collisions between adjacent buses.

Recommendation

If the scheme is implemented, it is recommended that the bus stand exit is hatched down to a single lane where it would enter the proposed roundabout.

Designer Response

We are not convinced that this is an issue. Two lanes are provided to improve capacity whilst also allowing for the possibility that an airport style service may be implemented where buses would do circuits to pick up people in the far away car parks, hence they would want a right hand lane to turn right round the roundabout.

3.6 Road Safety Audit comment

Drawing

60PO8081-JAC-INF-DRG-00001 Rev 0.7A

Location

Northbound approach to the proposed roundabout.

Summary

The exit from the northern A55 roundabout onto the proposed roundabout is very short and due to the anticipated heavy traffic flow and the requirement to Give Way could result in 'rear-end shunt' type collisions.

Description of Problem

The exit from the northern A55 roundabout onto the proposed roundabout is very short and drivers may need to Give Way on the approach in case there are any vehicles circulating the roundabout, although there is little reason for a driver to circumnavigate the roundabout.

Recommendation

If the scheme is implemented, it is recommended that the southern segment of the circulatory carriageway between the southbound exit and northbound entry would be kerbed, therefore creating a dumbbell type roundabout. This would not only remove the potential conflict on the northbound entry but may also improve capacity.

Designer Response

A dumbbell roundabout was considered as an option but discounted. The proposed solution retained the existing highway layout and allowed the new roundabout to be constructed off line of the existing highway works.

3.7 Road Safety Audit comment

Drawing

60PO8081-JAC-INF-DRG-00001 Rev 0.7A

Location

The existing farm access between the northern A55 roundabout and the access to the vehicle testing station.

Summary

It is proposed to close the section of carriageway that runs past the access to the farm (Penmynydd Farm) at its southern all traffic while the park and ride is operational.

Description of Problem

There is concern that southbound drivers on London Road approaching the proposed roundabout could perceive that the alignment of the road is still straight due to the retention of the short section of carriageway leading to the farm. This may result in drivers losing control of their vehicles or crossing into the opposing flow of traffic which could result in 'head-on' type collisions.

Recommendation

If the scheme is implemented, it is recommended that the northern segment of this section of carriageway is closed instead of the southern section in order to prevent 'see through' from the southbound approach to the proposed roundabout. A narrow link could be installed off the northern A55 roundabout for farm access only. Following closure of the Park and Ride facility this arrangement could be retained.

Designer Response

The local highways authority (IACC and WAG) preference is to close the south section of this road. Options for signage and VAS to warn drivers of the bend are to be reviewed at the next stage of design.

3.8 Road Safety Audit comment

Drawing

60PO8081-JAC-INF-DRG-00001 Rev 0.7A

Location

The exit from the Park and Ride facility onto the A5 at the proposed traffic signal junction.

Summary

It is proposed to install a section of 'squared off' kerb line to prevent / dissuade drivers from turning left from the park and ride onto the A5.

Description of Problem

It is proposed to install a section of 'squared off' kerb line to prevent / dissuade drivers from turning left from the Park and Ride facility onto the A5. However, large vehicles such as busses may not be able to make this manoeuvre in the event of an emergency which closes the main entrance/exit due to the central traffic island supporting the traffic signal poles. This could result in vehicles colliding with traffic signal equipment.

Recommendation

If the scheme is implemented, it is recommended that the eastern kerb line is retained as was shown on the previous drawing (**60PO8081-JAC-INF-DRG-00001 Rev 0.2**). However, a section of low kerbing (50mm high) could be implemented that mirrors the western kerb line and infilled with a coloured surface. This would allow overrunning in an emergency.

Designer Response

The local highway authority preference is for the squared of kerb line to prevent / dissuade drivers from turning left out of the facility (as per the latest drawing). Entry in emergency will always be from the west. The location of the traffic island to improve access will be reviewed at the next stage of design.

3.9 Road Safety Audit comment

Drawing

60PO8077-JAC-INF-DRG-00002 Rev 0.7

Location

The sections of 30mph carriageway to the north of the proposed roundabout (London Road) and adjacent to the proposed traffic signal junction on the A5.

Summary

It is proposed to implement a 30mph speed limit from a point 230m to the east of the traffic signal junction on the A5 to a point 150m north of the proposed roundabout. However, street lighting is only proposed to be installed around the northern A55 roundabout and the proposed new roundabout.

Description of Problem

It is proposed to install a tight bend on the section of southbound carriageway leading to the proposed roundabout. Although this is to be signed as a 30mph section of carriageway, without street lighting drivers will have difficulty appreciating the severity of the bend as well as not being able to see the adjacent junction during the hours of darkness. In addition, without street lighting the proposed traffic signal junction at the Park and Ride exit onto the A5 will be difficult for drivers to see during the hours of darkness. This could result in collisions during the hours of darkness.

Recommendation

If the scheme is implemented, it is recommended that the section of carriageway between the proposed roundabout and the start of the 30mph speed limit on London Road as well as the proposed traffic signal junction on the A5 is street lit. Additionally it will be necessary in install 30mph repeaters/roundels in appropriate locations along the sections of A5 that are unlit

Designer Response

Street lighting and signage to be reviewed at the next stage of design.

4 General observations

4.1 Road Safety Audit observation

It is assumed that a full swept path analysis (using 'Auto Track') has been carried out for a 15.5m articulated vehicle and vehicles with fixed rigid axles, to ensure that all manoeuvres are possible without kerb or white line overrunning.

Designer Response

Vehicle tracking has been undertaken for the appropriate vehicles that are proposed to use the facility (52 seat buses to spine road and bus transport area, cars/minibuses to parking areas, fire tender access where required). A 15.5m articulated vehicle is not proposed to be used on this site.

4.2 Road Safety Audit observation

No detailed white lining proposals have been provided or reviewed, however, it is suggested that at detailed design stage, consideration is given to implementing suitable road markings on the proposed roundabout if it is intended for drivers to circulate in two lanes, to and from the facility.

Designer Response

White lining proposals to be developed during next stage of design.

4.3 Road Safety Audit observation

There appears to be minimal separation between the entry and exit lanes leading to and from the facility, adjacent to the proposed roundabout. Whilst separated by a kerbed island the opposing traffic flows are directed towards each other. Additionally, whilst the exit radius from the roundabout is in accordance with TD 16/07 it is suggested that it is increased along with the lane separation. In order to reduce the need to maintain this grassed area in the future consideration should be given to the surface finish.

Designer Response

The current layout responds to feedback from the local highways authority. Exit radius' will be in accordance with standards.

4.4 Road Safety Audit observation

It is proposed to install a chevron sign assembly in accordance with TSRGD 2016 diagram number 515 opposite the southbound approach to the proposed roundabout. This chevron sign should be orientated so that it is perpendicular to the direction of travel of southbound drivers to be fully effective during the hours of darkness. It should also be ensured that this assembly does not obscure the intervisibilty of drivers using the adjacent junction. The chevron assembly shown on the drawing is not appropriate for this location as it also indicates a keep left sign normally associated with roundabouts.

Designer Response

Signage to be reviewed and confirmed during next stage of design.

4.5 Road Safety Audit observation

It is proposed in install what appears to be a right-turn lane with hatching within the proposed traffic signal junction on the A5. This is misleading and could result in drivers inadvertently entering what they believe to be a right-turn lane by mistake. It is suggested that this arrangement is amended at detailed design stage.

Designer Response

Design to be reviewed at detailed design stage.

5 Value+ and Sustainability

5.1 Value+ and Sustainability comment

None were identified at this stage of the RSA

6 Audit Team Statement

The problems identified have been noted in this report together with associated safety improvement suggestions that we recommend should be studied for implementation. No one on the Audit Team has been involved with the scheme design.

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Others Involved: See Introduction

See introduction

Distribution of report:

File :	a
Client :	a
Police :	n/a
Design Team:	a

Appendix A. Site location plan indicating the location of the problems identified in this RSA

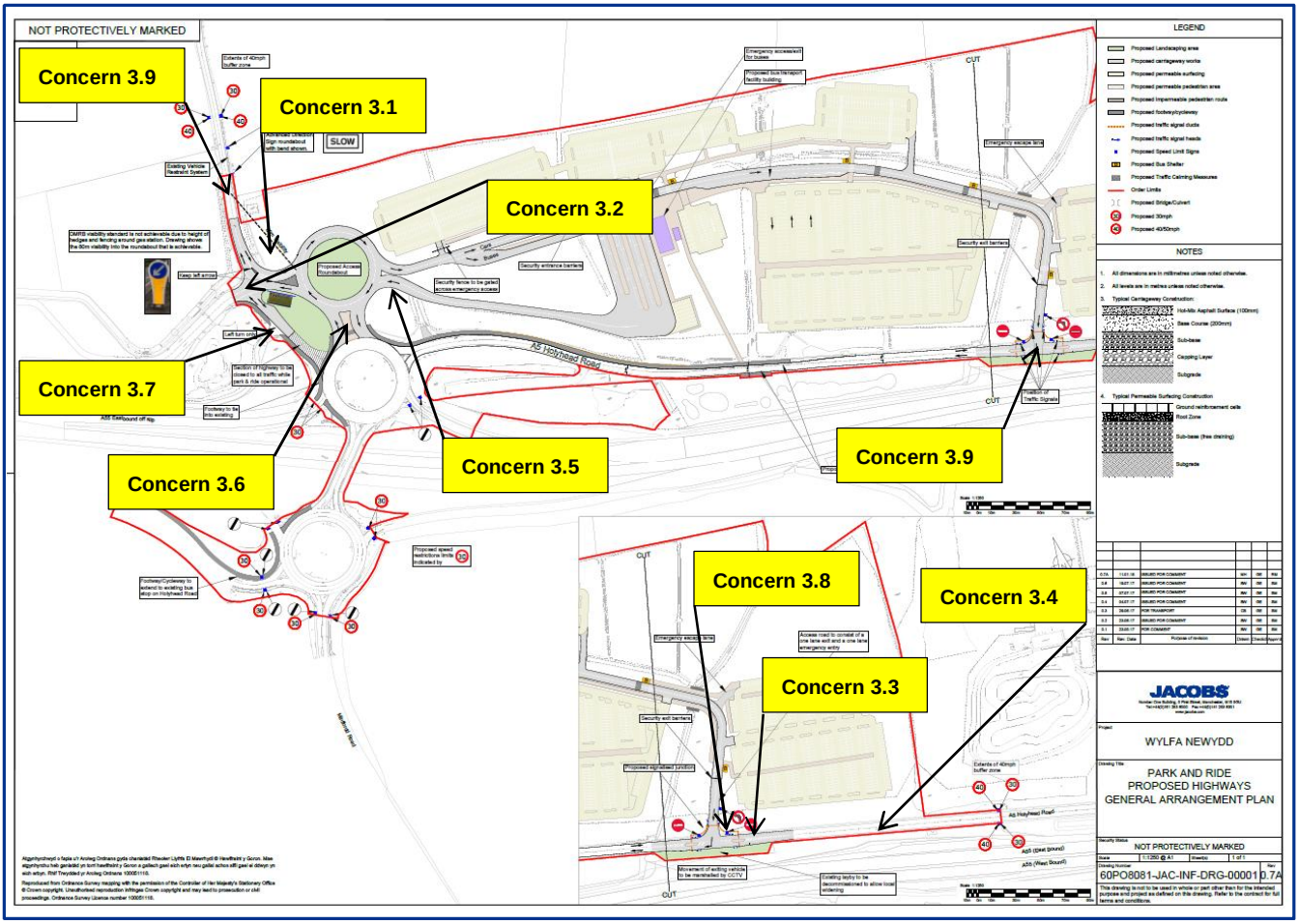

Figure A.1 – Appendix A. Site location plan indicating the location of the problems.

AECOM

WYLFA A5025 Highways Improvements: Stage 1 Road Safety Audit

Offline Improvements

Report No. WN02.05-URS-00-REP-006

Prepared for Horizon Nuclear Power

REVISION SCHEDULE					
Rev	**Date**	**Details**	**Prepared by**	**Reviewed by**	**Approved by**
01	22nd July 2015	DRAFT Stage 1 Road Safety Audit	Jamie Stone Engineer	Pete Denton Senior Engineer	Stuart Dungworth Associate
02	30th July 2015	FINAL Stage 1 Road Safety Audit	Jamie Stone Engineer	Pete Denton Senior Engineer	Stuart Dungworth Associate
03	9th February 2018	Revised FINAL Stage 1 Road Safety Audit	Stuart Dungworth Associate	Pete Denton Principal Engineer	Stuart Dungworth Associate

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Limitations

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The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the report.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this report. The work described in this report was undertaken during **July 2015 and February 2018** and is based on the conditions encountered and the information available during the said period of time. The scope of this report and the services are accordingly factually limited by these circumstances.

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1 INTRODUCTION

1.1 Audit Details

1.1.1 This report results from a Stage 1 Road Safety Audit carried out on the Wylfa A5025 Highways Improvements scheme located on the Isle of Anglesey, Wales. This report only takes into consideration the offline improvements associated with the scheme. The Audit was carried out at the request of AECOM (Manchester) on behalf of Horizon Nuclear Power.

1.1.2 The road safety team consisted of the following members:

1.	Stuart Dungworth	CEng FIHE MCIHT RegRSA (IHE)	
		Audit Team Leader	AECOM Infrastructure and Environmental Ltd.
2.	Pete Denton	BSc (Hons) DipASM MCIHT MSoRSA	
		Audit Team Member	AECOM Infrastructure and Environmental Ltd.
3.	Jamie Stone	BEng (Hons) TMICE MSoRSA	
		Audit Team Member	AECOM Infrastructure and Environmental Ltd.

1.1.3 The following representatives also attended the site visit on 1st July 2015:

1.	Neil Edwards	BEng (Hons)	
		Isle of Anglesey County Council	

1.1.4 The Road Safety Audit was undertaken in accordance with the Stage 1 Road Safety Audit Brief (document Number. WN02.05-URS-REP-005) dated 24th June 2015. The Road Safety Audit comprised of an examination of the documents provided by the design team, which are listed in **Appendix A**, and an examination of the site during the hours of daylight.

1.1.5 The Road Safety Audit took place in the AECOM Chesterfield office during July 2015 and the site was examined during the hours of daylight by all the Audit Team on 1st July 2015. The weather during the site visit was overcast with light rain showers and a damp road surface. The Audit was undertaken during the morning and afternoon off peak hours of 10:30 and 14:30 when traffic was flowing freely. There were no road works affecting the area.

1.1.6 The terms of reference of the Audit are as described in the Design Manual for Roads and Bridges (DMRB) document HD 19/15 'Road Safety Audit'. The advice issued in the DMRB applies to trunk road and motorway highway improvement schemes; however, the principles of HD19/15 have been adopted to define the scope of this Audit.

1.1.7 The scheme has been examined, and this report compiled, only with regard to the safety implications to road users of the scheme as presented. It has not been examined or verified for compliance with any other standards or criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem, the Road Safety Audit Team may, on occasion, have referred to a design standard without touching on technical audit.

1.1.8 An absence of any comment relating to specific road users/modes/safety issues in **Section 3** of this report does not imply that they have not been considered; instead the Audit Team consider that they are not adversely affected by the proposed changes.

1.1.9 Nothing in this audit should be regarded as a direct instruction to include or remove a measure from within the scheme. Responsibility for designing the scheme lies with the designer and as such the Audit Team accepts no design responsibility for any changes made to the scheme as a result of this audit.

1.1.10 Unless general to the scheme, each problem has been identified with reference to key features as well as being marked on the problem location plan attached in **Appendix C.**

1.1.11 Following changes to the design within Section 1, and an extension of the Brief to include Section 9, the Audit Team was asked to update the Stage 1 Road Safety Audit. The Road Safety Audit Team has been informed that a site visit was not required and that a variation to HD19/15 has been accepted by the Local Highway Authority. The Audit of the revised drawings was carried out during February 2018.

1.1.12 The revised drawings issued by the design team have been identified in **Appendix A**.

2 SITE DESCRIPTION

2.1 Existing Layout

2.1.1 The Wylfa Power Station site is located in the northwest corner of the Isle of Anglesey and is accessed via the A5025. The A5025 is a two-way single carriageway which links Wylfa Power Station to the A55 in the south and passes through the villages of Valley, Llanynghenedl, Llanfachraeth, Llanfaethlu, Llanryhddlad and Tregele within the Scheme extents.

2.1.2 The A5025 within the Audit area is covered by a number of different speed limits. These are as follows:

- Valley - 30mph speed limit;
- Valley to Llanynghendl - 60mph national speed limit;
- Llanynghendl – 40mph;
- Llanynghendl to Llanfachraeth - 60mph national speed limit;
- Llanfachraeth - 30mph speed limit;
- Llanfachraeth to Llanfaethlu - 50mph speed limit transitioning to a 60mph national speed limit;
- Llanfaethlu - 40mph speed limit;
- Llanfaethlu to Tregele - 60mph national speed limit;
- Tregele - 40mph speed limit; and,
- Tregele to Wylfa Power Station – 40mph speed limit.

2.1.3 Land use in the scheme extents is predominantly rural and agricultural with residential areas also located sporadically along the proposed scheme.

2.1.4 The existing A5025 carriageway surface varies from poor to reasonable conditions and the road markings are generally in good condition throughout.

2.1.5 Street lighting is present within the village areas, however, no street lighting is provided within the rural sections of the scheme. The site was not visited during the hours of darkness.

2.1.6 A location plan showing the extents of the scheme can be found on the next page.

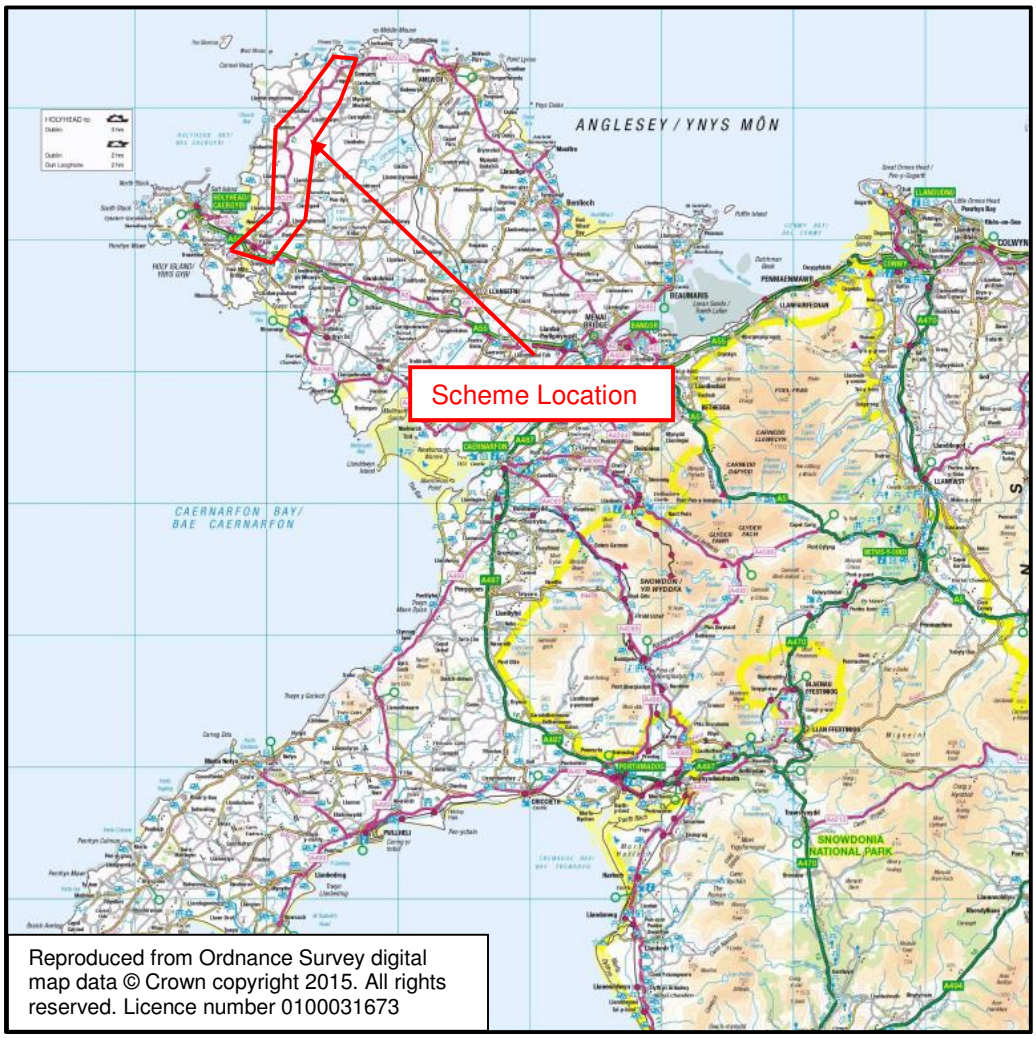

Figure 1: Wylfa A5025 Highways Improvements Scheme Location Plan.

2.2 General Scheme Details

2.2.1 The proposed scheme has been broken down into 8 defined sections. A plan outlining these 8 sections can be found in **Appendix B**. An additional section has been added to the original scheme to include the proposed power station access road junction.

2.2.2 Forecast baseline flows and construction or operational flows are not currently available. However, the theoretical capacity of the A5025 using the Congestion Reference Flow (CRF) methodology is 24,925 vehicles (AADT) average peak. The estimated AADT flow based on August 2014 flows is 6,101 vehicles. The existing A5025 is operating well within capacity with no congestion during weekday peak hours.

2.2.3 The existing A5/A5025 Valley junction operates well within acceptable capacity limits during both the AM and PM weekday peak hours. The results of recent tests suggest that the existing junction may possess sufficient reserve capacity to cater for the predicted increases in traffic in 2022.

2.2.4 There are various Non-Motorised User (NMU) desire lines located throughout the scheme extents, along with various public transport links as outlined below:

- Public transport: Bus service 61 runs 8 buses a day in each direction between Holyhead and Amlwch on weekdays. There are 7 buses a day on Saturdays but no service on Sundays.
- Cycling: On-road cycle routes cross the A5025 at 3 locations. These are National Cycle Routes 5 and 566 (the Copper Trail).
- PROWs: The existing A5025 is crossed by a total of 37 Public Rights of Way and the Wales Coast Path. A further 8 PROWs would be crossed by the proposed offline improvements.

2.2.5 Both the online and offline A5025 improvements are due to be completed before the construction works for Wylfa Newydd commence. However, the improvement works are inextricably linked to the construction of the new power station and have been designed to accommodate the additional traffic generated by the construction and operational phases.

2.2.6 The programme for decommissioning and repowering works at Rhyd-y-Groes wind farm is likely to overlap with the online A5025 works.

2.2.7 There are existing primary schools in Llanfachraeth and Llanfaethlu. There are proposals for a new larger primary school in Llanfaethlu which will replace existing primary schools in Llanfachraeth, Llanrhuddlad and Llanfaethlu.

2.2.8 10 year collision data and collision statistics for the A5025 between Valley and Cemaes has been provided to the Audit Team for review.

2.3 Proposed Scheme Details

2.3.1 As described above, the proposed scheme corridor has been broken down into 8 sections. 4 sections (1,3,5,7) are offline improvements and 4 sections (2,4,6,8) are online improvements. This report only takes into consideration the offline improvements associated with the scheme and are defined as follows:

- Section 1 (junction 3 of the A55 to Valley Junction A5/A5025): A proposed roundabout and carriageway link is to be constructed north of the existing Valley Junction to bypass Valley and the existing A5025 is to be stopped up at the tie-in point;
- Section 3 (north of Llanynghendl to north of Llanfachraeth): A proposed carriageway link is to be constructed to bypass Llanfachraeth. Sections of the existing A5025 are to be stopped up at the tie-in points, a new over bridge over the bypass provided within Llanfachraeth and new junctions provided to access the existing road network;
- Section 5 (south of Llanfaethlu to north of Llanfaethlu): A proposed carriageway link is to be constructed to bypass Llanfaethlu. Sections of the existing A5025 are to be stopped up at the tie-in points and a new junction provided to access the existing road network; and,
- Section 7 (north of Llanrhyddlad to north of Cefn Coch): A proposed carriageway link is to be constructed to bypass Cefn Coch. Sections of the existing A5025 are to be stopped up at the tie-in points, a new over bridge over the bypass provided within Cefn Coch and new junctions provided to access the existing road network.
- Section 9 (Power Station Access Road Junction): A proposed roundabout and spur to form the access to the proposed power station. This proposed junction with the A5025 is an offline improvement.

2.3.2 The number of speed limit changes is to be rationalised as part of the scheme. The existing 40mph speed limit through Llanynghendl is to remain before transitioning to a 60mph national speed limit throughout the online improvements and bypass sections to Cefn Coch. At Cefn Coch

the speed limit transitions to 40mph through the village before transitioning to a 60mph national speed limit throughout the remainder of the scheme extents.

2.4 Departures from Standard

There are currently no approved departures or relaxations from standard for the 4 offline sections. However, it is anticipated that there will be a limited requirement for departures and relaxations from standard.

3 ITEMS RESULTING FROM THIS STAGE 1 ROAD SAFETY AUDIT

3.1 The following road safety issues were identified during this Stage 1 Road Safety Audit.

A GENERAL

A1 CROSS-SECTIONAL VARIATION

A1.1 PROBLEM

Drawing No: Various.

Location: Various.

Summary: Narrow carriageway width leading to Heavy Goods Vehicles (HGV) passing close to one another and potential graze type collisions occurring.

The minimum carriageway width at various locations throughout the scheme extents is detailed as 6.7m with 300mm hard strips either side of the carriageway; where bends are less than 400m radius additional widening is to be specified. There is a risk that the tie-in points between the existing and proposed carriageways may create pinch points that may lead to collisions occurring.

RECOMMENDATION

Ensure that all tie-in points have a constant road width between the existing and proposed sections of carriageway.

A2 DRAINAGE

A2.1 PROBLEM

Drawing No: Various.

Location: Various.

Summary: Drainage headwalls not protected leading to increased collision severity.

No information has been provided to the Audit Team with regards to a Road Restraint System (RRS) protecting the proposed drainage headwalls on the A5025. If an errant vehicle should leave the carriageway in the vicinity of the drainage headwalls and strike them, the severity of the collision may be increased significantly.

RECOMMENDATION

Provide RRS to protect the drainage headwalls where there is a risk of collision due to their close proximity to the edge of the carriageway.

A3 NON-MOTORISED USER

A3.1 PROBLEM

Drawing No: Various.

Location: Various Public Rights of Way (PRoW).

Summary: Lack of connectivity between PRoWs leading to potential pedestrian trips and falls occurring.

Existing PRoWs are to be retained as part of the scheme. However, there is no information as to how the PRoWs are to be connected. The offline improvements may lead to an increase in the speed of traffic that may be detrimental to the safety of pedestrians. If the PRoWs are not sufficiently connected, pedestrians may have to walk within the uneven verges or along the carriageway, increasing the likelihood of injuries or pedestrian collisions with other road users.

RECOMMENDATION

Provide sufficient connectivity between PRoWs and ensure crossing points are provided at safe locations.

A4 ROAD MARKINGS

A4.1 PROBLEM

Drawing No: Various.

Location: Various.

Summary: Incorrect road markings leading to unsafe overtake manoeuvres and head-on collisions.

It has been assumed that the majority of the road markings shown on the drawings are indicative at this stage. There are a number of issues throughout the scheme where the scheme is not in accordance with the guidance contained in Chapter 5 of the Traffic Signs Manual (e.g. Tuck in Arrows and the interface between double white lines systems and single centre lines). Drivers may attempt overtaking manoeuvres at the locations where reduced visibility is present, increasing the likelihood of head on collisions.

RECOMMENDATION

Ensure that all road markings are in accordance with the guidance laid out in Chapter 5 of the Traffic Signs Manual at detailed design stage. This will be reviewed during the Stage 2 Road Safety Audit.

B <u>VALLEY BYPASS (SECTION 1)</u>

B1 ALIGNMENT

B1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22100-P1.

Location: Valley Roundabout.

Summary: Insufficient entry path curvature leading to higher than anticipated speeds on entry to the circulatory and potential loss of control collisions occurring.

The entry path curvature for vehicles entering the circulatory wishing to turn left from the northern leg and go straight ahead from the east leg to the west leg appears to be greater than the maximum specified in TD16/07. If the entry path curvature is not restricted there is a risk that vehicles may enter the circulatory at a higher than anticipated speed, potentially leading to loss of control collisions occurring.

RECOMMENDATION

Provide the appropriate entry path curvature at each entry to the roundabout to ensure that entry speeds are not excessive.

Safety Audit Team Response

The safety concern raised in this problem has been removed following the revised alignment of the junction of the offline improvements at Valley Roundabout (Dwg No: WN02.05-ACM-S1-00-DRG-101 P5).

B1.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22101-P1.

Location: Proposed A5025 westbound bend approach to Valley Roundabout.

Summary: See through effect with the old alignment potentially leading to vehicles leaving the carriageway.

The proposed alignment on the approach to Valley Roundabout from the north shows that the alignment curves away from the existing A5025. There is a risk that the see through effect of the old alignment will be maintained and lead to drivers failing to negotiate the curve. The retention of part of the old alignment for a cycle link could maintain this illusion. This issue will be exacerbated in the hours of darkness and in poor visibility (i.e. fog).

RECOMMENDATION

Break the view of the old alignment with either high growth landscaping or chevron signs.

B1.3 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22100-P1.

Location: Valley Crossroads; existing A5025 stopped up section.

Summary: Omission of advance guidance that the old alignment is not a through route could lead to unsafe turn manoeuvres, conflicts and collisions with other road users.

The existing A5025 is to be stopped up as part of the works resulting in the length between the existing signalled crossroads in Valley and the new alignment becoming a no through road. If no advanced warning is provided to drivers that the route is not a through route there is the risk that drivers will enter the existing A5025 unnecessarily and then make unsafe U-turn manoeuvres to exit again. This increase in manoeuvres will heighten the risk of collisions with other road users.

RECOMMENDATION

Install ‘no through route’ signs at the junction and direction signs in advance of the end of the route so that drivers can make a decision not to enter the road.

B1.4 PROBLEM

Drawing No: WN02.05-ACM-S1-00-DRG-101 P5 and WN02.05-ACM-S1-00-DRG-102 P5

Summary: High speed approach to the roundabout leading to loss of control and shunt type collisions.

The revised alignment from the north (A5025) has been relaxed and this may increase the likelihood of traffic approaching the Valley Roundabout at too high a speed. This may result in loss of control incidents and/or shunt type collisions.

RECOMMENDATION

It is recommended that a reduced speed limit is proposed on the approach to the junction from the north and appropriate signing included at the detail design stage to ensure driver awareness of the junction ahead.

B2 NON-MOTORISED USERS

B2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22101-P1.

Location: Valley Roundabout; off carriageway cycle facility.

Summary: Egress to the off carriageway cycle facility leading to potential conflicts and collisions with vehicles exiting the circulatory.

An off road cycle facility has been provided for cyclists wishing to turn right, from the north leg of the proposed Valley Roundabout to the west leg of the roundabout, without using the circulatory. There is a risk that drivers won't be expecting a cyclist to cross the east exit arm at this location and exit the roundabout at higher than expected speeds leading to collisions with cyclists. Additionally, it is likely that cyclists will be aware of the link to the old alignment at approximate chainage 400m and use this in preference to the cycle facility at Valley Roundabout due to the shorter distance.

RECOMMENDATION

Remove the off carriageway cycle facility from the northern leg of Valley Roundabout and positively direct all cycle traffic along the old A5025 alignment at approximate chainage 400m.

Safety Audit Team Response

The Road Safety Audit Team are of the opinion that the revised design will reduce the speed of traffic through the proposed junction and that the issue raised above will be less severe. To ensure the majority of cyclists use the junction as intended it is recommended that a positive signing strategy is implemented during the detailed design. (Dwg No: WN02.05-ACM-S1-00-DRG-101 P5).

B3 ACCESS

B3.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22100-P1.

Location: Valley Roundabout; west leg farm access.

Summary: Sharp bends in farm access potentially leading to farm vehicles overrunning the segregated footway/cycleway facility striking Non-Motorised Users (NMU).

A farm access is to be constructed on the south side of the west leg of the roundabout and will utilise part of the existing carriageway. There appears to be two sharp bends that a vehicle will need to negotiate when using the farm access. There is a risk that due to the tight alignment of the bends, vehicles will not be able to negotiate them without over-running the adjacent segregated footway/cycleway facility. If this occurs there is potential for a vehicle to come into contact with a NMU leading to injury.

RECOMMENDATION

Undertake swept path analysis to ensure vehicles can negotiate the bends efficiently. If this is not possible the alignment should be altered to ensure that no vehicle over-runs the segregated facility.

Safety Audit Team Response

The safety concern identified in this problem no longer applies. The existing field access appears to remain as existing. The design team should ensure that the design prevents the path across the mouth of the filed access from being used by cyclists (Dwg No: WN02.05-ACM-S1-00-DRG-101 P5).

B3.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22100-P1.

Location: Valley Roundabout freight yard access/egress.

Summary: Unsafe turn manoeuvres and conflicts and collisions with other road users occurring.

The existing freight yard is proposed to be accessed directly from the Valley Roundabout. However, there is the risk that drivers may unintentionally leave the roundabout at the access to the freight yard, and then make U-turn manoeuvres to exit again or reverse back into the roundabout. This will heighten the risk of collisions occurring with other road users.

RECOMMENDATION

Install ‘Private Access’ signs at the point drivers can make a decision not to enter the road to the freight yard and provide a turning head for drivers who unintentionally leave the roundabout at the freight yard access to turn around safely.

C LLANFACHRAETH BYPASS (SECTION 3)

C1 NEW//EXISTING ROAD INTERFACE

C1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23100-P1

Location: Proposed junction to the existing A5025 in Llanfacraeth (approximate chainage 175m).

Summary: Potentially high vehicle speeds leading to loss of control collisions or collisions occurring at the junction.

As part of the proposals, the existing speed limits throughout the Audit area are to be rationalised. As part of this rationalisation it is proposed that a 60mph national speed limit is to be introduced approximately 350m south of the proposed junction in Llanfacraeth. This may cause increased speeds on approach to the junction and potential late braking leading to loss of control collisions occurring. There is also the risk that drivers exiting the junction may not judge an approaching vehicles speed correctly and exit into the path of an oncoming vehicle leading to a collision.

RECOMMENDATION

Extend the 40mph speed limit further north, away from the junction.

C2 ALIGNMENT

C2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23100-P1 and WN02.05-URS-00-DRG-23103-P1.

Location: Proposed junctions to the existing A5025 in Llanfacraeth.

Summary: Insufficient width for vehicles turning right into the junction leading to potential graze-type collisions or shunts occurring.

The proposed A5025 are detailed with hatched central medians in the vicinity of the junctions linking to the existing A5025. However, the width of the central hatched area appears to be narrow. If vehicles are waiting to turn right into the junction, there is a risk that oncoming and following vehicles may pass too close, leading to graze-type collisions occurring or vehicles waiting within running lanes leading to shunts.

RECOMMENDATION

Undertake localised carriageway widening at the junctions to provide a full width right-turn facility.

C2.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23100-P1.

Location: South interface with existing alignment.

Summary: Fast approach to existing bends could result in loss of control.

The southbound alignment of the off-line improvements is significantly straighter than the existing alignment. This could result in drivers failing to appreciate the severity of the bend at the interface between the offline improvements and the existing road leading to loss of control.

RECOMMENDATION

Ensure that adequate warning signs are provided to alert drivers to the severity of the bend.

C3 CLIMATE

C3.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23102-P1.

Location: Proposed A5025 between approximate chainage 1300.000 and 1375.000.

Summary: Potential for loss of control collisions due to high side winds.

There is an exposed section of the proposed A5025 between approximate chainage 1300.000 and 1375.000. In periods of high side winds, there is a risk of vehicles losing control which may lead to them leaving the carriageway or collisions with other road users occurring. This issue is of particular concern for high sided vehicles.

RECOMMENDATION

Install 'side winds likely ahead' signs on both approaches.

C4 ACCESS

C4.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23103-P1.

Location: Proposed A5025 at approximate chainage 1780.00.

Summary: Proposed track crossing leading to potential loss of control collisions and shunt type collisions.

A track crossing is to be provided across the proposed A5025; the two tracks that the crossing joins can be accessed from adjacent side roads. There is a risk that due to the speed of the proposed A5025 that collisions may occur when vehicles attempt to use the crossing as approaching vehicles may need to suddenly brake leading to potential loss of control collisions or shunt type collisions occurring.

RECOMMENDATION

Investigate the need for the track crossing and if attainable, close the track crossing and retain the access from the side roads.

C5 SIDE ROADS

C5.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23101-P1.

Location: Mill Road, Llanfaethlu.

Summary: Road narrows at interface leading to head on collisions.

There is a risk that drivers heading for Melin Llynnon Mill will proceed over the improved section of the side road and approach the interface with the existing road too fast. This could result in being unable to stop if vehicles were travelling in the opposite direction and lead to head on type collisions.

RECOMMENDATION

Reduce the width of the new road alignment at the access to Bedo at chainage 80m where vehicles can use the entrance to safely pass and appropriate signage should also be installed at detail design.

C6 DRAINAGE

C6.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23100-P1 and WN02.05-URS-00-DRG-23101-P1.

Location: Access to attenuation ponds.

Summary: Sharp turn manoeuvres at the access/egress to the attenuation ponds leading to potential shunt type collisions and/or loss of control.

There are sharp turn manoeuvres that a vehicle will need to make when accessing/egressing the attenuation ponds to/from the proposed A5025 that will result in vehicles slowing down, almost to a stop before turning off the mainline. There is a risk that following traffic will not expect turning vehicles to slow down leading to shunt type collisions or loss of control in an attempt to avoid such a collision.

RECOMMENDATION

Where possible, provide alternate access/egress to the attenuation ponds away from the mainline. Where alternate access/egress cannot be attained, increase the mouth of the access to ensure vehicles can make the sharp turn manoeuvres efficiently.

D LLANFAETHLU BYPASS (SECTION 5)

D1 ALIGNMENT

D1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24101-P1.

Location: Proposed junction to the existing A5025 in Llanfaethlu.

Summary: Insufficient width for vehicles approaching the proposed A5025 junction leading to kerb strikes and loss of control collisions occurring.

The splitter island within the proposed A5025 junction appears to create a narrowing that may lead to overrun or vehicles striking the kerbed island leading to potential loss of control collisions occurring.

RECOMMENDATION

Ensure that all vehicles can negotiate the junction without striking the kerbed splitter island. This will be checked at the Stage 2 Road Safety Audit (detailed design).

D2 NON-MOTORISED USERS

D2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24101-P1.

Location: Pedestrian access at approximate chainage 1100.000.

Summary: Lack of footway provision and crossing point leading to pedestrian slips, trips and falls occurring.

A pedestrian access is to be provided within the western verge to link pedestrians to the village. However, no footway provision is provided within the eastern verge. If no footway is provided pedestrians may walk within the verge, leading to slips, trips and falls occurring and potential injury or they may walk within the carriageway leading to potential conflicts and collisions with vehicular traffic. Also, no designated crossing point is detailed which may lead to pedestrians crossing at unsafe locations, increasing the risk of conflicts and collisions occurring.

This issue will be exacerbated if the recommendations outlined in **Problem D4.1** are not implemented.

RECOMMENDATION

Provide a footway provision within the eastern verge and an uncontrolled crossing point.

D2.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24100-P1.

Location: Existing PROW (approximate chainage 490m).

Summary: Pedestrians crossing the road in front of approaching traffic leading to collisions.

An existing PROW emerges onto the proposed alignment at approximate chainage 490m. There is a risk that pedestrians may cross the road in front of approaching and fast moving traffic. If traffic is travelling too fast to stop in time it is likely that severe injuries to the pedestrians will occur.

RECOMMENDATION

Divert the existing PROW through the nearby underpass.

D3 ACCESS

D3.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24100-P1

Location: Proposed underbridge (approximate chainage 390m).

Summary: Insufficient headroom leading to potential injury

An underbridge is proposed at approximate chainage 390m to accommodate livestock. However, there is no information regarding the available headroom clearance. There is a risk that if the headroom clearance is not sufficient injuries may occur.

RECOMMENDATION

Ensure that there is sufficient headroom at the underbridge.

D3.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24100-P1.

Location: Farm access (approximate chainage 480m).

Summary: Drivers may over-react to other movements and activities adjacent to the highway resulting in shunt type collisions.

The closure of the existing road, south of the farm access at approximate chainage 480m and its use as an accommodation track leading to/from the cattle underpass makes the area confusing for all users. If direct access to the mainline is to remain drivers on the highway may be unaware of the potential movements of traffic, pedestrians and livestock and react disproportionately to a perceived risk. This may lead to heavy braking resulting in shunt type collisions.

RECOMMENDATION

Close direct access to the mainline and revise the private means of access along the line of the old road to the junction with the side road to the south.

D4 ADJACENT DEVELOPMENT

D4.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24101-P1.

Location: Llanfaethlu.

Summary: Inappropriate parking during school times may lead to collisions with stationary traffic or traffic travelling in the opposite direction.

The proposed location of the new school, together with the pedestrian link from the old road and the new alignment could result in parents stopping on the mainline to allow their children to access the school without having to use the 'old road'. This could lead to congestion on the bend and collisions with either stationary vehicles or traffic travelling in the opposing direction. There is also a high risk for children who may attempt to cross the road and who may step into the path of approaching traffic when they alight from a vehicle.

RECOMMENDATION

Raise parking/stopping restrictions along the mainline in the vicinity of the footpath link. The proposed school development should include parking/dropping off facilities within its design.

E CEFN COCH BYPASS (SECTION 7)

E1 ALIGNMENT

E1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-25101-P1.

Location: Approximate chainage 880m.

Summary: Potential for headlight glare due to close proximity of existing carriageway to proposed leading to collisions.

The proposed bypass of Cefn Coch is just to the west of the existing A5025 carriageway. Due to the close proximity of the carriageways and the relative vertical alignments, there is a risk that in hours of darkness, northbound vehicles headlights on the old road may dazzle oncoming southbound drivers on the mainline leading to potential loss of control collisions occurring.

RECOMMENDATION

Provide anti-glare barrier or adequate landscaping.

E1.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-25100-P1.

Location: Proposed junction at TY Capel Seilo.

Summary: Insufficient width for vehicles to pass leading to potential graze-type collisions occurring.

The proposed T-Junction at approximate chainage 625m, TY Capel Seilo, appears to have a narrow approach road. If the approach road is narrow there is the risk of vehicles passing too close leading to graze-type collisions occurring.

RECOMMENDATION

Provide sufficient carriageway width on the immediate approach to the junction for vehicles to pass efficiently.

E2 ACCESS

E2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-25101-P1.

Location: Old A5025 alignment; eastern side of proposed overbridge at chainage 40.000.

Summary: The access gate on the eastern side of the proposed overbridge is too close to the edge of carriageway leading to potential vehicle strikes.

The gate on the eastern side of the proposed overbridge is positioned in close proximity to the edge of the existing carriageway within the Cefn Coch bypass. Due to its close proximity to the northbound running lane, there is a risk that a vehicle may strike the gate as they pass leading to a collision occurring. Additionally, traffic must wait in the carriageway to open the gate and, although the road is bypassed it is still open to local traffic who may be unaware of stationary vehicles.

RECOMMENDATION

Set-back the gate away from the edge of the carriageway.

E3 NON-MOTORISED USERS

E3.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-25100-P1.

Location: Proposed underbridge (approximate chainage 230m).

Summary: Insufficient headroom leading to potential pedestrian injury.

An underbridge is proposed at approximate chainage 230m. It is not clear if there is sufficient headroom/clearance to enable this route to be used by all 'traffic'. There is a risk that if the headroom clearance is not sufficient injuries may occur.

RECOMMENDATION

Ensure that there is sufficient headroom at the underbridge for all users.

E4 DRAINAGE

E4.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-25100-P1 and WN02.05-URS-00-DRG-25101-P1.

Location: Access to Attenuation Ponds.

Summary: Sharp turn manoeuvres at the access/egress to the Attenuation Ponds leading to potential shunt type collisions and/or loss of control.

There are sharp turn manoeuvres that a vehicle will need to make when accessing/egressing the Attenuation Ponds to/from the proposed A5025 that will result in vehicles slowing down, almost to a stop before turning off the mainline. There is a risk that following traffic will not expect turning vehicles to slow down leading to shunt type collisions or loss of control in an attempt to avoid such a collision.

RECOMMENDATION

Where possible, provide alternate access/egress to the Attenuation Ponds away from the mainline. Where alternate access/egress cannot be attained, increase the mouth of the access to ensure vehicles can make the sharp turn manoeuvres efficiently.

F POWER STATION ACCESS ROAD JUNCTION (SECTION 9)

F1 ALIGNMENT

F1.1 PROBLEM

Drawing No: WN02.05-ACM-S9-00-DRG-101 P7

Location: Power Station Access Road Junction

Summary: Sharp bend in farm access potentially leading to farm vehicles over-running the centre line to access/egress the field resulting in head on collisions.

A farm access is to be constructed on the east side of the northern approach to the roundabout and will utilise part of the existing carriageway. There appears to be a sharp bend that a vehicle will need to negotiate when using the farm access. There is a risk that due to the tight alignment of the bends, vehicles will not be able to negotiate them without over-running the centre line of the A5025. This may lead to collisions with approaching traffic

RECOMMENDATION

It is recommended that swept path analysis is undertaken to ensure vehicles can negotiate the bends efficiently. If this is not possible the alignment should be altered to remove the chance of over-running the centre line.

F1.2 PROBLEM

Drawing No: WN02.05-ACM-S9-00-DRG-101 P7

Location: Power Station Access Road Junction

Summary: Restricted forward visibility to junction may lead to late breaking resulting in shunt type collision and loss of control

The forward visibility on the approach to the proposed junction from the south could be restricted by the vertical curve. This may lead to drivers approaching the junction too fast and may result in a loss of control at the entry or shunt type collisions with queuing traffic.

RECOMMENDATION

It is recommended that the appropriate, standard forward visibility for the design speed is available and that there are sufficient signs to warn drivers of the approaching junction.

F2.2 NON MOTORISED PROVISION

F2.1 PROBLEM

Drawing No: WN02.05-ACM-S9-00-DRG-101 P7

Location: Power Station Access Road Junction

Summary: Lack of segregated provision leading to collisions with vulnerable road users.

There is no provision for cyclists wishing to continue their onward journey along the A5025 towards Amlwch. There is also an absence of a separate route for cyclists approaching from the east. This may lead to cyclists negotiating the proposed roundabout and result in collisions with other traffic around the circulatory carriageway and at the entry arms.

RECOMMENDATION

It is recommended that appropriate, adequate cycle facilities are provided through the junction to accommodate all directions.

4 AUDIT TEAM STATEMENT

4.1 We certify that this Audit has been carried out in accordance with Road Safety Audit Standard (HD 19/15).

AUDIT TEAM LEADER

Stuart Dungworth CEng FIHE MCIHT RegRSA (IHE

AECOM Infrastructure and Environmental Ltd.
Royal Court
Basil Close
Chesterfield
Derbyshire
S41 7SL
United Kingdom

Signed [redacted]

Date: 9th February 2018

AUDIT TEAM MEMBER

Pete Denton BSc (Hons) DipASM MCIHT MSoRSA

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Signed: [redacted]

Date: 9th February 2018

Jamie Stone BEng (Hons) TMICE MSoRSA

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Royal Court
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Chesterfield
Derbyshire
S41 7SL
United Kingdom

Signed: [redacted]

Date: 9th February 2018

AUDIT TEAM OBSERVERS

There were no Audit Team Observers present during the site visit.

OTHERS INVOLVED

Neil Edwards BEng (Hons)

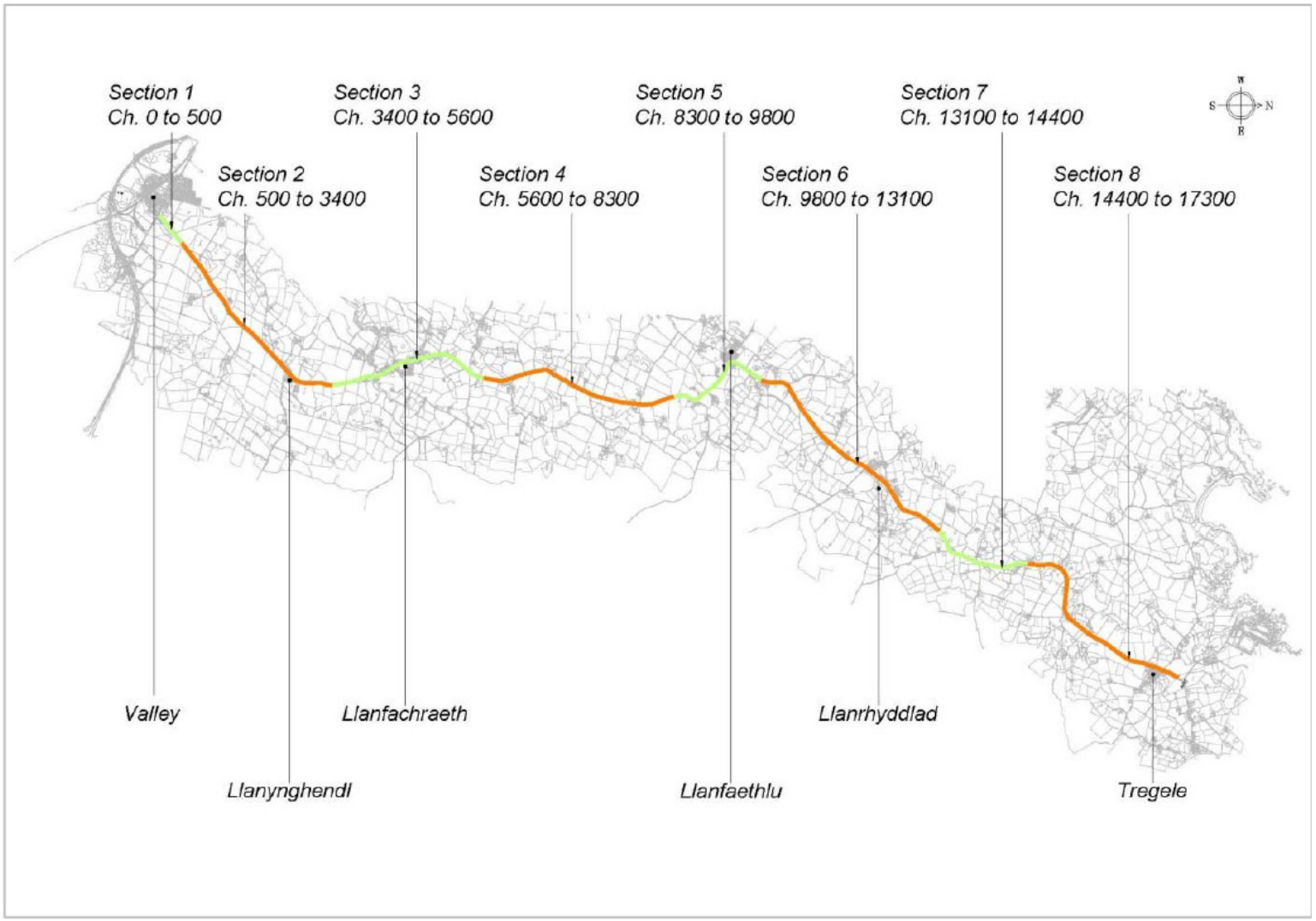
Isle of Anglesey County Council
Council Offices
Llangefni
Anglesey
LL77 7TW

APPENDIX A: LIST OF DRAWINGS, DOCUMENTS AND DEPARTURES FROM STANDARD

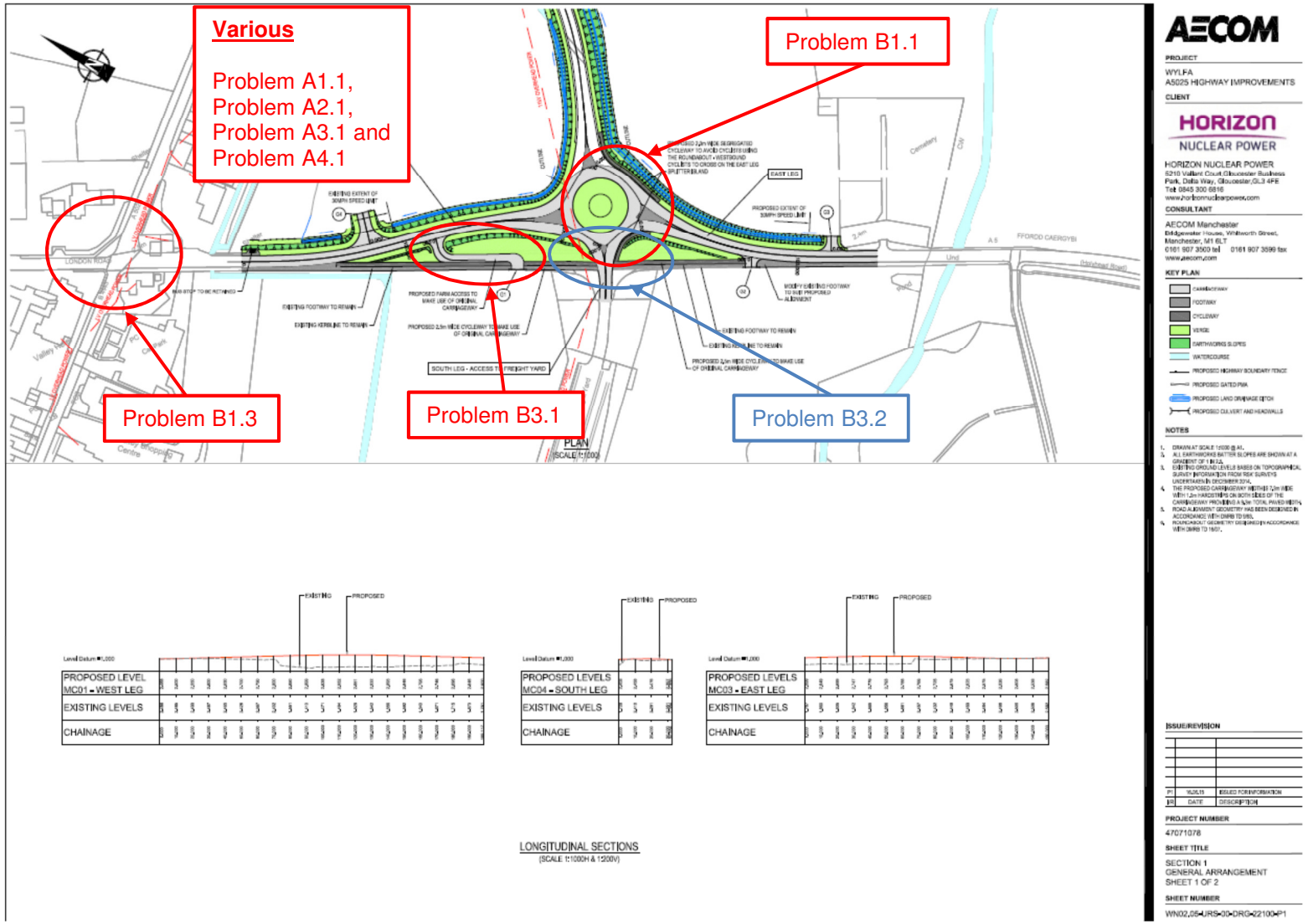
The following documents were submitted as part of the Road Safety Audit: **Document No.**	**Rev.**	**Description**	**Date**
WN02.05-URS-00-DRG-22100-P1	P1	Section 1 General Arrangement Sheet 1 of 2	16.06.15
WN02.05-ACM-S1-00-DRG-101	P5	Section 1 General Arrangement Sheet 1 of 2	04.07.17
WN02.05-URS-00-DRG-22101-P1	P1	Section 1 General Arrangement Sheet 2 of 2	16.06.15
WN02.05-ACM-S9-00-DRG-102	P5	Section 1 General Arrangement Sheet 1 of 2	04.07.17
WN02.05-URS-00-DRG-23100-P1	P1	Section 3 General Arrangement Sheet 1 of 4	24.06.15
WN02.05-URS-00-DRG-23101-P1	P1	Section 3 General Arrangement Sheet 2 of 4	24.06.15
WN02.05-URS-00-DRG-23102-P1	P1	Section 3 General Arrangement Sheet 3 of 4	24.06.15
WN02.05-URS-00-DRG-23103-P1	P1	Section 3 General Arrangement Sheet 4 of 4	24.06.15
WN02.05-URS-00-DRG-24100-P1	P1	Section 5 General Arrangement Sheet 1 of 2	16.06.15
WN02.05-URS-00-DRG-24101-P1	P1	Section 5 General Arrangement Sheet 2 of 2	16.06.15
WN02.05-URS-00-DRG-25100-P1	P1	Section 7 General Arrangement Sheet 1 of 2	24.06.15
WN02.05-URS-00-DRG-25101-P1	P1	Section 7 General Arrangement Sheet 2 of 2	24.06.15
WN02.05-ACM-S9-00-DRG-101	P7	Power Station Access Road Junction General Arrangement Sheet 1 of 1	05.07.17
WN02.05-URS-00-DRG-22200-P1	P1	Section 1 Geometrical Layout Sheet 1 of 2	16.06.15
WN02.05-URS-00-DRG-22201-P1	P1	Section 1 Geometrical Layout Sheet 2 of 2	16.06.15
WN02.05-URS-00-DRG-24200-P1	P1	Section 5 Geometrical Layout Sheet 1 of 2	16.06.15
WN02.05-URS-00-DRG-24201-P1	P1	Section 5 Geometrical Layout Sheet 2 of 2	16.06.15
NUC/WFB/0081/S2/AP6	-	Llanfachraeth Bypass Alignments (Indicative)	-
WN02.05-URS-00-DRG-21810-P1	P1	A5025 Highways Improvements	27.05.15

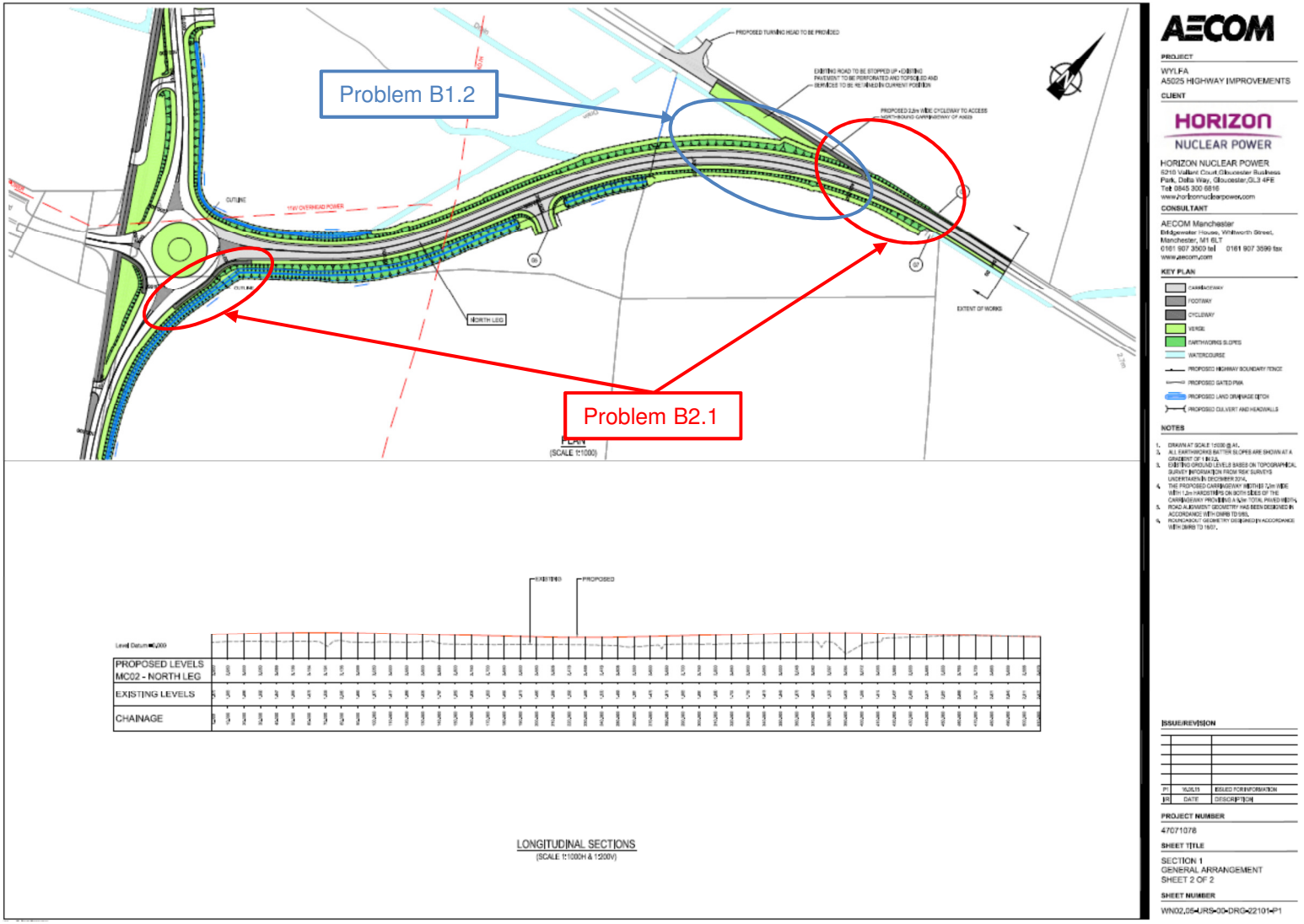
		Proposed Speed Limit Sheet 1 of 4	
WN02.05-URS-00-DRG-21811-P1	P1	A5025 Highways Improvements Proposed Speed Limit Sheet 2 of 4	27.05.15
WN02.05-URS-00-DRG-21812-P1	P1	A5025 Highways Improvements Proposed Speed Limit Sheet 3 of 4	27.05.15
WN02.05-URS-00-DRG-21813-P1	P1	A5025 Highways Improvements Proposed Speed Limit Sheet 4 of 4	28.04.15
WN02.05-URS-REP-005	01	WYLFA A5025 Highways Improvements: Brief for Stage 1 Road Safety Audit	24.06.15
		10 year collision data for the A5025 between Valley and Cemaes	

APPENDIX B: EXTENTS OF THE SCHEME


Section 1
Ch. 0 to 500
Section 2
Ch. 500 to 3400
Section 3
Ch. 3400 to 5600
Section 4
Ch. 5600 to 8300
Section 5
Ch. 8300 to 9800
Section 6
Ch. 9800 to 13100
Section 7
Ch. 13100 to 14400
Section 8
Ch. 14400 to 17300
Valley
Llanynghendl
Llanfachraeth
Llanfaethlu
Llanrhyddlad
Tregele

APPENDIX C: PROBLEM LOCATION PLANS


Various
Problem A1.1,
Problem A2.1,
Problem A3.1 and
Problem A4.1
Problem B1.1
Problem B1.3
Problem B3.1
Problem B3.2
PLAN
(SCALE 1:1000)
PROPOSED LEVEL MC01 - WEST LEG
EXISTING LEVELS
CHAINAGE
PROPOSED LEVELS MC04 - SOUTH LEG
EXISTING LEVELS
CHAINAGE
PROPOSED LEVELS MC03 - EAST LEG
EXISTING LEVELS
CHAINAGE
LONGITUDINAL SECTIONS
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
NOTES
ISSUE/REVISION
PROJECT NUMBER
47071078
SHEET TITLE
SECTION 1
GENERAL ARRANGEMENT
SHEET 1 OF 2
SHEET NUMBER
WN02,05-URS-00-DRG-22100-P1


Problem B1.2
Problem B2.1
PROPOSED TURNING HEAD TO BE PROVIDED
EXISTING ROAD TO BE STOPPED UP + EXISTING PAVEMENT TO BE PERFORATED AND TOPSOILED AND SURFACES TO BE RETAINED IN CURRENT POSITION
PROPOSED 2.2m WIDE CYCLEWAY TO ACCESS NORTH-BOUND CARRIAGEWAY OF A5025
OUTLINE
11kV OVERHEAD POWER
NORTH LEG
EXTENT OF WORKS
PLAN
(SCALE 1:1000)
EXISTING
PROPOSED
PROPOSED LEVELS MC02 - NORTH LEG
EXISTING LEVELS
CHAINAGE
LONGITUDINAL SECTIONS
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
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PROJECT NUMBER
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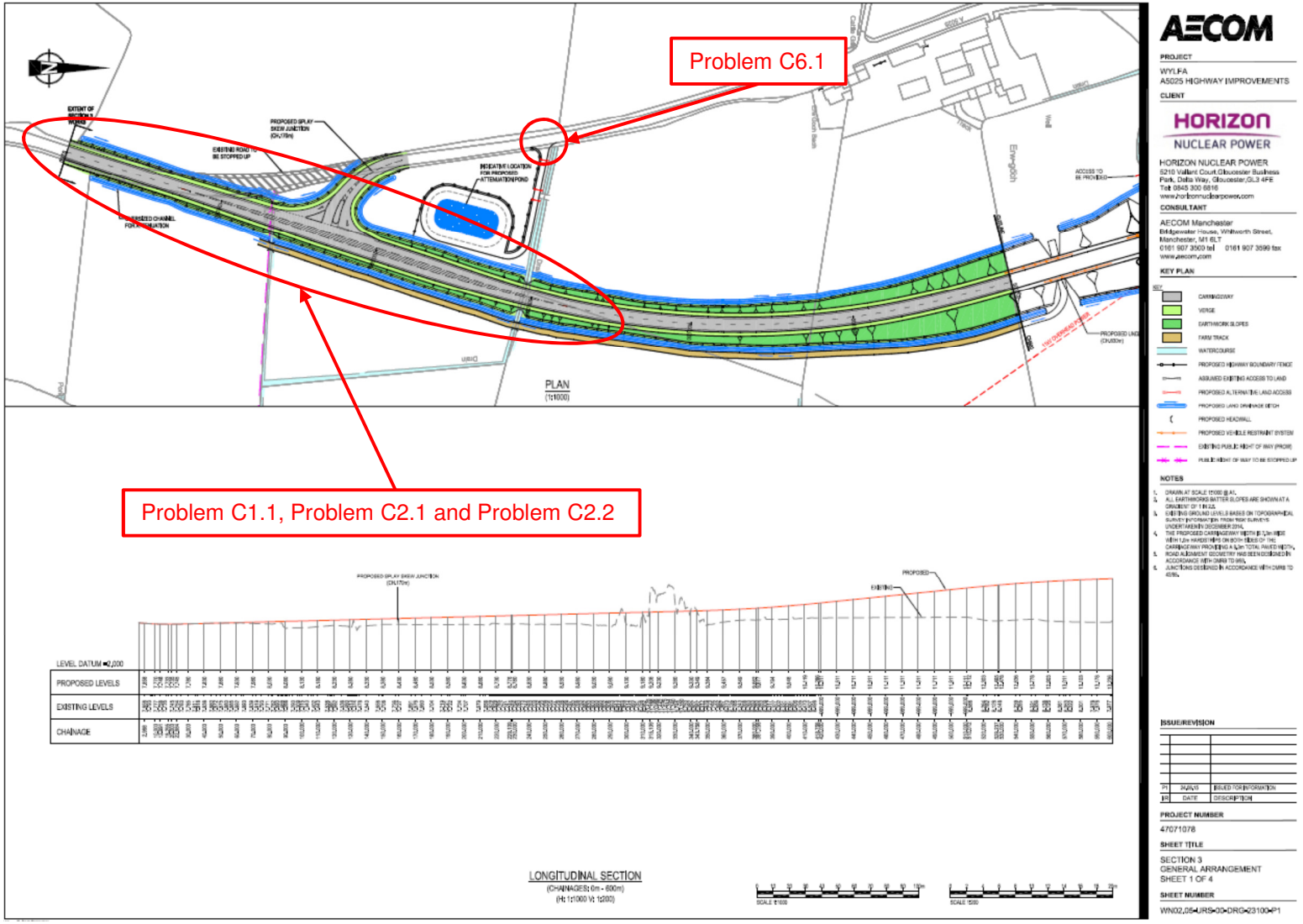
Problem C6.1
Problem C1.1, Problem C2.1 and Problem C2.2
PLAN
(1:1000)
LONGITUDINAL SECTION
(CHAINAGES 0m - 600m)
(Ht 1:1000 Vt 1:200)
LEVEL DATUM =0.000
PROPOSED LEVELS
EXISTING LEVELS
CHAINAGE
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
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ISSUE/REVISION
PROJECT NUMBER
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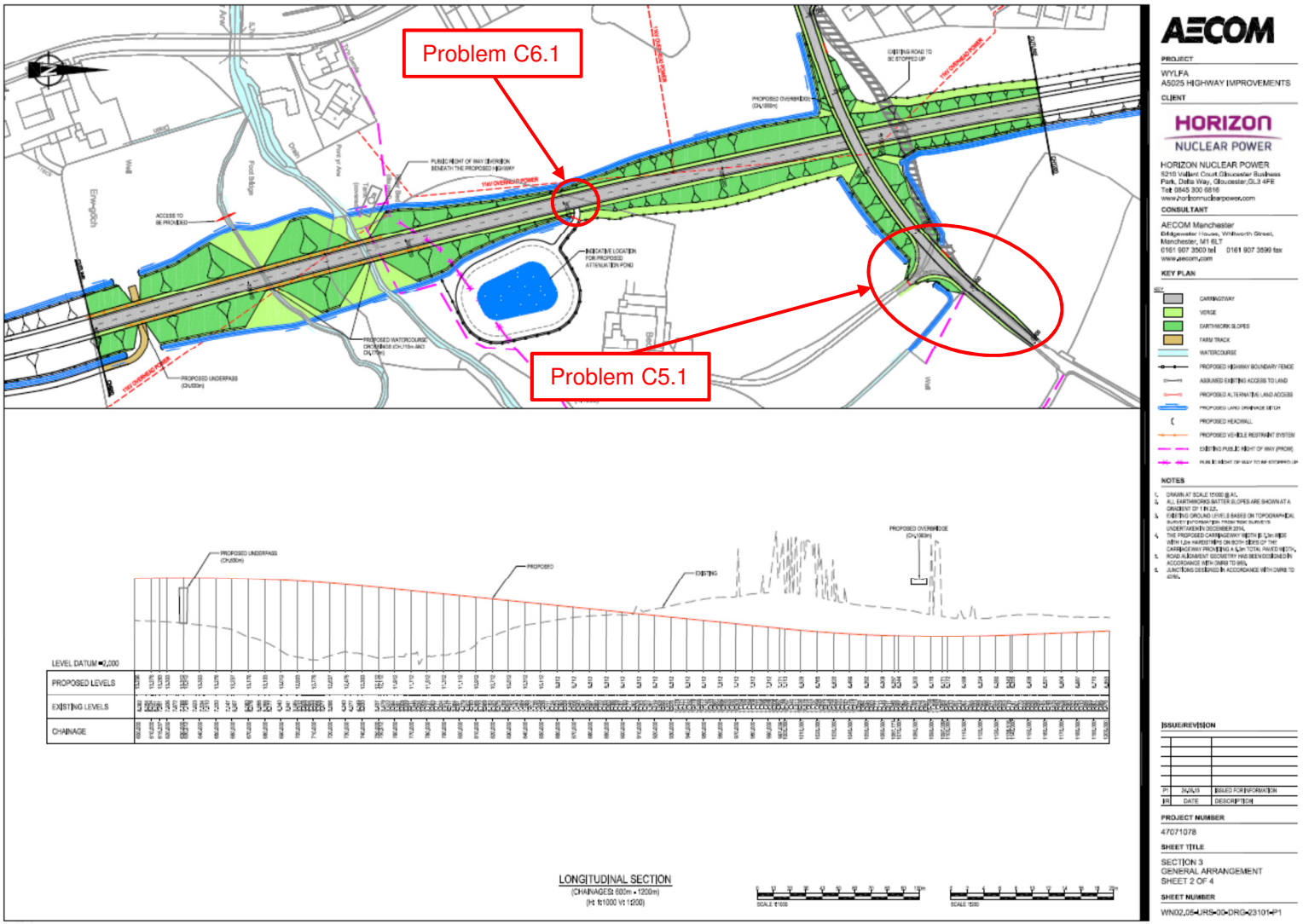
SHEET TITLE
SECTION 3
GENERAL ARRANGEMENT
SHEET 1 OF 4
SHEET NUMBER
WN02.05-URS-00-DRG-23100-P1


Problem C6.1
Problem C5.1
PROPOSED UNDERPASS
PROPOSED
EXISTING
PROPOSED OVERBRIDGE
LEVEL DATUM =0.200
PROPOSED LEVELS
EXISTING LEVELS
CHAINAGE
LONGITUDINAL SECTION
(CHAINAGES 600m - 1200m)
(H: 1:1000 V: 1:200)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
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CONSULTANT
AECOM Manchester
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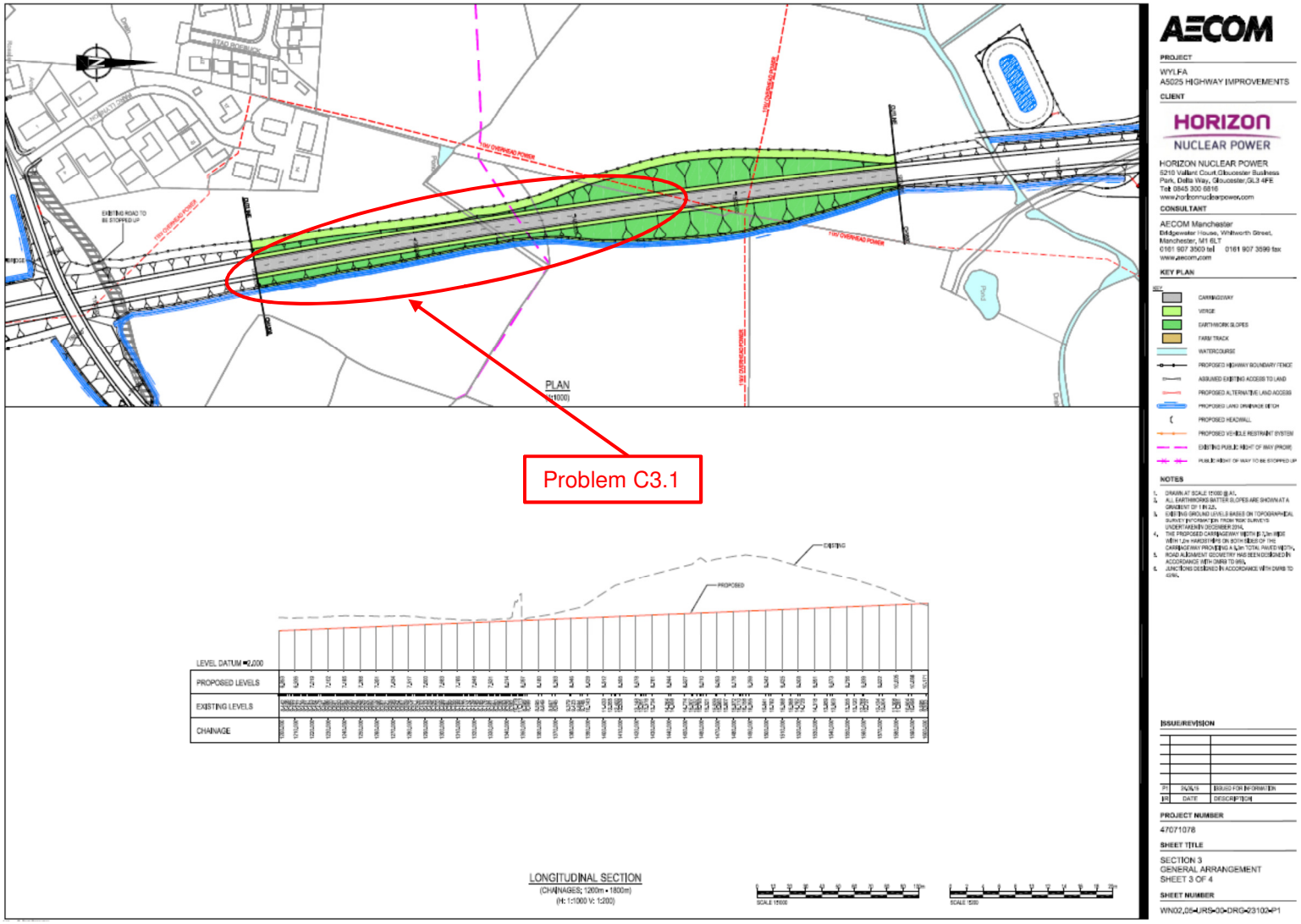
PLAN
Problem C3.1
LONGITUDINAL SECTION
(CHAINAGES: 1200m - 1800m)
(H: 1:1000 V: 1:200)
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
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ISSUE/REVISION
PROJECT NUMBER
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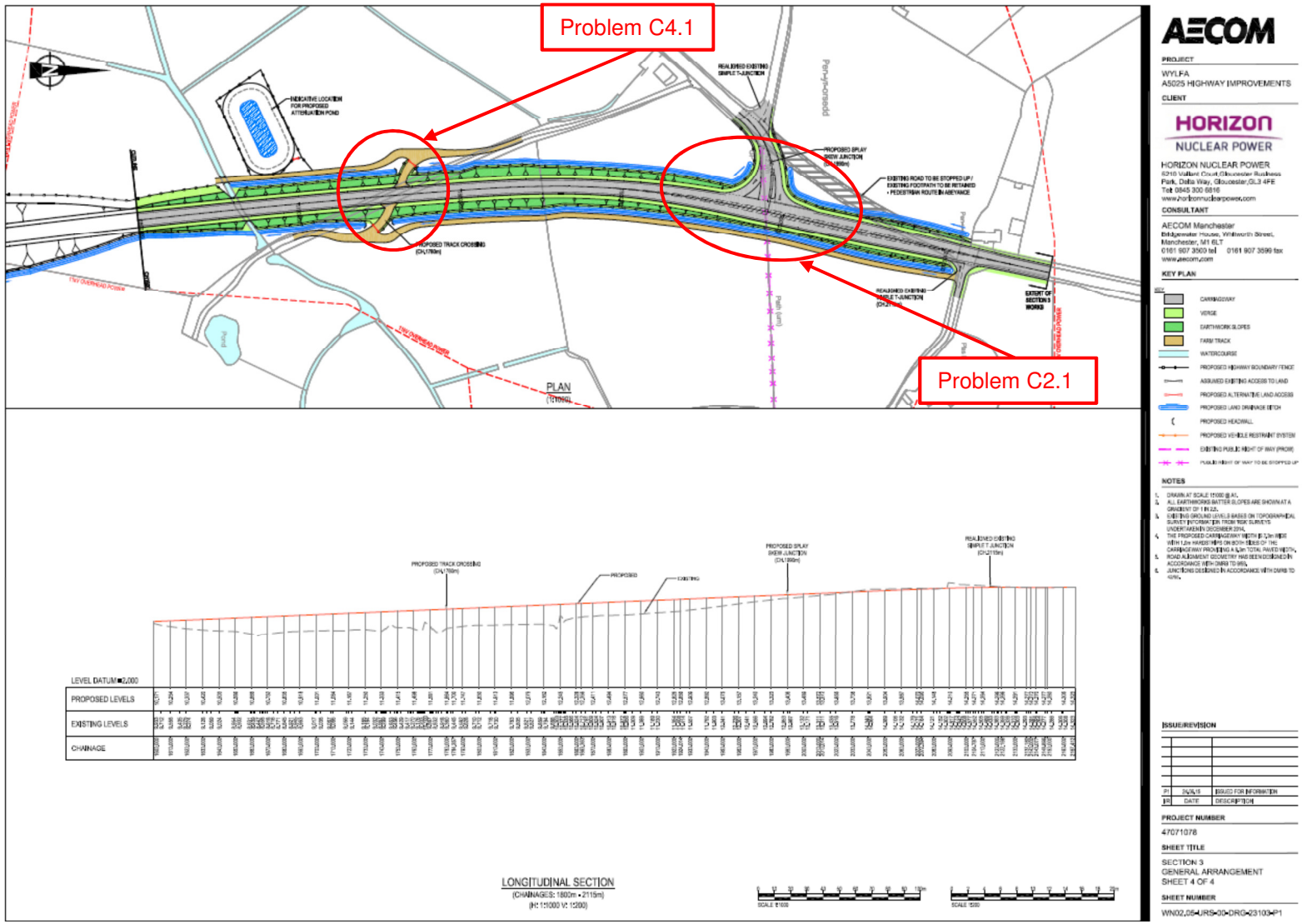
SHEET NUMBER
WN02,06-URS-00-DRG-23102-P1


Problem C4.1
Problem C2.1
PLAN
LONGITUDINAL SECTION
(CHAINAGES: 1800m - 2115m)
(H: 1:1000 V: 1:200)
LEVEL DATUM =0.000
PROPOSED LEVELS
EXISTING LEVELS
CHAINAGE
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
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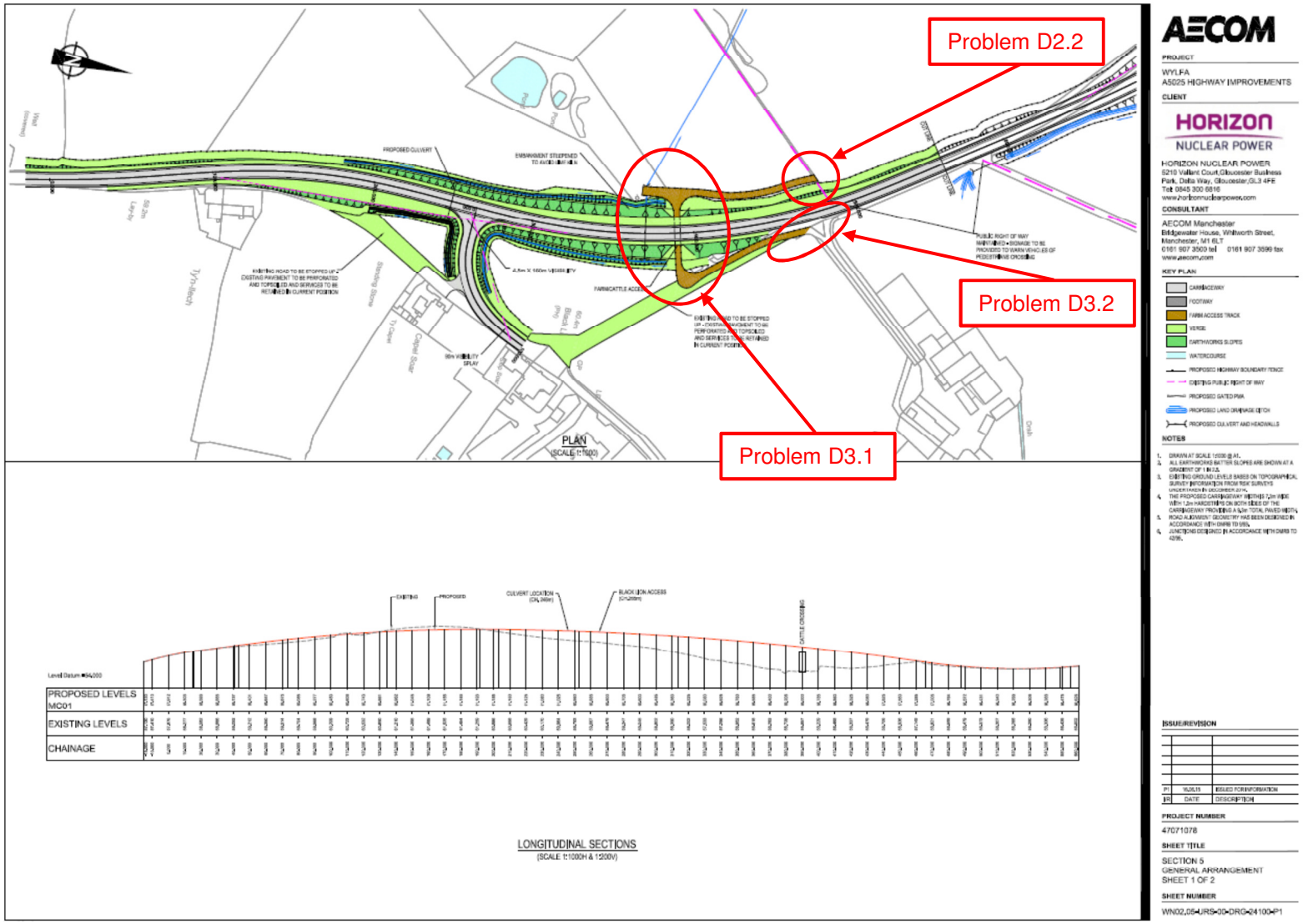
Problem D2.2
Problem D3.2
Problem D3.1
PLAN
(SCALE 1:1000)
LONGITUDINAL SECTIONS
(SCALE 1:1000H & 1:200V)
PROPOSED LEVELS MC01
EXISTING LEVELS
CHAINAGE
AECOM
WYLFA
A5025 HIGHWAY IMPROVEMENTS
HORIZON NUCLEAR POWER
HORIZON NUCLEAR POWER
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Bridgewater House, Whitworth Street, Manchester, M1 6LT
0161 907 3500 tel 0161 907 3599 fax
www.aecom.com
KEY PLAN
NOTES
ISSUE/REVISION
PROJECT NUMBER
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SHEET NUMBER
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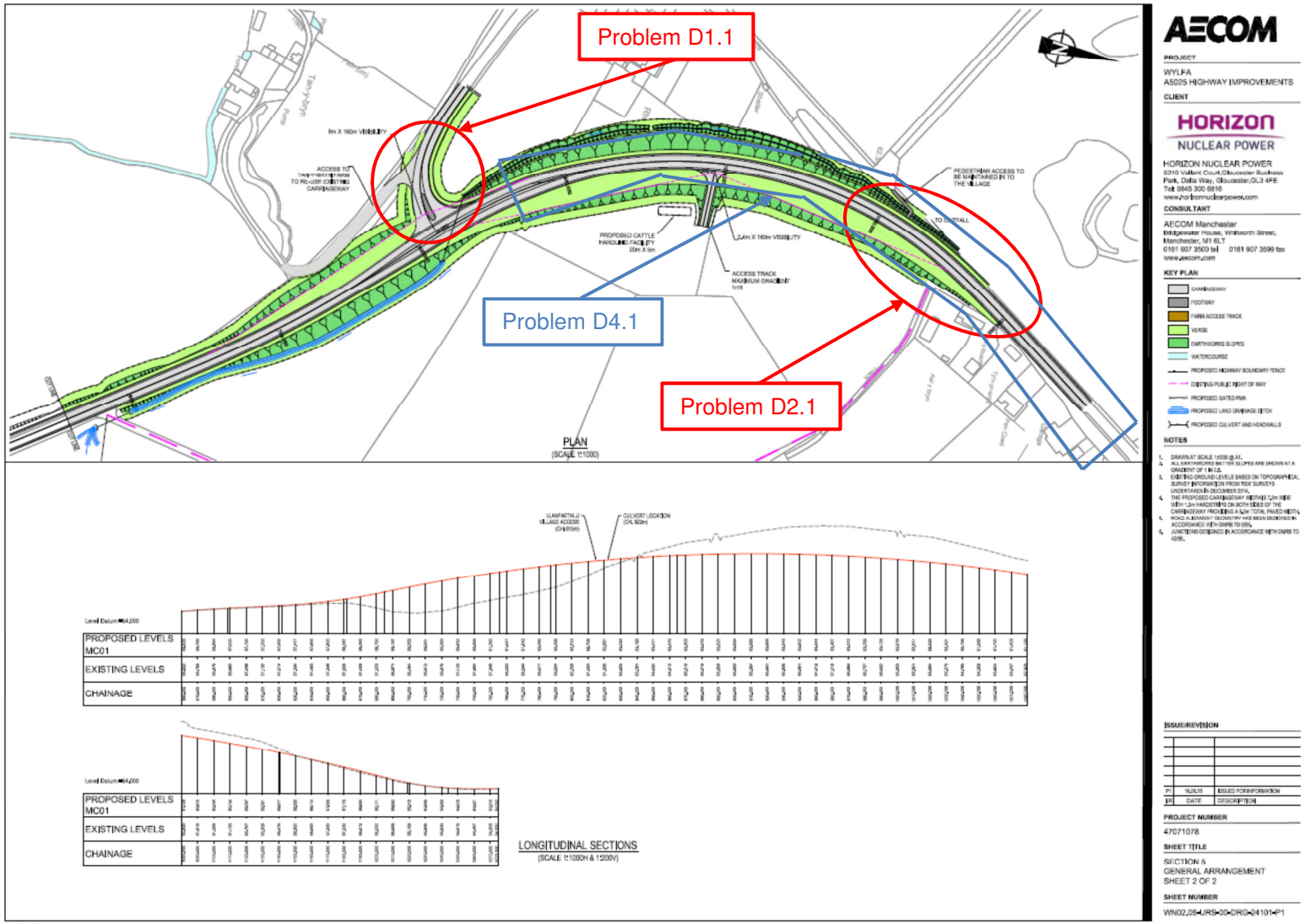
Problem D1.1
Problem D4.1
Problem D2.1
PLAN
(SCALE 1:1000)
PROPOSED LEVELS MC01
EXISTING LEVELS
CHAINAGE
LONGITUDINAL SECTIONS
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
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PROJECT NUMBER
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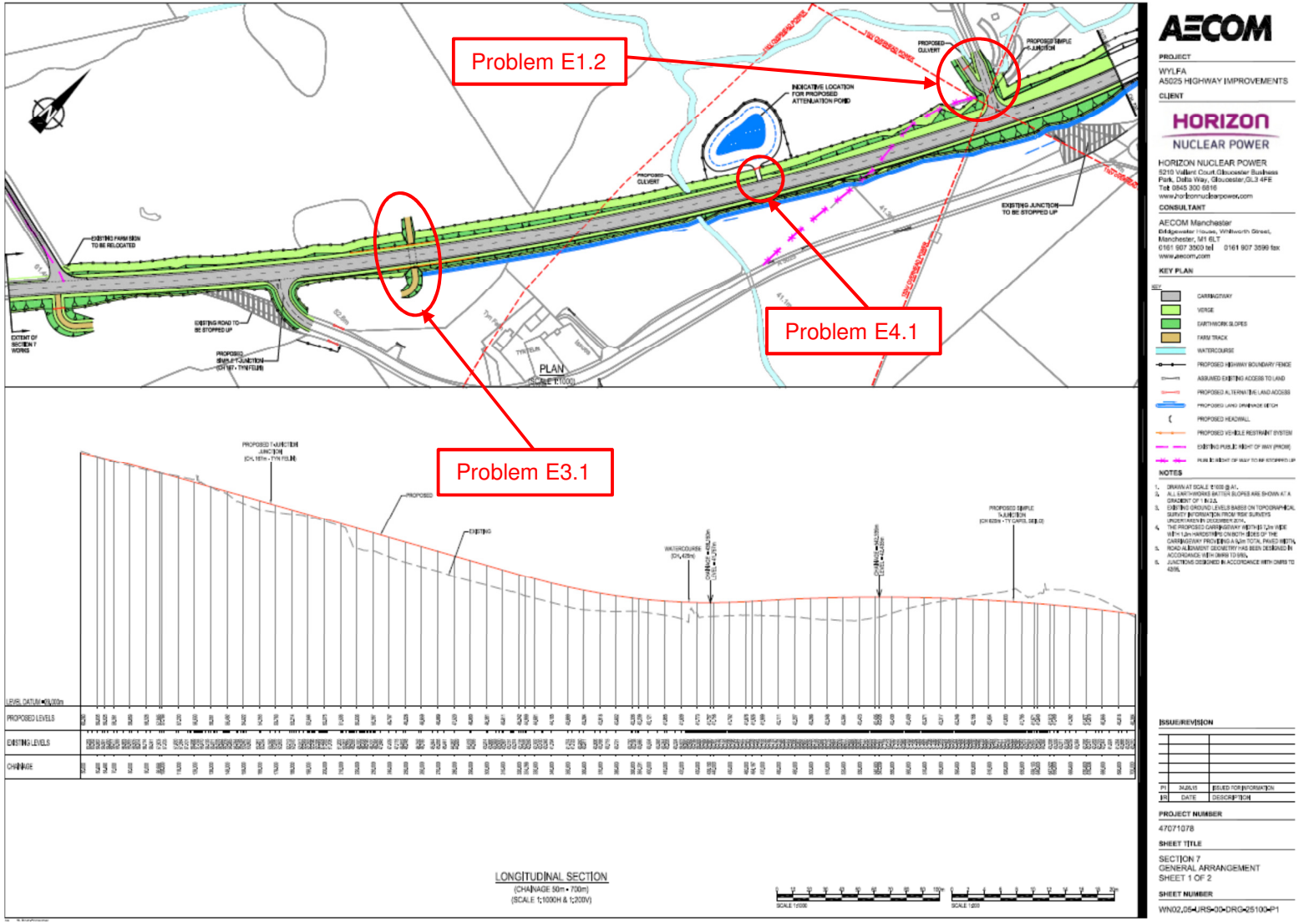
SHEET TITLE
SECTION 5
GENERAL ARRANGEMENT
SHEET 2 OF 2
SHEET NUMBER


Problem E1.2
Problem E4.1
Problem E3.1
PLAN
LONGITUDINAL SECTION
(CHAINAGE 50m - 700m)
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
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ISSUE/REVISION
PROJECT NUMBER
47071078
SHEET TITLE
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GENERAL ARRANGEMENT
SHEET 1 OF 2
SHEET NUMBER
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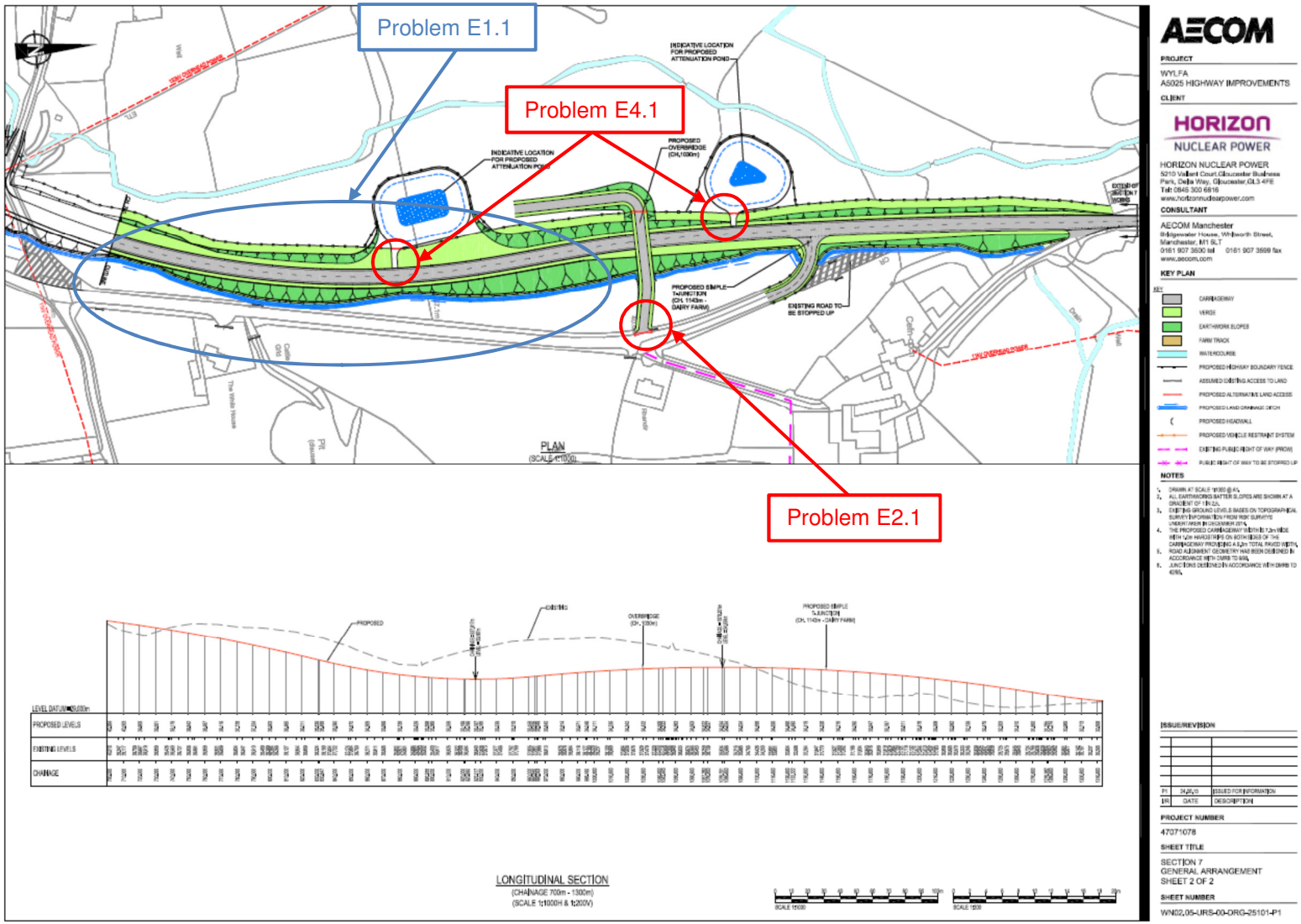
Problem E1.1
Problem E4.1
Problem E2.1
PLAN
LONGITUDINAL SECTION
(CHAINAGE 700m - 1300m)
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
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CONSULTANT
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SHEET TITLE
SECTION 7
GENERAL ARRANGEMENT
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SHEET NUMBER
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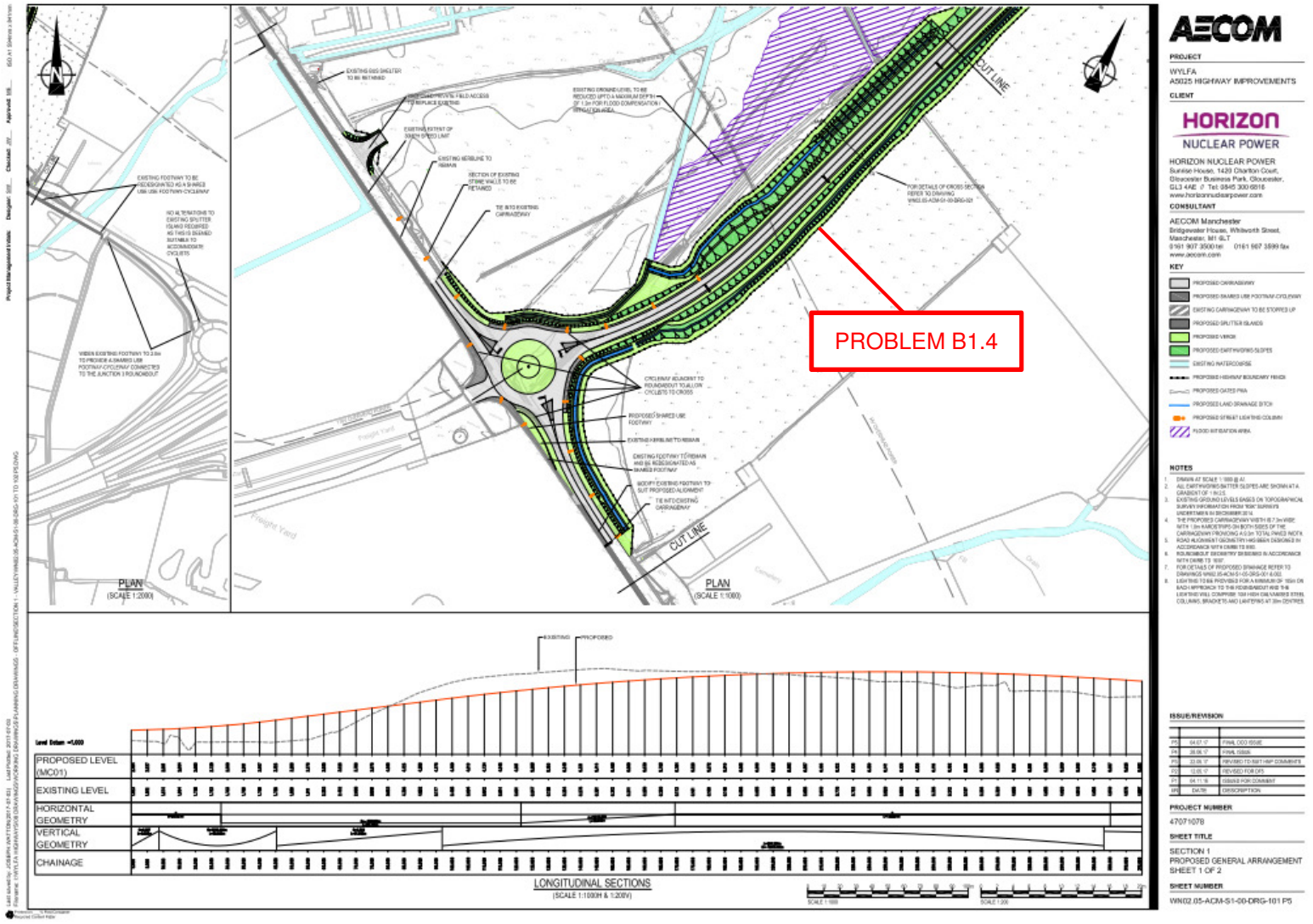
PROBLEM B1.4
PLAN
(SCALE 1:2000)
PLAN
(SCALE 1:1000)
CUT LINE
CUT LINE
PROPOSED LEVEL (MC01)
EXISTING LEVEL
HORIZONTAL GEOMETRY
VERTICAL GEOMETRY
CHAINAGE
LONGITUDINAL SECTIONS
(SCALE 1:1000H & 1:200V)
AECOM
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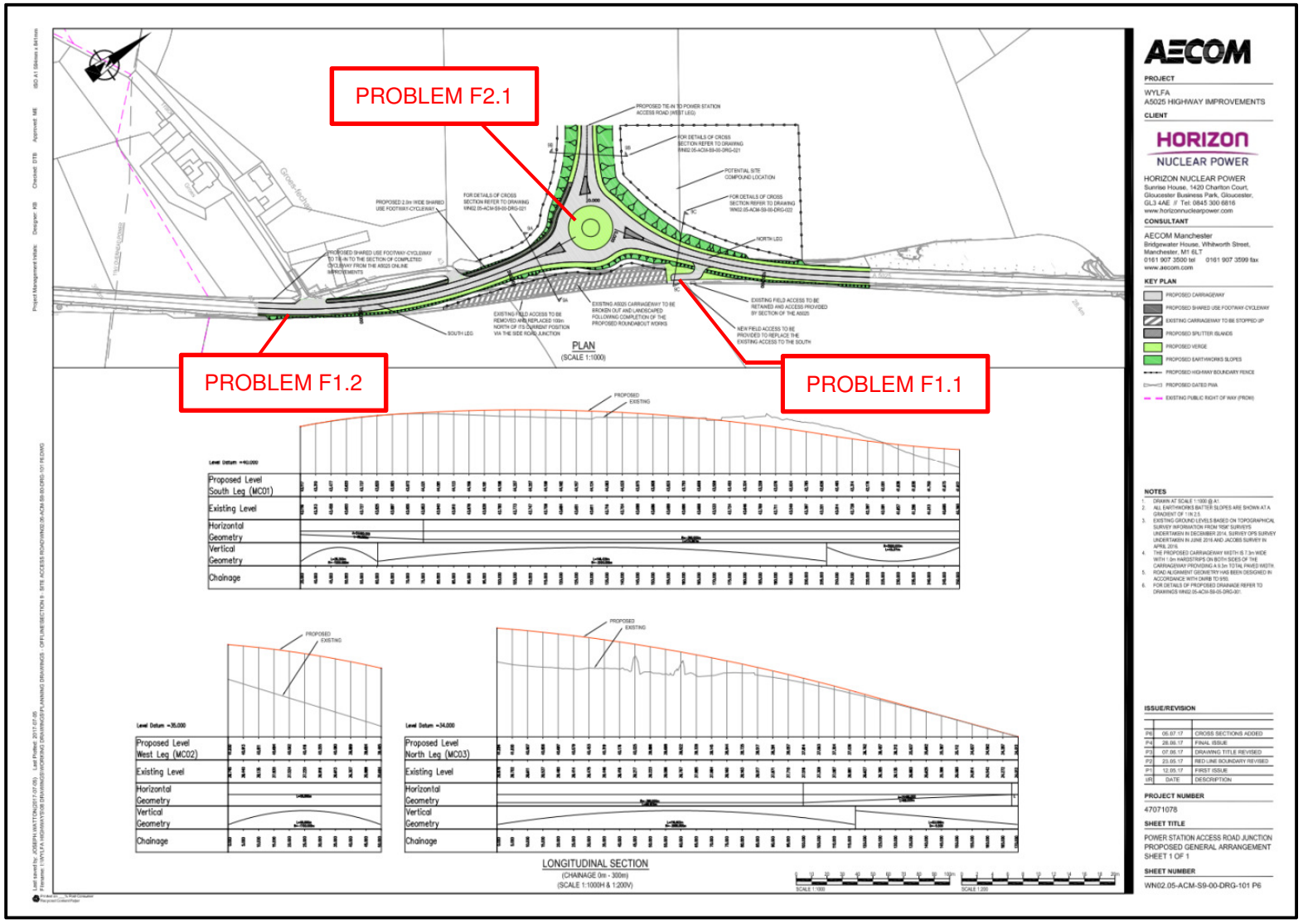
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY
NOTES
ISSUE/REVISION
PROJECT NUMBER
47071078
SHEET TITLE
SECTION 1
PROPOSED GENERAL ARRANGEMENT
SHEET 1 OF 2
SHEET NUMBER
WN02.05-ACM-S1-00-DRG-101 P5


PROBLEM F2.1
PROBLEM F1.2
PROBLEM F1.1
PLAN
(SCALE 1:1000)
LONGITUDINAL SECTION
(CHAINAGE 0m - 300m)
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
NOTES
ISSUE/REVISION
PROJECT NUMBER
47071078
SHEET TITLE
POWER STATION ACCESS ROAD JUNCTION
PROPOSED GENERAL ARRANGEMENT
SHEET 1 OF 1
SHEET NUMBER
WN02.05-ACM-S9-00-DRG-101 P6

About AECOM

AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 100,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and has annual revenue in excess of $6 billion.

More information on AECOM and its services can be found at www.aecom.com.

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AECOM

WYLFA A5025 Highways Improvements: Stage 1 Road Safety Audit

Offline Improvements

Design Team Response

Report No. WN02.05-URS-00-REP-009

Prepared for Horizon Nuclear Power

REVISION SCHEDULE					
Rev	**Date**	**Details**	**Prepared by**	**Reviewed by**	**Approved by**
01	9 October 2015	DRAFT Stage 1 Road Safety Audit – Design Team Response	Martin Ellis Associate	Joe Watton Senior Assistant Engineer	Martin Ellis Associate
02	3 August 2016	Offline DRAFT Stage 1 Road Safety Audit – Final Comments	Michael Gartside Senior Engineer	Martin Ellis Associate	Martin Ellis Associate
03	12 February 2018	Revised FINAL Stage 1 RSA – Design Team Response	Martin Ellis Associate	Joe Watton Senior Engineer	Martin Ellis Associate

AECOM Infrastructure & Environment UK Limited
Royal Court
Basil Close
Chesterfield
S41 7SL

Limitations

AECOM Infrastructure & Environment UK Limited ("AECOM") has prepared this report for the sole use of **Horizon Nuclear Power** in accordance with the Agreement under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this report or any other services provided by AECOM. This report is confidential and may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of AECOM.

The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the report.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this report. The work described in this report was undertaken during **July 2015** and is based on the conditions encountered and the information available during the said period of time. The scope of this report and the services are accordingly factually limited by these circumstances.

AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the report, which may come or be brought to AECOM's attention after the date of the report.

Certain statements made in the report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. AECOM specifically does not guarantee or warrant any estimate or projections contained in this report.

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URES:

1 INTRODUCTION

1.1 Audit Details

1.1.1 This report results from a Stage 1 Road Safety Audit carried out on the Wylfa A5025 Highways Improvements scheme located on the Isle of Anglesey, Wales. This report only takes into consideration the offline improvements associated with the scheme. The Audit was carried out at the request of AECOM (Manchester) on behalf of Horizon Nuclear Power.

1.1.2 The road safety team consisted of the following members:

1.	Stuart Dungworth	CEng FIHE MCIHT RegRSA (IHE)	
		Audit Team Leader	AECOM Infrastructure and Environmental Ltd.
2.	Pete Denton	BSc (Hons) DipASM MCIHT MSoRSA	
		Audit Team Member	AECOM Infrastructure and Environmental Ltd.
3.	Jamie Stone	BEng (Hons) TMICE MSoRSA	
		Audit Team Member	AECOM Infrastructure and Environmental Ltd.

1.1.3 The following representatives also attended the site visit on 1st July 2015:

1.	Neil Edwards	BEng (Hons)	
		Isle of Anglesey County Council	

1.1.4 The Road Safety Audit was undertaken in accordance with the Stage 1 Road Safety Audit Brief (document Number. WN02.05-URS-REP-005) dated 24th June 2015. The Road Safety Audit comprised of an examination of the documents provided by the design team, which are listed in **Appendix A**, and an examination of the site during the hours of daylight.

1.1.5 The Road Safety Audit took place in the AECOM Chesterfield office during July 2015 and the site was examined during the hours of daylight by all the Audit Team on 1st July 2015. The weather during the site visit was overcast with light rain showers and a damp road surface. The Audit was undertaken during the morning and afternoon off peak hours of 10:30 and 14:30 when traffic was flowing freely. There were no road works affecting the area.

1.1.6 The terms of reference of the Audit are as described in the Design Manual for Roads and Bridges (DMRB) document HD 19/15 'Road Safety Audit'. The advice issued in the DMRB applies to trunk road and motorway highway improvement schemes; however, the principles of HD19/15 have been adopted to define the scope of this Audit.

1.1.7 The scheme has been examined, and this report compiled, only with regard to the safety implications to road users of the scheme as presented. It has not been examined or verified for compliance with any other standards or criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem, the Road Safety Audit Team may, on occasion, have referred to a design standard without touching on technical audit.

1.1.8 An absence of any comment relating to specific road users/modes/safety issues in **Section 3** of this report does not imply that they have not been considered; instead the Audit Team consider that they are not adversely affected by the proposed changes.

1.1.9 Nothing in this audit should be regarded as a direct instruction to include or remove a measure from within the scheme. Responsibility for designing the scheme lies with the designer and as such the Audit Team accepts no design responsibility for any changes made to the scheme as a result of this audit.

1.1.10 Unless general to the scheme, each problem has been identified with reference to key features as well as being marked on the problem location plan attached in **Appendix C.**

1.1.11 Following changes to the design within Section 1, and an extension of the Brief to include Section 9, the Audit Team was asked to update the Stage 1 Road Safety Audit. The Road Safety Audit Team has been informed that a site visit was not required and that a variation to HD19/15 has been accepted by the Local Highway Authority. The Audit of the revised drawings was carried out during February 2018.

1.1.12 The revised drawings issued by the design team have been identified in **Appendix A**.

2 SITE DESCRIPTION

2.1 Existing Layout

2.1.1 The Wylfa Power Station site is located in the northwest corner of the Isle of Anglesey and is accessed via the A5025. The A5025 is a two-way single carriageway which links Wylfa Power Station to the A55 in the south and passes through the villages of Valley, Llanynghenedl, Llanfachraeth, Llanfaethlu, Llanryhddlad and Tregele within the Scheme extents.

2.1.2 The A5025 within the Audit area is covered by a number of different speed limits. These are as follows:

- Valley - 30mph speed limit;
- Valley to Llanynghendl - 60mph national speed limit;
- Llanynghendl – 40mph;
- Llanynghendl to Llanfachraeth - 60mph national speed limit;
- Llanfachraeth - 30mph speed limit;
- Llanfachraeth to Llanfaethlu - 50mph speed limit transitioning to a 60mph national speed limit;
- Llanfaethlu - 40mph speed limit;
- Llanfaethlu to Tregele - 60mph national speed limit;
- Tregele - 40mph speed limit; and,
- Tregele to Wylfa Power Station – 40mph speed limit.

2.1.3 Land use in the scheme extents is predominantly rural and agricultural with residential areas also located sporadically along the proposed scheme.

2.1.4 The existing A5025 carriageway surface varies from poor to reasonable conditions and the road markings are generally in good condition throughout.

2.1.5 Street lighting is present within the village areas, however, no street lighting is provided within the rural sections of the scheme. The site was not visited during the hours of darkness.

2.1.6 A location plan showing the extents of the scheme can be found on the next page.

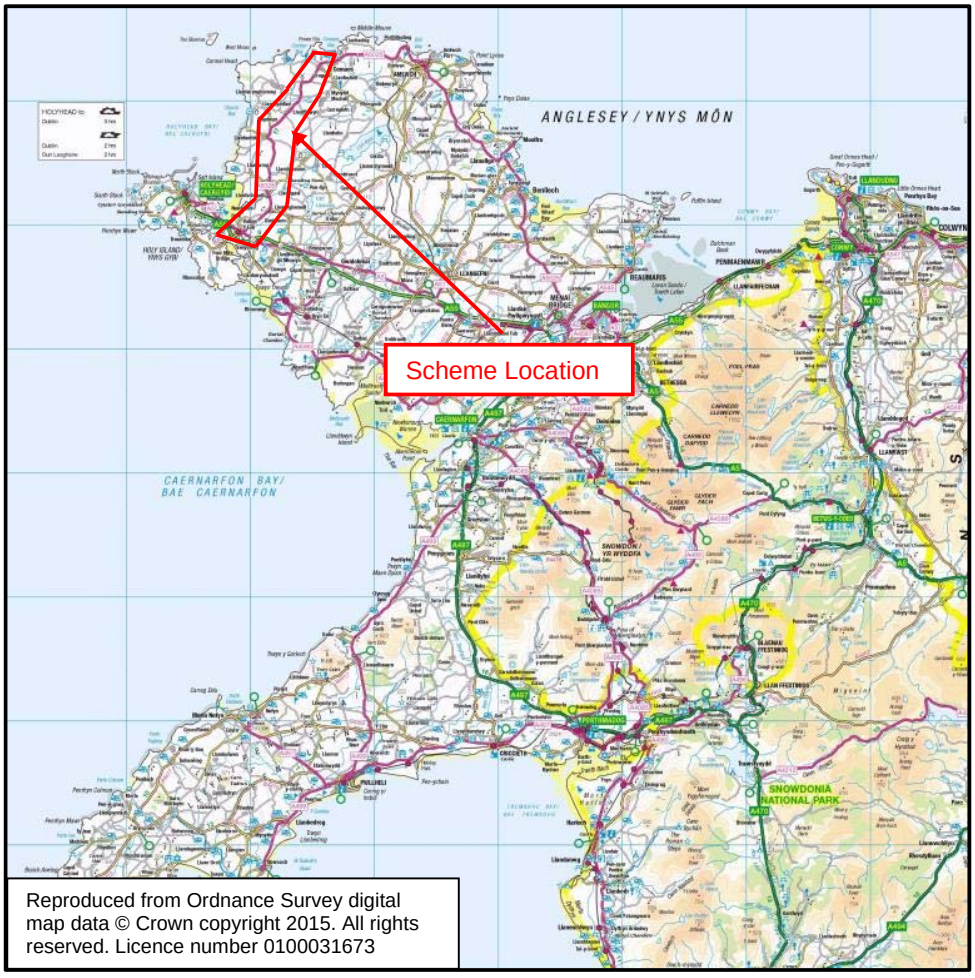

Figure 1: Wylfa A5025 Highways Improvements Scheme Location Plan.

2.2 General Scheme Details

2.2.1 The proposed scheme has been broken down into 8 defined sections. A plan outlining these 8 sections can be found in **Appendix B**.

2.2.2 Forecast baseline flows and construction or operational flows are not currently available. However, the theoretical capacity of the A5025 using the Congestion Reference Flow (CRF) methodology is 24,925 vehicles (AADT) average peak. The estimated AADT flow based on August 2014 flows is 6,101 vehicles. The existing A5025 is operating well within capacity with no congestion during weekday peak hours.

2.2.3 The existing A5/A5025 Valley junction operates well within acceptable capacity limits during both the AM and PM weekday peak hours. The results of recent tests suggest that the existing junction may possess sufficient reserve capacity to cater for the predicted increases in traffic in 2022.

2.2.4 There are various Non-Motorised User (NMU) desire lines located throughout the scheme extents, along with various public transport links as outlined below:

- Public transport: Bus service 61 runs 8 buses a day in each direction between Holyhead and Amlwch on weekdays. There are 7 buses a day on Saturdays but no service on Sundays.
- Cycling: On-road cycle routes cross the A5025 at 3 locations. These are National Cycle Routes 5 and 566 (the Copper Trail).
- PROWs: The existing A5025 is crossed by a total of 37 Public Rights of Way and the Wales Coast Path. A further 8 PROWs would be crossed by the proposed offline improvements.

2.2.5 Both the online and offline A5025 improvements are due to be completed before the construction works for Wylfa Newydd commence. However, the improvement works are inextricably linked to the construction of the new power station and have been designed to accommodate the additional traffic generated by the construction and operational phases.

2.2.6 The programme for decommissioning and repowering works at Rhyd-y-Groes wind farm is likely to overlap with the online A5025 works.

2.2.7 There are existing primary schools in Llanfachraeth and Llanfaethlu. There are proposals for a new larger primary school in Llanfaethlu which will replace existing primary schools in Llanfachraeth, Llanrhuddlad and Llanfaethlu.

2.2.8 10 year collision data and collision statistics for the A5025 between Valley and Cemaes has been provided to the Audit Team for review.

2.3 Proposed Scheme Details

2.3.1 As described above, the proposed scheme corridor has been broken down into 8 sections. 4 sections (1,3,5,7) are offline improvements and 4 sections (2,4,6,8) are online improvements. This report only takes into consideration the offline improvements associated with the scheme and are defined as follows:

- Section 1 (junction 3 of the A55 to Valley Junction A5/A5025): A proposed roundabout and carriageway link is to be constructed north of the existing Valley Junction to bypass Valley and the existing A5025 is to be stopped up at the tie-in point;
- Section 3 (north of Llanynghendl to north of Llanfachraeth): A proposed carriageway link is to be constructed to bypass Llanfachraeth. Sections of the existing A5025 are to be stopped up at the tie-in points, a new over bridge over the bypass provided within Llanfachraeth and new junctions provided to access the existing road network;
- Section 5 (south of Llanfaethlu to north of Llanfaethlu): A proposed carriageway link is to be constructed to bypass Llanfaethlu. Sections of the existing A5025 are to be stopped up at the tie-in points and a new junction provided to access the existing road network; and,
- Section 7 (north of Llanrhyddlad to north of Cefn Coch): A proposed carriageway link is to be constructed to bypass Cefn Coch. Sections of the existing A5025 are to be stopped up at the tie-in points, a new over bridge over the bypass provided within Cefn Coch and new junctions provided to access the existing road network.

2.3.2 The number of speed limit changes is to be rationalised as part of the scheme. The existing 40mph speed limit through Llanynghendl is to remain before transitioning to a 60mph national speed limit throughout the online improvements and bypass sections to Cefn Coch. At Cefn Coch the speed limit transitions to 40mph through the village before transitioning to a 60mph national speed limit throughout the remainder of the scheme extents.

2.4 Departures from Standard

There are currently no *approved* departures or relaxations from standard for the 4 offline sections. However, it is anticipated that there will be a limited requirement for departures and relaxations from standard.

3 ITEMS RESULTING FROM THIS STAGE 1 ROAD SAFETY AUDIT

3.1 The following road safety issues were identified during this Stage 1 Road Safety Audit.

A GENERAL

A1 CROSS-SECTIONAL VARIATION

A1.1 PROBLEM

Drawing No: Various.

Location: Various.

Summary: Narrow carriageway width leading to Heavy Goods Vehicles (HGV) passing close to one another and potential graze type collisions occurring.

The minimum carriageway width at various locations throughout the scheme extents is detailed as 6.7m with 300mm hard strips either side of the carriageway; where bends are less than 400m radius additional widening is to be specified. There is a risk that the tie-in points between the existing and proposed carriageways may create pinch points that may lead to collisions occurring.

RECOMMENDATION

Ensure that all tie-in points have a constant road width between the existing and proposed sections of carriageway.

DESIGN TEAM RESPONSE

Accepted. The A5025 will be improved in stages. The online A5025 works will be constructed in advance of the offline A5025 and so the tie-ins (between the existing and proposed sections of carriageway) will be constructed in phases.

A2 DRAINAGE

A2.1 PROBLEM

Drawing No: Various.

Location: Various.

Summary: Drainage headwalls not protected leading to increased collision severity.

No information has been provided to the Audit Team with regards to a Road Restraint System (RRS) protecting the proposed drainage headwalls on the A5025. If an errant vehicle should leave the carriageway in the vicinity of the drainage headwalls and strike them, the severity of the collision may be increased significantly.

RECOMMENDATION

Provide RRS to protect the drainage headwalls where there is a risk of collision due to their close proximity to the edge of the carriageway.

DESIGN TEAM RESPONSE

Accepted. RRS will be provided where there is a risk of collision due to the proximity of the headwalls to the edge of the carriageway.

A3 NON-MOTORISED USER

A3.1 PROBLEM

Drawing No: Various.

Location: Various Public Rights of Way (PRoW).

Summary: Lack of connectivity between PRoWs leading to potential pedestrian trips and falls occurring.

Existing PRoWs are to be retained as part of the scheme. However, there is no information as to how the PRoWs are to be connected. The offline improvements may lead to an increase in the speed of traffic that may be detrimental to the safety of pedestrians. If the PRoWs are not sufficiently connected, pedestrians may have to walk within the uneven verges or along the carriageway, increasing the likelihood of injuries or pedestrian collisions with other road users.

RECOMMENDATION

Provide sufficient connectivity between PRoWs and ensure crossing points are provided at safe locations.

DESIGN TEAM RESPONSE

Accepted. Connectivity between PRoWs and appropriate crossing points will be considered during the detailed design.

A4 ROAD MARKINGS

A4.1 PROBLEM

Drawing No: Various.

Location: Various.

Summary: Incorrect road markings leading to unsafe overtake manoeuvres and head-on collisions.

It has been assumed that the majority of the road markings shown on the drawings are indicative at this stage. There are a number of issues throughout the scheme where the scheme is not in accordance with the guidance contained in Chapter 5 of the Traffic Signs Manual (e.g. Tuck in Arrows and the interface between double white lines systems and single centre lines). Drivers may attempt overtaking manoeuvres at the locations where reduced visibility is present, increasing the likelihood of head on collisions.

RECOMMENDATION

Ensure that all road markings are in accordance with the guidance laid out in Chapter 5 of the Traffic Signs Manual at detailed design stage. This will be reviewed during the Stage 2 Road Safety Audit.

DESIGN TEAM RESPONSE

Accepted. Road markings will be designed in accordance with the guidance laid out in Chapter 5 of the Traffic Signs Manual.

B VALLEY BYPASS (SECTION 1)

B1 ALIGNMENT

B1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22100-P1.

Location: Valley Roundabout.

Summary: Insufficient entry path curvature leading to higher than anticipated speeds on entry to the circulatory and potential loss of control collisions occurring.

The entry path curvature for vehicles entering the circulatory wishing to turn left from the northern leg and go straight ahead from the east leg to the west leg appears to be greater than the maximum specified in TD16/07. If the entry path curvature is not restricted there is a risk that vehicles may enter the circulatory at a higher than anticipated speed, potentially leading to loss of control collisions occurring.

RECOMMENDATION

Provide the appropriate entry path curvature at each entry to the roundabout to ensure that entry speeds are not excessive.

DESIGN TEAM RESPONSE

The entry path curvature will be checked to ensure that it complies with TD 16/07.

Safety Audit Team Response

The safety concern raised in this problem has been removed following the revised alignment of the junction of the offline improvements at Valley Roundabout (Dwg No: WN02.05-ACM-S1-00-DRG-101 P5).

B1.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22101-P1.

Location: Proposed A5025 westbound bend approach to Valley Roundabout.

Summary: See through effect with the old alignment potentially leading to vehicles leaving the carriageway.

The proposed alignment on the approach to Valley Roundabout from the north shows that the alignment curves away from the existing A5025. There is a risk that the see through effect of the old alignment will be maintained and lead to drivers failing to negotiate the curve. The retention of part of the old alignment for a cycle link could maintain this illusion. This issue will be exacerbated in the hours of darkness and in poor visibility (i.e. fog).

RECOMMENDATION

Break the view of the old alignment with either high growth landscaping or chevron signs.

DESIGN TEAM RESPONSE

Accepted. The issue will be assessed during the detailed design. Chevrons signs and/or landscaping will be provided.

B1.3 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22100-P1.

Location: Valley Crossroads; existing A5025 stopped up section.

Summary: Omission of advance guidance that the old alignment is not a through route could lead to unsafe turn manoeuvres, conflicts and collisions with other road users.

The existing A5025 is to be stopped up as part of the works resulting in the length between the existing signalled crossroads in Valley and the new alignment becoming a no through road. If no advanced warning is provided to drivers that the route is not a through route there is the risk that drivers will enter the existing A5025 unnecessarily and then make unsafe U-turn manoeuvres to exit again. This increase in manoeuvres will heighten the risk of collisions with other road users.

RECOMMENDATION

Install 'no through route' signs at the junction and direction signs in advance of the end of the route so that drivers can make a decision not to enter the road.

DESIGN TEAM RESPONSE

Accepted. Appropriate signage will be provided and appropriate turning facilities provided.

B1.4 PROBLEM

Drawing No: WN02.05-ACM-S1-00-DRG-101 P5 and WN02.05-ACM-S1-00-DRG-102 P5

Summary: High speed approach to the roundabout leading to loss of control and shunt type collisions.

The revised alignment from the north (A5025) has been relaxed and this may increase the likelihood of traffic approaching the Valley Roundabout at too high a speed. This may result in loss of control incidents and/or shunt type collisions.

RECOMMENDATION

It is recommended that a reduced speed limit is proposed on the approach to the junction from the north and appropriate signing included at the detail design stage to ensure driver awareness of the junction ahead.

DESIGN TEAM RESPONSE

Accepted. A reduced speed limit will be imposed on the approach to the roundabout from the north. Appropriate signing will also be included to ensure driver awareness of the junction ahead.

B2 NON-MOTORISED USERS

B2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22101-P1.

Location: Valley Roundabout; off carriageway cycle facility.

Summary: Egress to the off carriageway cycle facility leading to potential conflicts and collisions with vehicles exiting the circulatory.

An off road cycle facility has been provided for cyclists wishing to turn right, from the north leg of the proposed Valley Roundabout to the west leg of the roundabout, without using the circulatory. There is a risk that drivers won't be expecting a cyclist to cross the east exit arm at this location and exit the roundabout at higher than expected speeds leading to collisions with cyclists. Additionally, it is likely that cyclists will be aware of the link to the old alignment at approximate chainage 400m and use this in preference to the cycle facility at Valley Roundabout due to the shorter distance.

RECOMMENDATION

Remove the off carriageway cycle facility from the northern leg of Valley Roundabout and positively direct all cycle traffic along the old A5025 alignment at approximate chainage 400m.

DESIGN TEAM RESPONSE

The proposed cycling strategy is subject to ongoing discussions between Horizon, IACC and Sustrans. The issue will be resolved and developed during the detailed design.

Safety Audit Team Response

The Road Safety Audit Team are of the opinion that the revised design will reduce the speed of traffic through the proposed junction and that the issue raised above will be less severe. To ensure the majority of cyclists use the junction as intended it is recommended that a positive signing strategy is implemented during the detailed design. (Dwg No: WN02.05-ACM-S1-00-DRG-101 P5).

B3 ACCESS

B3.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22100-P1.

Location: Valley Roundabout; west leg farm access.

Summary: Sharp bends in farm access potentially leading to farm vehicles overrunning the segregated footway/cycleway facility striking Non-Motorised Users (NMU).

A farm access is to be constructed on the south side of the west leg of the roundabout and will utilise part of the existing carriageway. There appears to be two sharp bends that a vehicle will need to negotiate when using the farm access. There is a risk that due to the tight alignment of the bends, vehicles will not be able to negotiate them without over-running the adjacent segregated footway/cycleway facility. If this occurs there is potential for a vehicle to come into contact with a NMU leading to injury.

RECOMMENDATION

Undertake swept path analysis to ensure vehicles can negotiate the bends efficiently. If this is not possible the alignment should be altered to ensure that no vehicle over-runs the segregated facility.

DESIGN TEAM RESPONSE

Accepted. Swept path analysis will be undertaken. The track alignment will be modified if necessary.

Safety Audit Team Response

The safety concern identified in this problem no longer applies. The existing field access appears to remain as existing. The design team should ensure that the design prevents the path across the mouth of the filed access from being used by cyclists (Dwg No: WN02.05-ACM-S1-00-DRG-101 P5).

B3.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-22100-P1.

Location: Valley Roundabout freight yard access/egress.

Summary: Unsafe turn manoeuvres and conflicts and collisions with other road users occurring.

The existing freight yard is proposed to be accessed directly from the Valley Roundabout. However, there is the risk that drivers may unintentionally leave the roundabout at the access to the freight yard, and then make U-turn manoeuvres to exit again or reverse back into the roundabout. This will heighten the risk of collisions occurring with other road users.

RECOMMENDATION

Install 'Private Access' signs at the point drivers can make a decision not to enter the road to the freight yard and provide a turning head for drivers who unintentionally leave the roundabout at the freight yard access to turn around safely.

DESIGN TEAM RESPONSE

Accepted. Appropriate signage will be provided. A turning facility will be included/located prior to the gate into the freight yard, which is locked.

C LLANFACHRAETH BYPASS (SECTION 3)

C1 NEW//EXISTING ROAD INTERFACE

C1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23100-P1

Location: Proposed junction to the existing A5025 in Llanfachraeth (approximate chainage 175m).

Summary: Potentially high vehicle speeds leading to loss of control collisions or collisions occurring at the junction.

As part of the proposals, the existing speed limits throughout the Audit area are to be rationalised. As part of this rationalisation it is proposed that a 60mph national speed limit is to be introduced approximately 350m south of the proposed junction in Llanfachraeth. This may cause increased speeds on approach to the junction and potential late braking leading to loss of control collisions occurring. There is also the risk that drivers exiting the junction may not judge an approaching vehicle's speed correctly and exit into the path of an oncoming vehicle leading to a collision.

RECOMMENDATION

Extend the 40mph speed limit further north, away from the junction.

DESIGN TEAM RESPONSE

Accepted. The proposed extension of the 40mph speed limit will be discussed with the local highway authority (IACC).

C2 ALIGNMENT

C2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23100-P1 and WN02.05-URS-00-DRG-23103-P1.

Location: Proposed junctions to the existing A5025 in Llanfachraeth.

Summary: Insufficient width for vehicles turning right into the junction leading to potential graze-type collisions or shunts occurring.

The proposed A5025 are detailed with hatched central medians in the vicinity of the junctions linking to the existing A5025. However, the width of the central hatched area appears to be narrow. If vehicles are waiting to turn right into the junction, there is a risk that oncoming and following vehicles may pass too close, leading to graze-type collisions occurring or vehicles waiting within running lanes leading to shunts.

RECOMMENDATION

Undertake localised carriageway widening at the junctions to provide a full width right-turn facility.

DESIGN TEAM RESPONSE

Not accepted. The width of the ghost island turning lane is 3.5m. This complies with paragraph 7.35 of TD 42/95.

C2.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23100-P1.

Location: South interface with existing alignment.

Summary: Fast approach to existing bends could result in loss of control.

The southbound alignment of the off-line improvements is significantly straighter than the existing alignment. This could result in drivers failing to appreciate the severity of the bend at the interface between the offline improvements and the existing road leading to loss of control.

RECOMMENDATION

Ensure that adequate warning signs are provided to alert drivers to the severity of the bend.

DESIGN TEAM RESPONSE

Accepted. Appropriate signage will be provided. Consideration will also be given to extending the 40mph limit through the tie-in and beyond the junction. Problem C1.1 refers.

C3 CLIMATE

C3.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23102-P1.

Location: Proposed A5025 between approximate chainage 1300.000 and 1375.000.

Summary: Potential for loss of control collisions due to high side winds.

There is an exposed section of the proposed A5025 between approximate chainage 1300.000 and 1375.000. In periods of high side winds, there is a risk of vehicles losing control which may lead to them leaving the carriageway or collisions with other road users occurring. This issue is of particular concern for high sided vehicles.

RECOMMENDATION

Install 'side winds likely ahead' signs on both approaches.

DESIGN TEAM RESPONSE

Accepted. Appropriate signage and environmental screening will be provided. The mainline is in cutting at this location (chainage 1300 – 1375) and the wind effects should not be significant. However, consideration will be given to providing signage between chainage 300 and chainage 900 where the mainline is on embankment.

C4 ACCESS

C4.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23103-P1.

Location: Proposed A5025 at approximate chainage 1780.00.

Summary: Proposed track crossing leading to potential loss of control collisions and shunt type collisions.

A track crossing is to be provided across the proposed A5025; the two tracks that the crossing joins can be accessed from adjacent side roads. There is a risk that due to the speed of the proposed A5025 that collisions may occur when vehicles attempt to use the crossing as approaching vehicles may need to suddenly brake leading to potential loss of control collisions or shunt type collisions occurring.

RECOMMENDATION

Investigate the need for the track crossing and if attainable, close the track crossing and retain the access from the side roads.

DESIGN TEAM RESPONSE

Accepted. The design has been revised and a cattle underpass has been included. Vehicular access will be from the adjacent side roads.

C5 SIDE ROADS

C5.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23101-P1.

Location: Mill Road, Llanfachraeth.

Summary: Road narrows at interface leading to head on collisions.

There is a risk that drivers heading for Melin Llynnon Mill will proceed over the improved section of the side road and approach the interface with the existing road too fast. This could result in being unable to stop if vehicles were travelling in the opposite direction and lead to head on type collisions.

RECOMMENDATION

Reduce the width of the new road alignment at the access to Bedo at chainage 80m where vehicles can use the entrance to safely pass and appropriate signage should also be installed at detail design.

DESIGN TEAM RESPONSE

Accepted. The width of the road will be reduced from the access to Bedo to the eastern tie-in. Appropriate signage will be provided.

C6 DRAINAGE

C6.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-23100-P1 and WN02.05-URS-00-DRG-23101-P1.

Location: Access to attenuation ponds.

Summary: Sharp turn manoeuvres at the access/egress to the attenuation ponds leading to potential shunt type collisions and/or loss of control.

There are sharp turn manoeuvres that a vehicle will need to make when accessing/egressing the attenuation ponds to/from the proposed A5025 that will result in vehicles slowing down, almost to a stop before turning off the mainline. There is a risk that following traffic will not expect turning vehicles to slow down leading to shunt type collisions or loss of control in an attempt to avoid such a collision.

RECOMMENDATION

Where possible, provide alternate access/egress to the attenuation ponds away from the mainline. Where alternate access/egress cannot be attained, increase the mouth of the access to ensure vehicles can make the sharp turn manoeuvres efficiently.

DESIGN TEAM RESPONSE

Accepted. The intention is that access to attenuation ponds should be from the mainline, not from the landowner's side. The proposed accesses will be used infrequently by the local highway authority (IACC) for pond maintenance purposes. The geometry of the junction between the track and mainline will be developed during the detailed design. However, the design of the accesses will need to be such that they do not encourage parking for non-maintenance purposes (i.e. public parking).

D LLANFAETHLU BYPASS (SECTION 5)

D1 ALIGNMENT

D1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24101-P1.

Location: Proposed junction to the existing A5025 in Llanfaethlu.

Summary: Insufficient width for vehicles approaching the proposed A5025 junction leading to kerb strikes and loss of control collisions occurring.

The splitter island within the proposed A5025 junction appears to create a narrowing that may lead to overrun or vehicles striking the kerbed island leading to potential loss of control collisions occurring.

RECOMMENDATION

Ensure that all vehicles can negotiate the junction without striking the kerbed splitter island. This will be checked at the Stage 2 Road Safety Audit (detailed design).

DESIGN TEAM RESPONSE

Accepted. Swept path analysis will be undertaken during detailed design to confirm that all vehicles approaching the proposed junction can safely negotiate the kerbed splitter island.

D2 NON-MOTORISED USERS

D2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24101-P1.

Location: Pedestrian access at approximate chainage 1100.000.

Summary: Lack of footway provision and crossing point leading to pedestrian slips, trips and falls occurring.

A pedestrian access is to be provided within the western verge to link pedestrians to the village. However, no footway provision is provided within the eastern verge. If no footway is provided pedestrians may walk within the verge, leading to slips, trips and falls occurring and potential injury

or they may walk within the carriageway leading to potential conflicts and collisions with vehicular traffic. Also, no designated crossing point is detailed which may lead to pedestrians crossing at unsafe locations, increasing the risk of conflicts and collisions occurring.

This issue will be exacerbated if the recommendations outlined in **Problem D4.1** are not implemented.

RECOMMENDATION

Provide a footway provision within the eastern verge and an uncontrolled crossing point.

DESIGN TEAM RESPONSE

Accepted. Although there is currently no footway provision in the area, it is proposed to provide a short length of footway in the eastern verge to link up with an uncontrolled crossing point at approximate chainage 1180.

D2.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24100-P1.

Location: Existing PROW (approximate chainage 490m).

Summary: Pedestrians crossing the road in front of approaching traffic leading to collisions.

An existing PROW emerges onto the proposed alignment at approximate chainage 490m. There is a risk that pedestrians may cross the road in front of approaching and fast moving traffic. If traffic is travelling too fast to stop in time it is likely that severe injuries to the pedestrians will occur.

RECOMMENDATION

Divert the existing PROW through the nearby underpass.

DESIGN TEAM RESPONSE

Not accepted. Since the proposed A5025 alignment follows the existing A5025 alignment in this area, the PRoW will be maintained in its current position. Traffic signs will be provided to warn vehicles of pedestrians crossing the highway in this area. Consideration will be given to extending the proposed 40mph speed limit further south to cover the area where the PRoW emerges onto the alignment.

D3 ACCESS

D3.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24100-P1

Location: Proposed underbridge (approximate chainage 390m).

Summary: Insufficient headroom leading to potential injury

An underbridge is proposed at approximate chainage 390m to accommodate livestock. However, there is no information regarding the available headroom clearance. There is a risk that if the headroom clearance is not sufficient injuries may occur.

RECOMMENDATION

Ensure that there is sufficient headroom at the underbridge.

DESIGN TEAM RESPONSE

Accepted. It is proposed that a headroom of 2.8m will be provided. The underpass is not intended for agricultural vehicles.

D3.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24100-P1.

Location: Farm access (approximate chainage 480m).

Summary: Drivers may over-react to other movements and activities adjacent to the highway resulting in shunt type collisions.

The closure of the existing road, south of the farm access at approximate chainage 480m and its use as an accommodation track leading to/from the cattle underpass makes the area confusing for all users. If direct access to the mainline is to remain drivers on the highway may be unaware of the potential movements of traffic, pedestrians and livestock and react disproportionately to a perceived risk. This may lead to heavy braking resulting in shunt type collisions.

RECOMMENDATION

Close direct access to the mainline and revise the private means of access along the line of the old road to the junction with the side road to the south.

DESIGN TEAM RESPONSE

Not accepted. The proposed arrangement has resulted from extensive negotiations with the adjacent landowner. He has requested that livestock movements are kept separate from vehicle movements into and out of the farm. Appropriate signage will be provided to warn drivers of turning vehicles.

D4 ADJACENT DEVELOPMENT

D4.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-24101-P1.

Location: Llanfaethlu.

Summary: Inappropriate parking during school times may lead to collisions with stationary traffic or traffic travelling in the opposite direction.

The proposed location of the new school, together with the pedestrian link from the old road and the new alignment could result in parents stopping on the mainline to allow their children to access the school without having to use the ‘old road’. This could lead to congestion on the bend and collisions with either stationary vehicles or traffic travelling in the opposing direction. There is also a high risk for children who may attempt to cross the road and who may step into the path of approaching traffic when they alight from a vehicle.

RECOMMENDATION

Raise parking/stopping restrictions along the mainline in the vicinity of the footpath link. The proposed school development should include parking/dropping off facilities within its design.

DESIGN TEAM RESPONSE

Accepted. The proposed school development contains parking and drop-off facilities within its design. Parking/stopping restrictions in the vicinity of the footpath link will be discussed with the local highway authority (IACC).

E CEFN COCH BYPASS (SECTION 7)

E1 ALIGNMENT

E1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-25101-P1.

Location: Approximate chainage 880m.

Summary: Potential for headlight glare due to close proximity of existing carriageway to proposed leading to collisions.

The proposed bypass of Cefn Coch is just to the west of the existing A5025 carriageway. Due to the close proximity of the carriageways and the relative vertical alignments, there is a risk that in hours of darkness, northbound vehicles headlights on the old road may dazzle oncoming southbound drivers on the mainline leading to potential loss of control collisions occurring.

RECOMMENDATION

Provide anti-glare barrier or adequate landscaping.

DESIGN TEAM RESPONSE

Accepted. The potential will be assessed during the detailed design. Future traffic flows on the old road will be very low and limited to vehicles accessing the farm at Cefn Coch. The proposed mainline vertical alignment is lower than the existing A5025 carriageway and headlights on the very small number of vehicles on the old road will be higher than traffic on the mainline. The narrow strip between the proposed road and the existing road has been identified for potential landscaping. This will screen drivers on the mainline from any headlights on the existing A5025.

E1.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-25100-P1.

Location: Proposed junction at TY Capel Seilo.

Summary: Insufficient width for vehicles to pass leading to potential graze-type collisions occurring.

The proposed T-Junction at approximate chainage 625m, TY Capel Seilo, appears to have a narrow approach road. If the approach road is narrow there is the risk of vehicles passing too close leading to graze-type collisions occurring.

RECOMMENDATION

Provide sufficient carriageway width on the immediate approach to the junction for vehicles to pass efficiently.

DESIGN TEAM RESPONSE

Not accepted. The existing minor road between the cross roads and Llanfairynghornwy is very narrow. At the proposed tie-in, the existing road is less than 3.0m wide. At the proposed junction, the side road is widened to 5.5m wide. Swept path analysis demonstrates that cars can pass efficiently at the junction. However, it is accepted that HGVs would have difficulty in passing other vehicles both at the junction and on the minor road. Whilst the carriageway could be widened, it is considered that this would be out of context with the remainder of the road.

E2 ACCESS

E2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-25101-P1.

Location: Old A5025 alignment; eastern side of proposed overbridge at chainage 40.000.

Summary: The access gate on the eastern side of the proposed overbridge is too close to the edge of carriageway leading to potential vehicle strikes.

The gate on the eastern side of the proposed overbridge is positioned in close proximity to the edge of the existing carriageway within the Cefn Coch bypass. Due to its close proximity to the northbound running lane, there is a risk that a vehicle may strike the gate as they pass leading to a collision occurring. Additionally, traffic must wait in the carriageway to open the gate and, although the road is bypassed it is still open to local traffic who may be unaware of stationary vehicles.

RECOMMENDATION

Set-back the gate away from the edge of the carriageway.

DESIGN TEAM RESPONSE

Accepted. The gate will be moved and set back away from the edge of the carriageway.

E3 NON-MOTORISED USERS

E3.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-25100-P1.

Location: Proposed underbridge (approximate chainage 230m).

Summary: Insufficient headroom leading to potential pedestrian injury.

An underbridge is proposed at approximate chainage 230m. It is not clear if there is sufficient headroom/clearance to enable this route to be used by all 'traffic'. There is a risk that if the headroom clearance is not sufficient injuries may occur.

RECOMMENDATION

Ensure that there is sufficient headroom at the underbridge for all users.

DESIGN TEAM RESPONSE

Not accepted. The underpass is a cattle creep and is not designed to accommodate farm machinery. It will have 2.8m headroom. The underpass location has recently been moved to chainage 150m.

E4 DRAINAGE

E4.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-25100-P1 and WN02.05-URS-00-DRG-25101-P1.

Location: Access to Attenuation Ponds.

Summary: Sharp turn manoeuvres at the access/egress to the Attenuation Ponds leading to potential shunt type collisions and/or loss of control.

There are sharp turn manoeuvres that a vehicle will need to make when accessing/egressing the Attenuation Ponds to/from the proposed A5025 that will result in vehicles slowing down, almost to a stop before turning off the mainline. There is a risk that following traffic will not expect turning vehicles to slow down leading to shunt type collisions or loss of control in an attempt to avoid such a collision.

RECOMMENDATION

Where possible, provide alternate access/egress to the Attenuation Ponds away from the mainline. Where alternate access/egress cannot be attained, increase the mouth of the access to ensure vehicles can make the sharp turn manoeuvres efficiently.

DESIGN TEAM RESPONSE

Accepted. The intention is that access to attenuation ponds should be from the mainline, not from the landowner's side. The proposed accesses will be used infrequently by the local highway authority (IACC) for pond maintenance purposes. The geometry of the junction between the track and mainline will be developed during the detailed design.

F POWER STATION ACCESS ROAD JUNCTION (SECTION 9)

F1 ALIGNMENT

F1.1 PROBLEM

Drawing No: WN02.05-ACM-S9-00-DRG-101 P7

Location: Power Station Access Road Junction

Summary: Sharp bend in farm access potentially leading to farm vehicles over-running the centre line to access/egress the field resulting in head on collisions.

A farm access is to be constructed on the east side of the northern approach to the roundabout and will utilise part of the existing carriageway. There appears to be a sharp bend that a vehicle will need to negotiate when using the farm access. There is a risk that due to the tight alignment of the bends, vehicles will not be able to negotiate them without over-running the centre line of the A5025. This may lead to collisions with approaching traffic

RECOMMENDATION

It is recommended that swept path analysis is undertaken to ensure vehicles can negotiate the bends efficiently. If this is not possible the alignment should be altered to remove the chance of over-running the centre line.

DESIGN TEAM RESPONSE

The project design team will liaise with the affected landowner to understand the farm vehicle movements that need to be accommodated. A swept path analysis will be undertaken following the conversation with the landowner. The access will be widened if necessary to accommodate the turning farm vehicles.

F1.2 PROBLEM

Drawing No: WN02.05-ACM-S9-00-DRG-101 P7

Location: Power Station Access Road Junction

Summary: Restricted forward visibility to junction may lead to late breaking resulting in shunt type collision and loss of control

The forward visibility on the approach to the proposed junction from the south could be restricted by the vertical curve. This may lead to drivers approaching the junction too fast and may result in a loss of control at the entry or shunt type collisions with queuing traffic.

RECOMMENDATION

It is recommended that the appropriate, standard forward visibility for the design speed is available and that there are sufficient signs to warn drivers of the approaching junction.

DESIGN TEAM RESPONSE

The design in the vicinity of the junction is based on a 40 mph / 70kph design speed. It relies on a local speed restriction to assist with geometry (including visibility). Appropriate warning signs will be provided on the approach to the junction.

F2.2 NON MOTORISED PROVISION

F2.1 PROBLEM

Drawing No: WN02.05-ACM-S9-00-DRG-101 P7

Location: Power Station Access Road Junction

Summary: Lack of segregated provision leading to collisions with vulnerable road users.

There is no provision for cyclists wishing to continue their onward journey along the A5025 towards Amlwch. There is also an absence of a separate route for cyclists approaching from the east. This may lead to cyclists negotiating the proposed roundabout and result in collisions with other traffic around the circulatory carriageway and at the entry arms.

RECOMMENDATION

It is recommended that appropriate, adequate cycle facilities are provided through the junction to accommodate all directions.

DESIGN TEAM RESPONSE

Off-carriageway cycle facilities will be provided by Horizon to the north and east of the proposed roundabout under a separate contract. These facilities will link up with those provided under the off-line highways project and cater for all movements.

4 AUDIT TEAM STATEMENT

4.1 I certify that this Audit has been carried out in accordance with Road Safety Audit Standard (HD 19/15).

AUDIT TEAM LEADER

Stuart Dungworth CEng FIHE MCIHT RegRSA (IHE

AECOM Infrastructure and Environmental Ltd.
Royal Court
Basil Close
Chesterfield
Derbyshire
S41 7SL
United Kingdom

Signed: [redacted]

Date: 9 February 2018

AUDIT TEAM MEMBER

Pete Denton BSc (Hons) DipASM MCIHT MSoRSA

AECOM Infrastructure and Environmental Ltd.
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Signed: [redacted]

Date: 9 February 2018

Jamie Stone BEng (Hons) TMICE MSoRSA

AECOM Infrastructure and Environmental Ltd.
Royal Court
Basil Close
Chesterfield
Derbyshire
S41 7SL
United Kingdom

Signed: [redacted]

Date: 9 February 2018

AUDIT TEAM OBSERVERS

There were no Audit Team Observers present during the site visit.

OTHERS INVOLVED

Neil Edwards BEng (Hons)

Isle of Anglesey County Council
Council Offices
Llangefni
Anglesey
LL77 7TW

APPENDIX A: LIST OF DRAWINGS, DOCUMENTS AND DEPARTURES FROM STANDARD

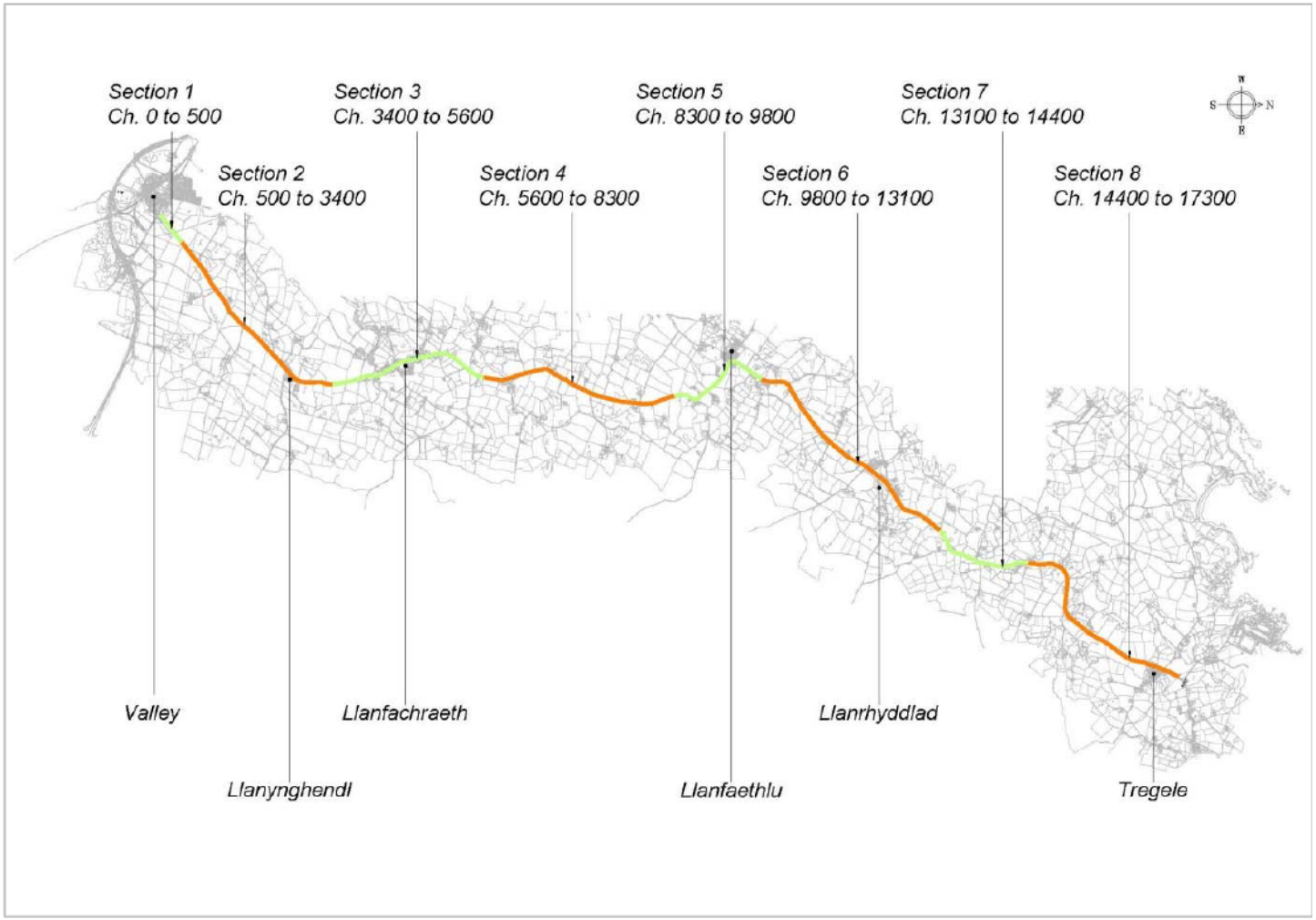
The following documents were submitted as part of the Road Safety Audit:

Document No.	Rev.	Description	Date
WN02.05-URS-00-DRG-22100-P1	P1	Section 1 General Arrangement Sheet 1 of 2	16.06.15
WN02.05-ACM-S1-00-DRG-101	P5	Section 1 General Arrangement Sheet 1 of 2	04.07.17
WN02.05-URS-00-DRG-22101-P1	P1	Section 1 General Arrangement Sheet 2 of 2	16.06.15
WN02.05-ACM-S9-00-DRG-102	P5	Section 1 General Arrangement Sheet 1 of 2	04.07.17
WN02.05-URS-00-DRG-23100-P1	P1	Section 3 General Arrangement Sheet 1 of 4	24.06.15
WN02.05-URS-00-DRG-23101-P1	P1	Section 3 General Arrangement Sheet 2 of 4	24.06.15
WN02.05-URS-00-DRG-23102-P1	P1	Section 3 General Arrangement Sheet 3 of 4	24.06.15
WN02.05-URS-00-DRG-23103-P1	P1	Section 3 General Arrangement Sheet 4 of 4	24.06.15
WN02.05-URS-00-DRG-24100-P1	P1	Section 5 General Arrangement Sheet 1 of 2	16.06.15
WN02.05-URS-00-DRG-24101-P1	P1	Section 5 General Arrangement Sheet 2 of 2	16.06.15
WN02.05-URS-00-DRG-25100-P1	P1	Section 7 General Arrangement Sheet 1 of 2	24.06.15
WN02.05-URS-00-DRG-25101-P1	P1	Section 7 General Arrangement Sheet 2 of 2	24.06.15
WN02.05-ACM-S9-00-DRG-101	P7	Power Station Access Road Junction General Arrangement Sheet 1 of 1	05.07.17
WN02.05-URS-00-DRG-22200-P1	P1	Section 1 Geometrical Layout Sheet 1 of 2	16.06.15
WN02.05-URS-00-DRG-22201-P1	P1	Section 1 Geometrical Layout Sheet 2 of 2	16.06.15
WN02.05-URS-00-DRG-24200-P1	P1	Section 5 Geometrical Layout Sheet 1 of 2	16.06.15
WN02.05-URS-00-DRG-24201-P1	P1	Section 5 Geometrical Layout Sheet 2 of 2	16.06.15
NUC/WFB/0081/S2/AP6	-	Llanfachraeth Bypass Alignments (Indicative)	-
WN02.05-URS-00-DRG-21810-P1	P1	A5025 Highways Improvements Proposed Speed Limit Sheet 1 of 4	27.05.15
WN02.05-URS-00-DRG-21811-P1	P1	A5025 Highways Improvements	27.05.15

		Proposed Speed Limit Sheet 2 of 4	
WN02.05-URS-00-DRG-21812-P1	P1	A5025 Highways Improvements Proposed Speed Limit Sheet 3 of 4	27.05.15

WN02.05-URS-00-DRG-21813-P1	P1	A5025 Highways Improvements Proposed Speed Limit Sheet 4 of 4	28.04.15
WN02.05-URS-REP-005	01	WYLFA A5025 Highways Improvements: Brief for Stage 1 Road Safety Audit	24.06.15
		10 year collision data for the A5025 between Valley and Cemaes	

APPENDIX B: EXTENTS OF THE SCHEME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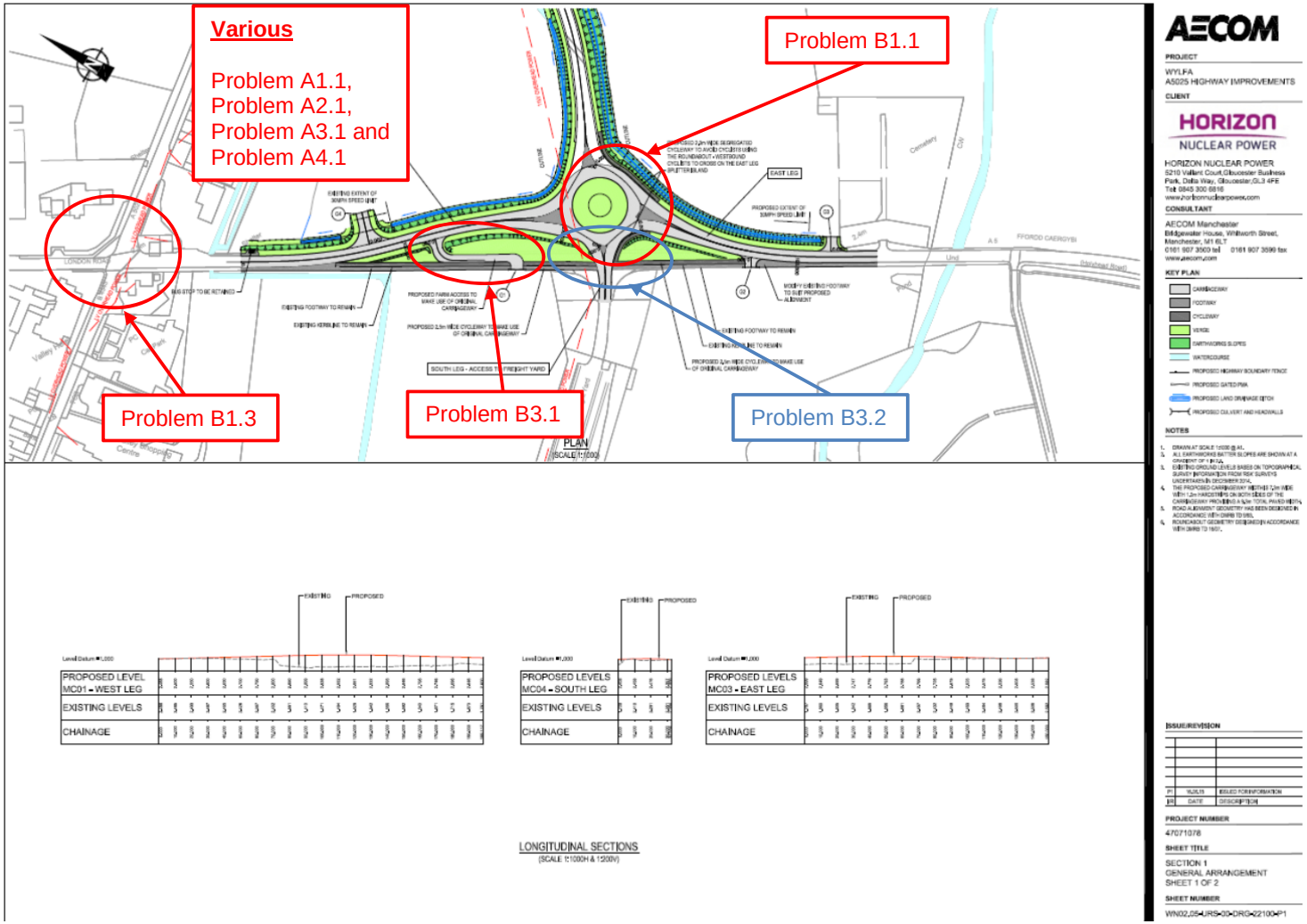
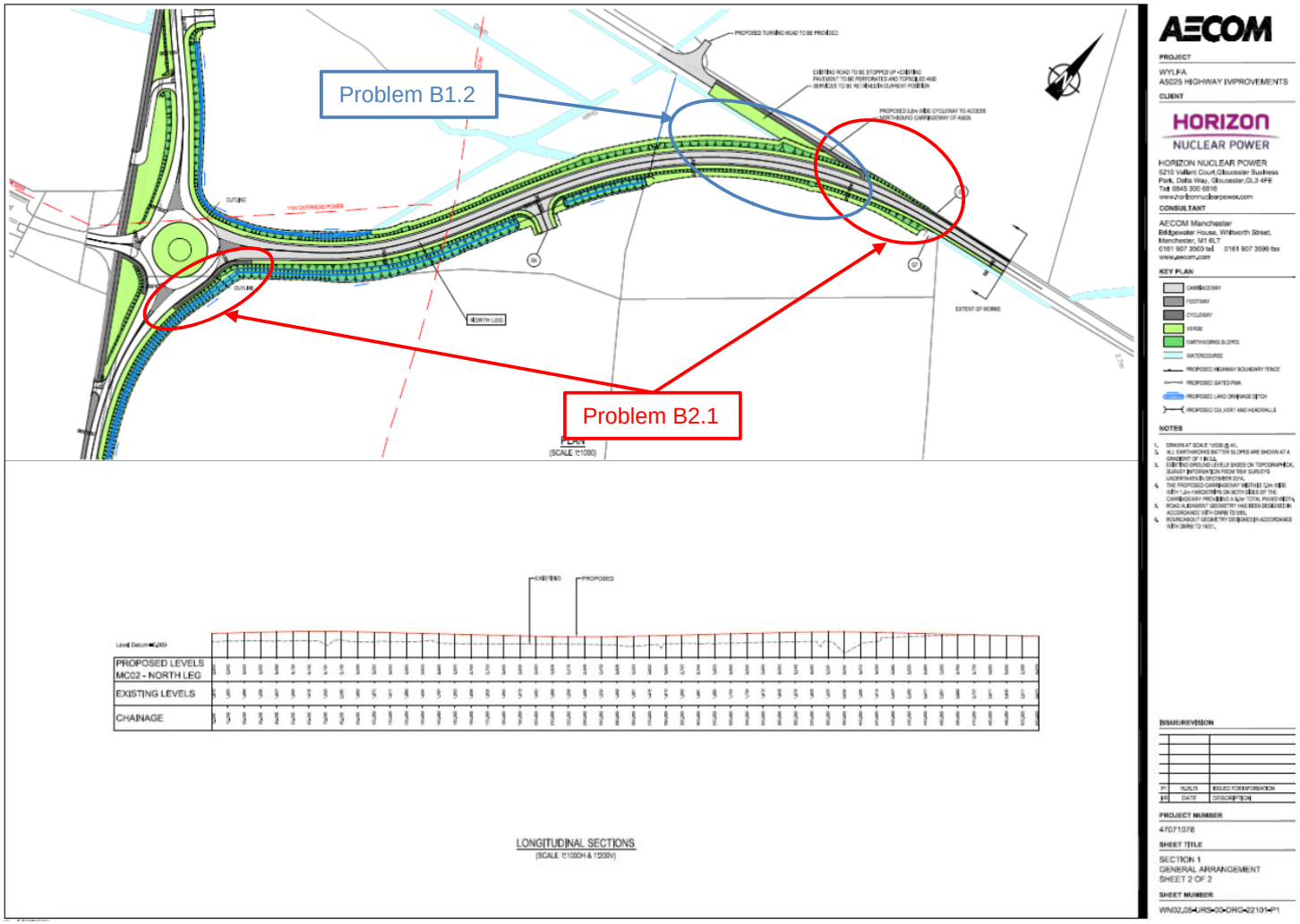
Ch. 0 to 500
Section 2
Ch. 500 to 3400
Section 3
Ch. 3400 to 5600
Section 4
Ch. 5600 to 8300
Section 5
Ch. 8300 to 9800
Section 6
Ch. 9800 to 13100
Section 7
Ch. 13100 to 14400
Section 8
Ch. 14400 to 17300
Valley
Llanynghendl
Llanfachraeth
Llanfaethlu
Llanrhyddlad
Tregele

APPENDIX C: PROBLEM LOCATION PLANS


Various
Problem A1.1,
Problem A2.1,
Problem A3.1 and
Problem A4.1
Problem B1.1
Problem B1.3
Problem B3.1
Problem B3.2
PLAN
(SCALE 1:1000)
PROPOSED LEVEL MC01 - WEST LEG
EXISTING LEVELS
CHAINAGE
PROPOSED LEVELS MC04 - SOUTH LEG
EXISTING LEVELS
CHAINAGE
PROPOSED LEVELS MC03 - EAST LEG
EXISTING LEVELS
CHAINAGE
LONGITUDINAL SECTIONS
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
NOTES
ISSUE/REVISION
PROJECT NUMBER
47071078
SHEET TITLE
SECTION 1
GENERAL ARRANGEMENT
SHEET 1 OF 2
SHEET NUMBER
WN02,05-URS-00-DRG-22100-P1


Problem B1.2
Problem B2.1
PROPOSED TURNING HEAD TO BE PROVIDED
EXISTING ROAD TO BE STOPPED UP
PROPOSED 3.0m WIDE CYCLEWAY TO ACCESS
NORTH LEG
EXTENT OF WORKS
PLAN
(SCALE 1:1000)
EXISTING
PROPOSED
PROPOSED LEVELS
MC02 - NORTH LEG
EXISTING LEVELS
CHAINAGE
LONGITUDINAL SECTIONS
(SCALE 1:1000H & 1:500V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
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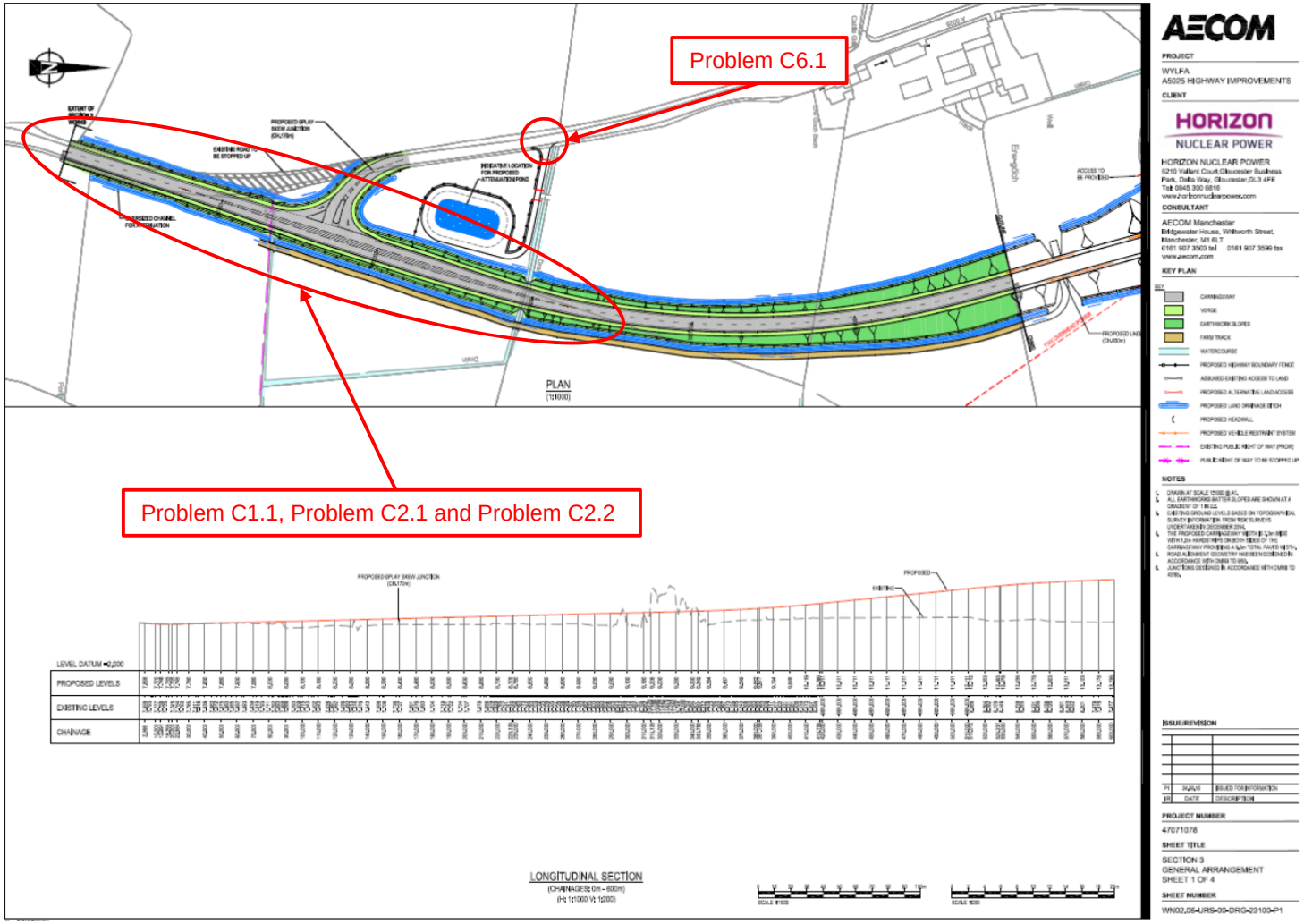
SHEET 2 OF 2
SHEET NUMBER


Problem C6.1
Problem C1.1, Problem C2.1 and Problem C2.2
PLAN
(1:1000)
LONGITUDINAL SECTION
(CHAINAGES: 0m - 600m)
(Hz 1:1000 Vt 1:200)
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON NUCLEAR POWER
CONSULTANT
KEY PLAN
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PROJECT NUMBER
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SHEET TITLE
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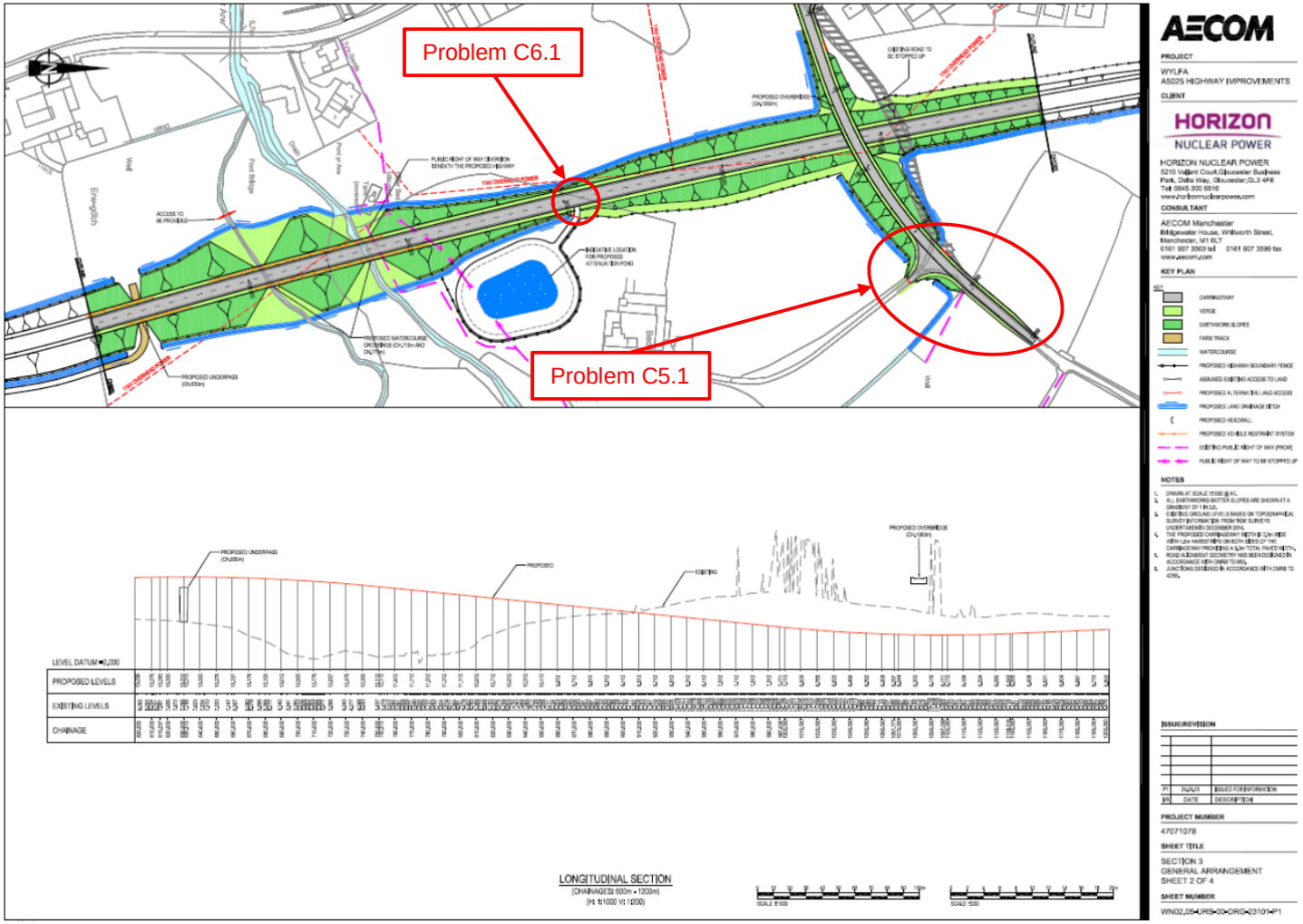
GENERAL ARRANGEMENT
SHEET 1 OF 4
SHEET NUMBER


Problem C6.1
Problem C5.1
LONGITUDINAL SECTION
(CHAINAGES 620m - 1200m)
(Hz 1:1000 Vt 1:200)
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
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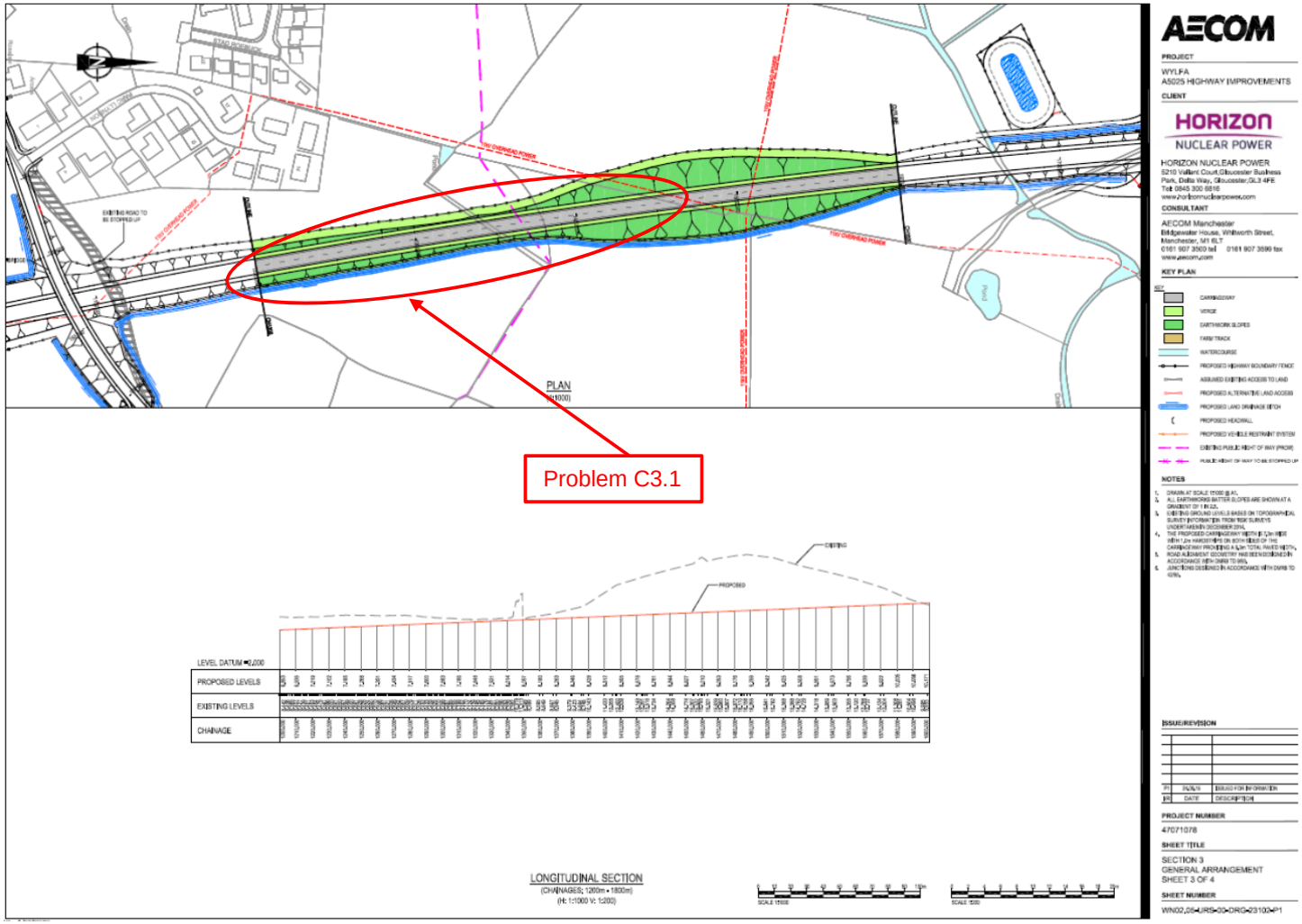
PLAN
Problem C3.1
LONGITUDINAL SECTION
(CHAINAGES; 1200m • 1800m)
(Ht 1:1000 V: 1:200)
LEVEL DATUM =2,200
PROPOSED LEVELS
EXISTING LEVELS
CHAINAGE
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
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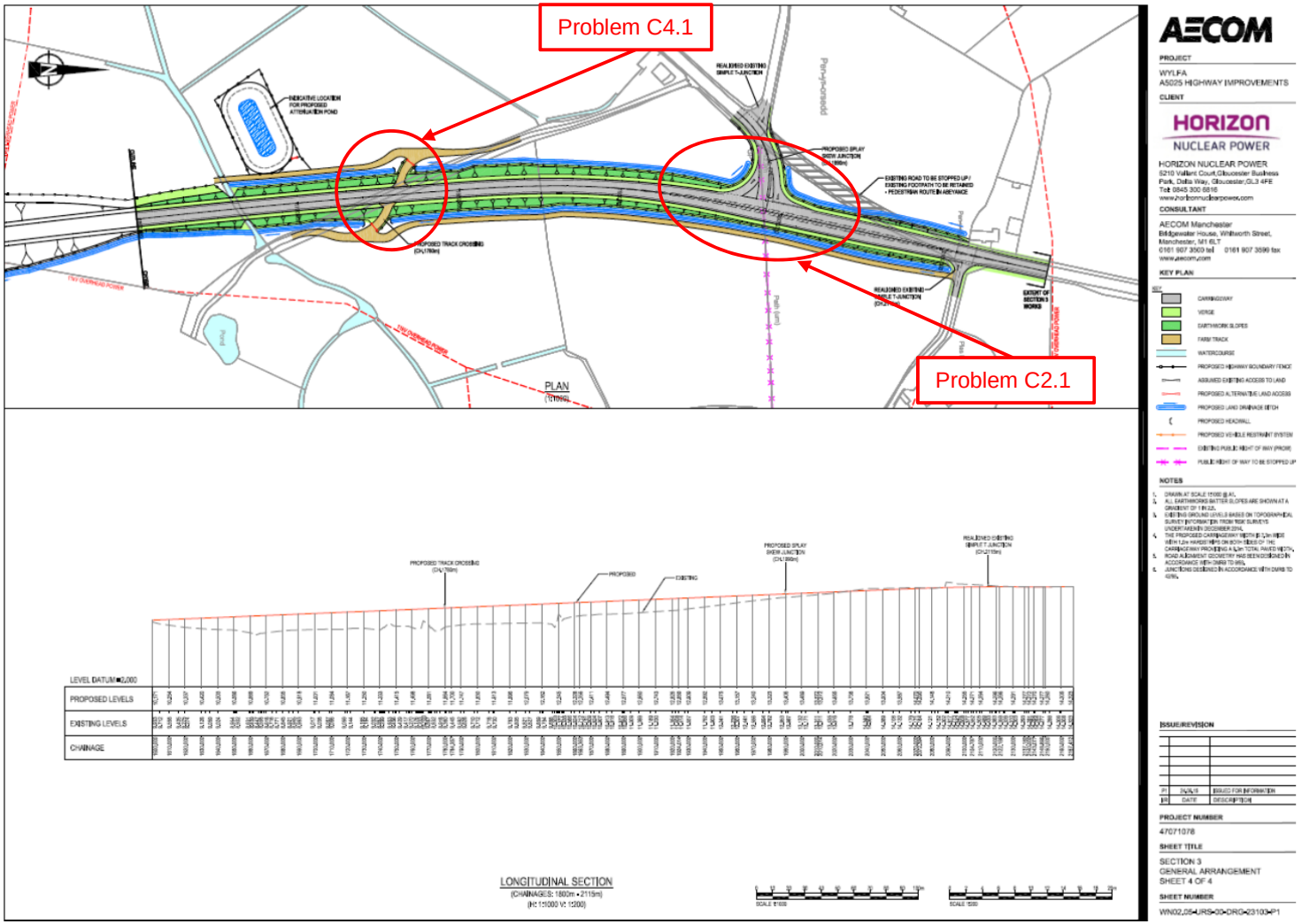
Problem C4.1
Problem C2.1
PLAN
LONGITUDINAL SECTION
(CHAINAGES: 1800m - 2115m)
(H: 1:1000 V: 1:200)
LEVEL DATUM
PROPOSED LEVELS
EXISTING LEVELS
CHAINAGE
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
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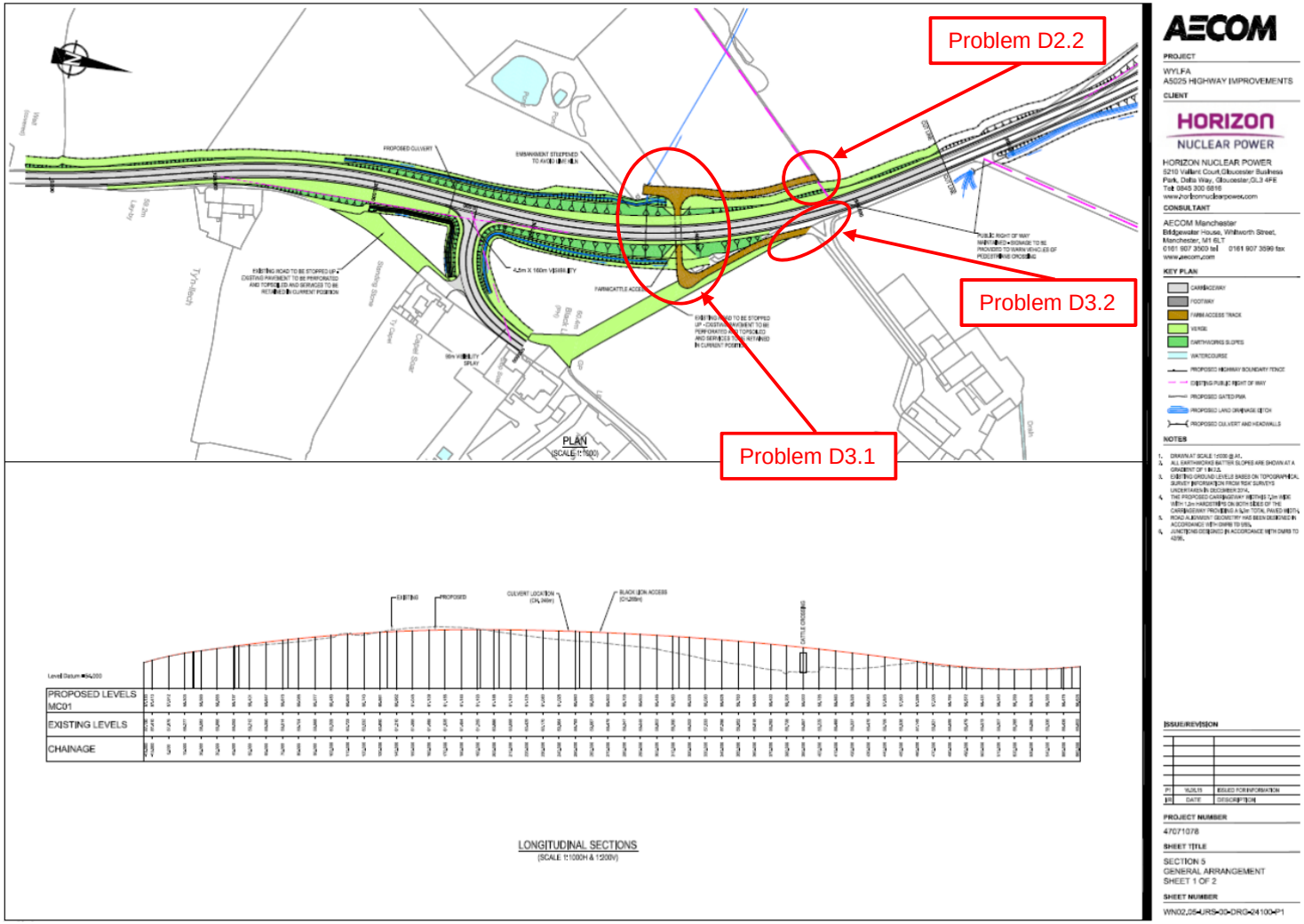
SHEET 4 OF 4
SHEET NUMBER


Problem D2.2
Problem D3.2
Problem D3.1
PLAN
(SCALE 1:1000)
PROPOSED LEVELS MC01
EXISTING LEVELS
CHAINAGE
LONGITUDINAL SECTIONS
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
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SHEET 1 OF 2
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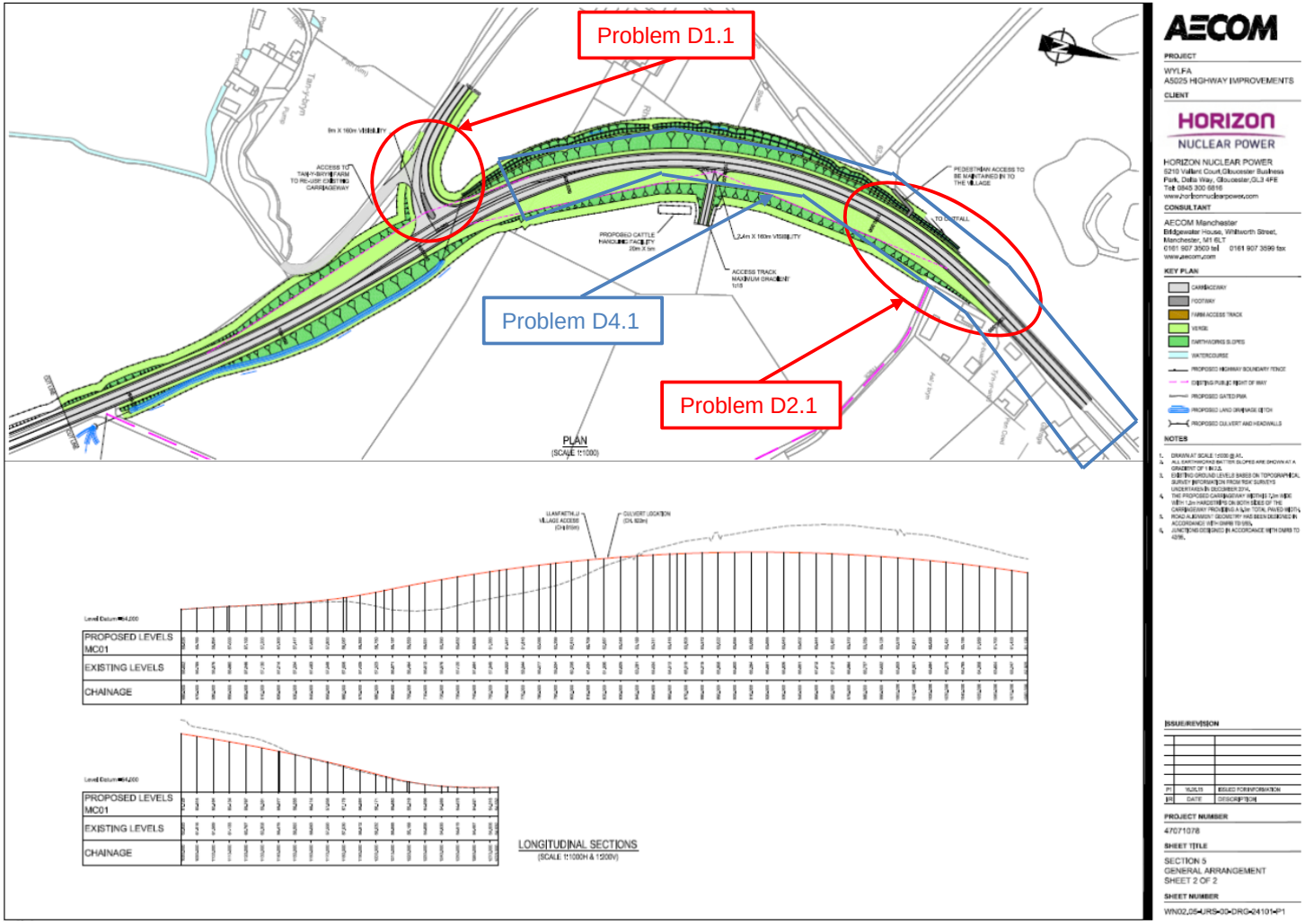
Problem D1.1
Problem D4.1
Problem D2.1
PLAN
(SCALE 1:1000)
PROPOSED LEVELS MC01
EXISTING LEVELS
CHAINAGE
LONGITUDINAL SECTIONS
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
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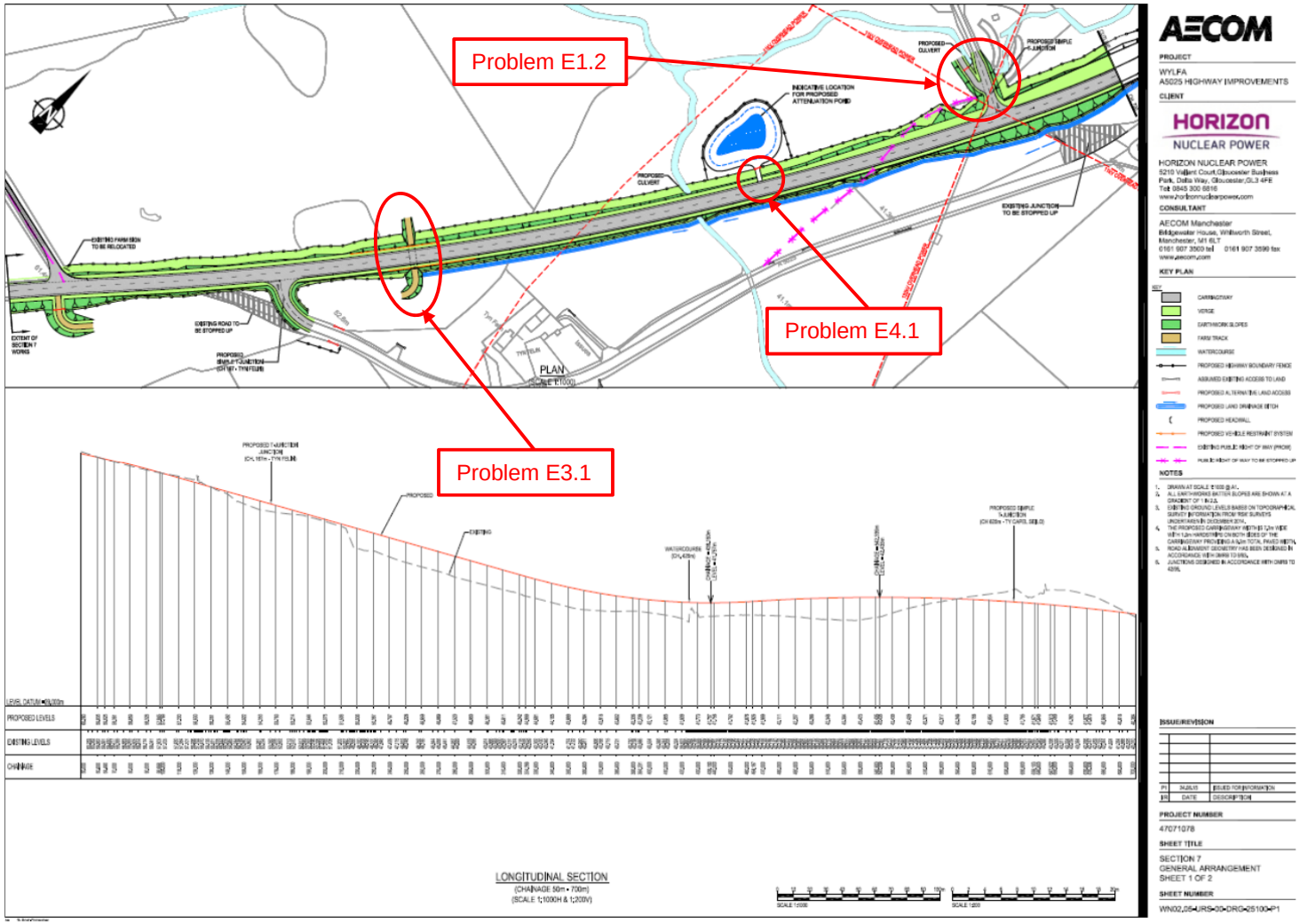
SHEET 2 OF 2
SHEET NUMBER


Problem E1.2
Problem E4.1
Problem E3.1
PLAN
LONGITUDINAL SECTION
(CHAINAGE 50m - 700m)
(SCALE 1:1000H & 1:200V)
PROPOSED LEVELS
EXISTING LEVELS
CHAINAGE
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
CONSULTANT
KEY PLAN
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SECTION 7
GENERAL ARRANGEMENT
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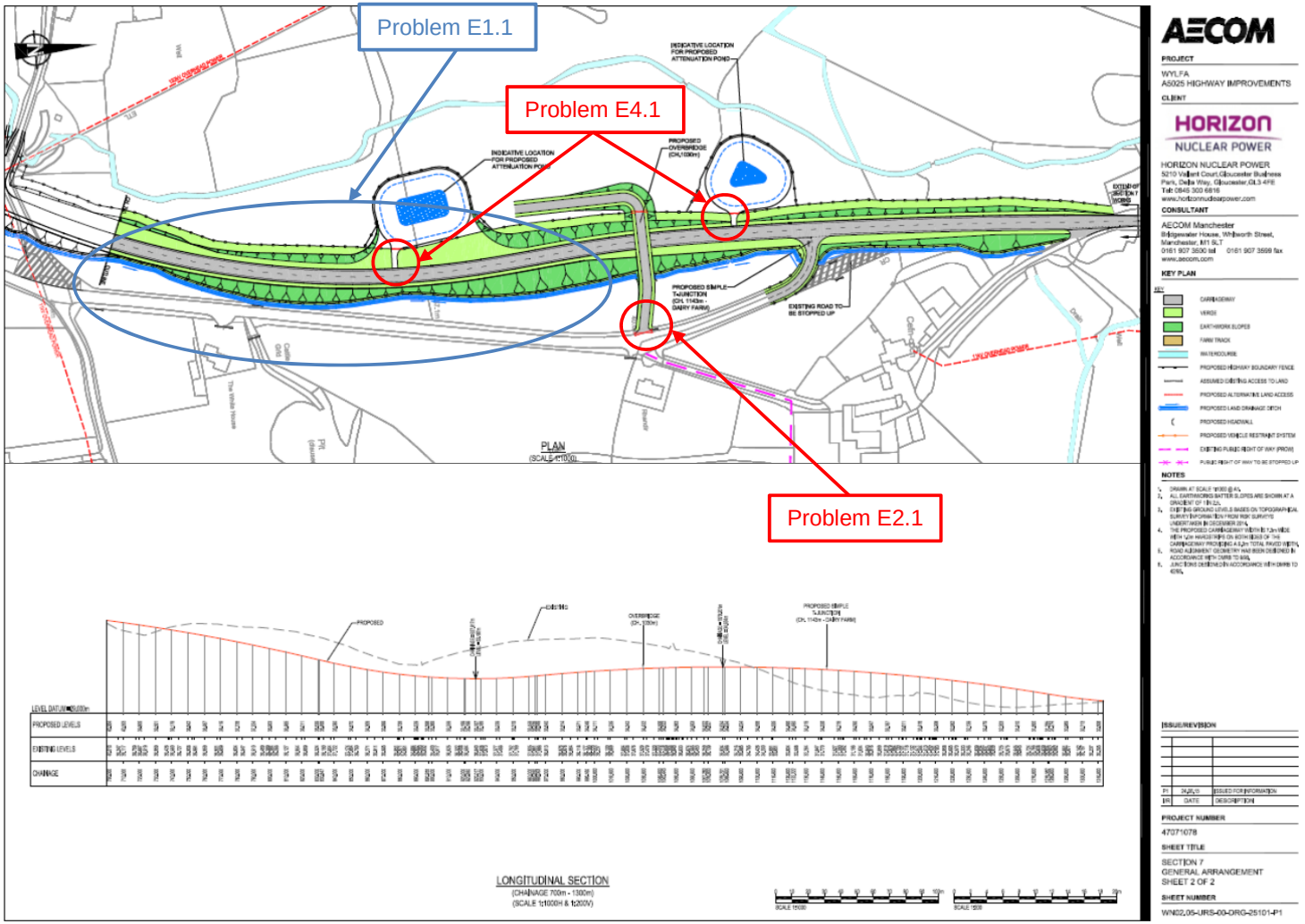
SHEET NUMBER


Problem E1.1
Problem E4.1
Problem E2.1
PLAN
LONGITUDINAL SECTION
(CHAINAGE 700m - 1300m)
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
NOTES
ISSUE/REVISION
PROJECT NUMBER
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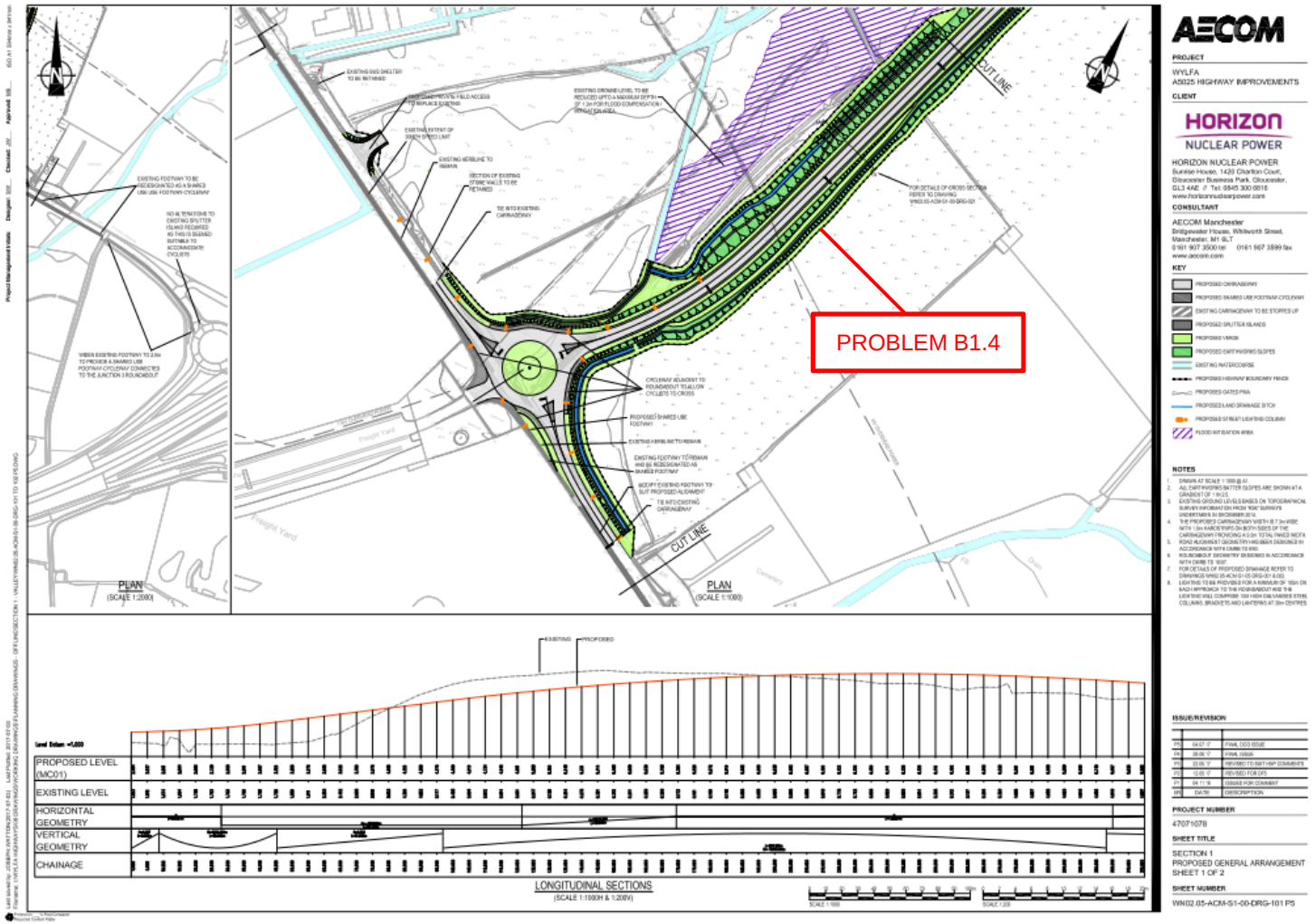
SHEET TITLE
SECTION 7
GENERAL ARRANGEMENT
SHEET 2 OF 2
SHEET NUMBER
WN02,05-URS-00-DRG-25101-P1


PROBLEM B1.4
PLAN
(SCALE 1:2000)
PLAN
(SCALE 1:1000)
CUT LINE
CUT LINE
PROPOSED LEVEL (MC01)
EXISTING LEVEL
HORIZONTAL GEOMETRY
VERTICAL GEOMETRY
CHAINAGE
LONGITUDINAL SECTIONS
(SCALE 1:1000H & 1:200V)
AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY
NOTES
ISSUE/REVISION
PROJECT NUMBER
47071078
SHEET TITLE
SECTION 1
PROPOSED GENERAL ARRANGEMENT
SHEET 1 OF 2
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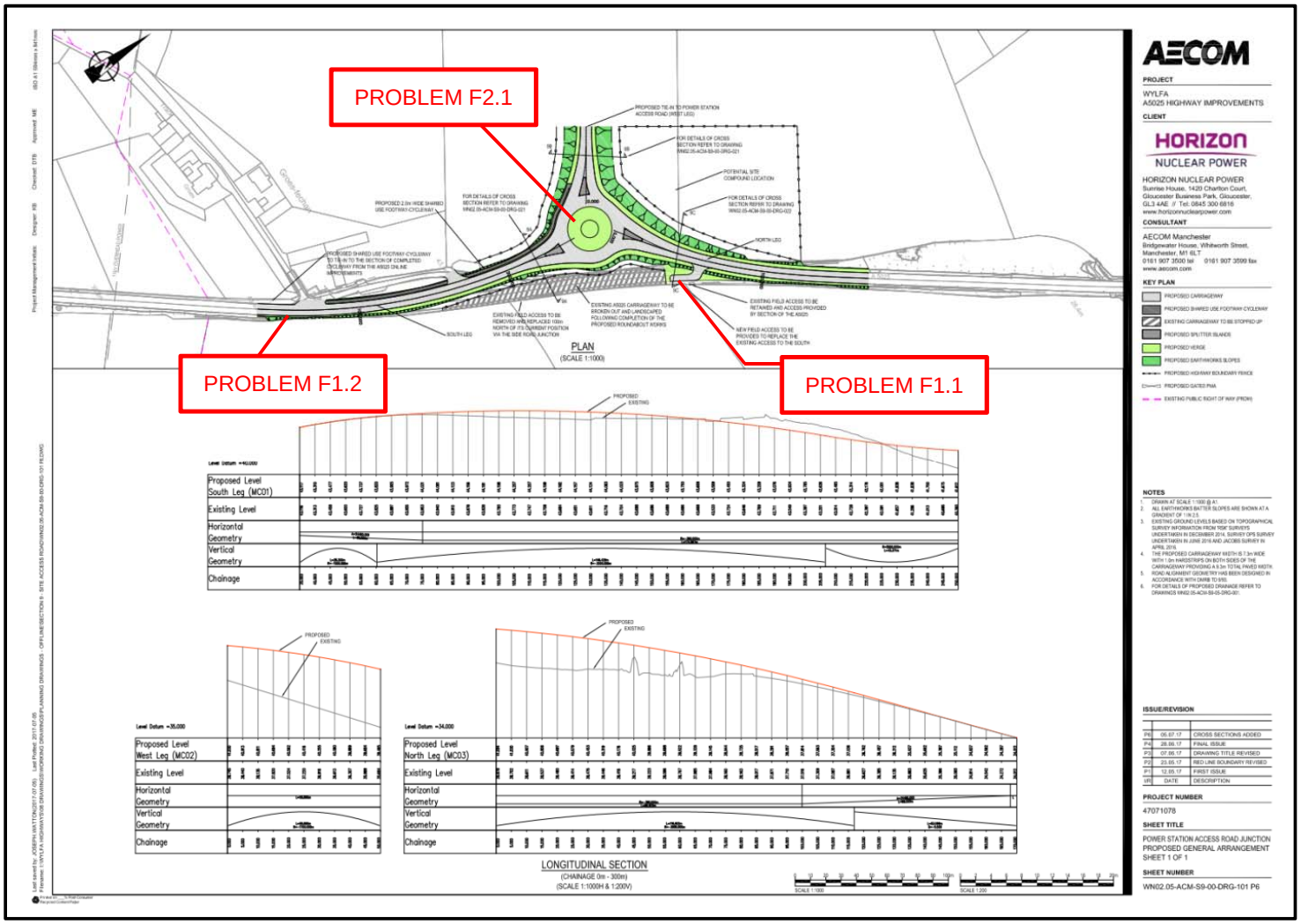
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AECOM
PROJECT
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
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ISSUE/REVISION
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47071078
SHEET TITLE
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AECOM

WYLFA A5025 Highways Improvements: Stage 1 Road Safety Audit

Online Improvements

Design Team Response

Report No. WN02.05-URS-00-REP-010

Prepared for Horizon Nuclear Power

REVISION SCHEDULE					
Rev	**Date**	**Details**	**Prepared by**	**Reviewed by**	**Approved by**
01	14 October 2015	Online DRAFT Stage 1 Road Safety Audit – Design Team Comments	Martin Ellis Associate	Joe Watton Senior Assistant Engineer	Martin Ellis Associate
02	3rd August 2016	Online DRAFT Stage 1 Road Safety Audit – Final Comments	Michael Gartside Senior Engineer	Martin Ellis Associate	Martin Ellis Associate

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1 INTRODUCTION

1.1 Audit Details

1.1.1 This report results from a Stage 1 Road Safety Audit carried out on the Wylfa A5025 Highways Improvements scheme located on the Isle of Anglesey, Wales. This report only takes into consideration the online improvements associated with the scheme. The audit was carried out at the request of AECOM (Manchester) on behalf of Horizon Nuclear Power.

1.1.2 The road safety team consisted of the following members:

1.	Stuart Dungworth	CEng FIHE MCIHT RegRSA (IHE)	
		Audit Team Leader	AECOM Infrastructure and Environmental Ltd.
2.	Pete Denton	BSc (Hons) DipASM MCIHT MSoRSA	
		Audit Team Member	AECOM Infrastructure and Environmental Ltd.
3.	Jamie Stone	BEng (Hons) TMICE MSoRSA	
		Audit Team Member	AECOM Infrastructure and Environmental Ltd.

1.1.3 The following representatives also attended the site visit on 1st July 2015:

1.	Neil Edwards	BEng (Hons)	
		Isle of Anglesey County Council	

1.1.4 The Road Safety Audit was undertaken in accordance with the Stage 1 Road Safety Audit Brief (document Number. WN02.05-URS-REP-005) dated 24th June 2015. The Road Safety Audit comprised of an examination of the documents provided by the design team, which are listed in **Appendix A**, and an examination of the site during the hours of daylight.

1.1.5 The Road Safety Audit took place in the AECOM Chesterfield office during July 2015 and the site was examined during the hours of daylight by all the Audit Team on 1st July 2015. The weather during the site visit was overcast with light rain showers and a damp road surface. The Audit was undertaken during the morning and afternoon off peak hours of 10:30 and 14:30 when traffic was flowing freely. There were no road works affecting the area.

1.1.6 The terms of reference of the Audit are as described in the Design Manual for Roads and Bridges (DMRB) document HD 19/15 'Road Safety Audit'. The advice issued in the DMRB applies to trunk road and motorway highway improvement schemes; however, the principles of HD19/15 have been adopted to define the scope of this Audit.

1.1.7 The scheme has been examined, and this report compiled, only with regard to the safety implications to road users of the scheme as presented. It has not been examined or verified for compliance with any other standards or criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem, the Road Safety Audit Team may, on occasion, have referred to a design standard without touching on technical audit.

1.1.8 An absence of any comment relating to specific road users/modes/safety issues in **Section 3** of this report does not imply that they have not been considered; instead the Audit Team consider that they are not adversely affected by the proposed changes.

1.1.9 Nothing in this Audit should be regarded as a direct instruction to include or remove a measure from within the scheme. Responsibility for designing the scheme lies with the designer and as such the Audit Team accepts no design responsibility for any changes made to the scheme as a result of this Audit.

1.1.10 Unless general to the scheme, each problem has been identified with reference to key features as well as being marked on the problem location plan attached in **Appendix C.**

2 SITE DESCRIPTION

2.1 Existing Layout

2.1.1 The Wylfa Power Station site is located in the northwest corner of the Isle of Anglesey and is accessed via the A5025. The A5025 is a two-way single carriageway which links Wylfa Power Station to the A55 in the south and passes through the villages of Valley, Llanynghenedl, Llanfachraeth, Llanfaethlu, Llanryhddlad and Tregele within the scheme extents.

2.1.2 The A5025 within the Audit area is covered by a number of different speed limits. These are as follows:

- Valley - 30mph speed limit;
- Valley to Llanynghendl - 60mph national speed limit;
- Llanynghendl – 40mph;
- Llanynghendl to Llanfachraeth - 60mph national speed limit;
- Llanfachraeth - 30mph speed limit;
- Llanfachraeth to Llanfaethlu - 50mph speed limit transitioning to a 60mph national speed limit;
- Llanfaethlu - 40mph speed limit;
- Llanfaethlu to Tregele - 60mph national speed limit;
- Tregele - 40mph speed limit; and,
- Tregele to Wylfa Power Station – 40mph speed limit.

2.1.3 Land use in the scheme extents is predominantly rural and agricultural with residential areas also located sporadically along the proposed scheme.

2.1.4 The existing A5025 carriageway surface varies from poor to reasonable conditions and the road markings are generally in good condition throughout.

2.1.5 Street lighting is present within the village areas, however, no street lighting is provided within the rural sections of the scheme. The site was not visited during the hours of darkness.

2.1.6 A location plan showing the extents of the scheme can be found on the next page.

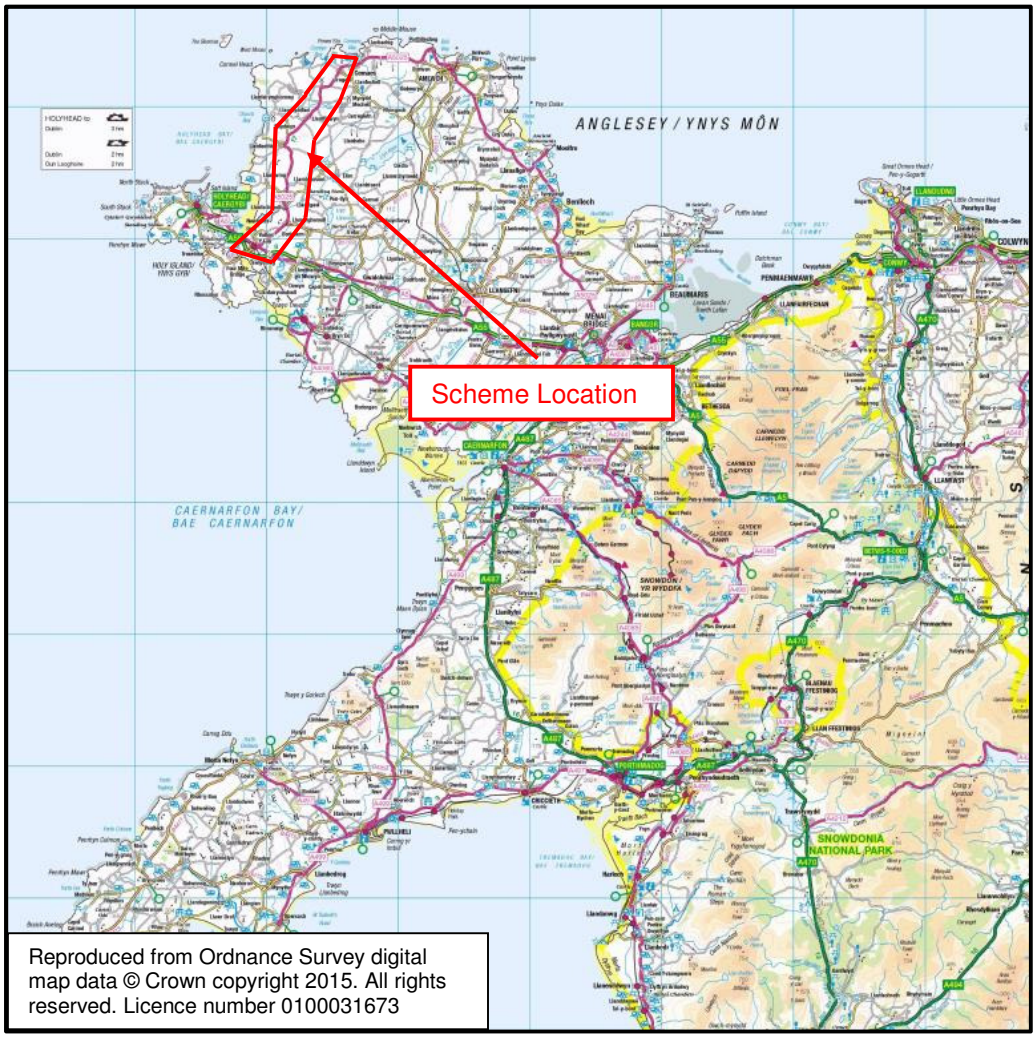

Figure 1: Wylfa A5025 Highways Improvements Scheme Location Plan.

2.2 General Scheme Details

2.2.1 The proposed scheme has been broken down into 8 defined sections. A plan outlining these 8 sections can be found in **Appendix B**.

2.2.2 Forecast baseline flows and construction or operational flows are not currently available. However, the theoretical capacity of the A5025 using the Congestion Reference Flow (CRF) methodology is 24,925 vehicles (AADT) average peak. The estimated AADT flow based on August 2014 flows is 6,101 vehicles. The existing A5025 is operating well within capacity with no congestion during weekday peak hours.

2.2.3 The existing A5/A5025 Valley junction operates well within acceptable capacity limits during both the AM and PM weekday peak hours. The results of recent tests suggest that the existing junction may possess sufficient reserve capacity to cater for the predicted increases in traffic in 2022.

2.2.4 There are various Non-Motorised User (NMU) desire lines located throughout the scheme extents, along with various public transport links as outlined below:

- Public transport: Bus service 61 runs 8 buses a day in each direction between Holyhead and Amlwch on weekdays. There are 7 buses a day on Saturdays but no service on Sundays.
- Cycling: On-road cycle routes cross the A5025 at 3 locations. These are National Cycle Routes 5 and 566 (the Copper Trail).
- Public Rights of Ways (PRoW): The existing A5025 is crossed by a total of 37 PRoWs and the Wales Coastal Path. A further 8 PROWs would be crossed by the proposed offline improvements.

2.2.5 Both the online and offline A5025 improvements are due to be completed before the construction works for Wylfa Newydd commence. However, the improvement works are inextricably linked to the construction of the new power station and have been designed to accommodate the additional traffic generated by the construction and operational phases.

2.2.6 The programme for decommissioning and repowering works at Rhyd-y-Groes wind farm is likely to overlap with the online A5025 works.

2.2.7 There are existing primary schools in Llanfachraeth and Llanfaethlu. There are proposals for a new larger primary school in Llanfaethlu which will replace existing primary schools in Llanfachraeth, Llanrhuddlad and Llanfaethlu.

2.2.8 10 year collision data and collision statistics for the A5025 between Valley and Cemaes has been provided to the Audit Team for review.

2.3 Proposed Scheme Details

2.3.1 As described above, the proposed scheme corridor has been broken down into 8 sections. 4 sections (1,3,5,7) are offline improvements and 4 sections (2,4,6,8) are online improvements. This report only takes into consideration the online improvements associated with the scheme and are defined as follows:

- Section 2 (Valley Junction A5/A5025 to north of Llanynghendl): Localised widening of the A5025 to increase the carriageway width to a minimum of 6.7m, increased to 7.3m for bends less than 400m but more than 150m and increased to 7.9m for bends less than 150m, throughout the scheme extents and an existing “Arrive Alive”, layby at approximate chainage 2675.000 to be hatched and no longer used.
- Section 4 (north of Llanfachraeth to south of Llanfaethlu): Localised widening of the A5025 to increase the carriageway width to a minimum of 6.7m, increased to 7.3m for bends less than 400m but more than 150m and increased to 7.9m for bends less than 150m, throughout the scheme extents and an existing “Arrive Alive”, layby at approximate chainage 5775.000 to be hatched and no longer used.
- Section 6 (north of Llanfaethlu to north of Llanrhyddlad): Localised widening of the A5025 to increase the carriageway width to a minimum of 6.7m, increased to 7.3m for bends less than 400m but more than 150m and increased to 7.9m for bends less than 150m, throughout the scheme extents and two overgrown junctions at approximate chainage 12100.000 are to be stopped up.
- Section 8 (north of Cefn Coch to Wylfa site access): Localised widening of the A5025 to increase the carriageway width to a minimum of 6.7m, increased to 7.3 for bends of less than 400m but more than 150m. The improvement works also include the provision of a 2m wide cycle way on the western side of the A5025. A new roundabout for access to the site is to be

constructed at the northern extent of the section and forms the limit of the works. Improvements to existing junctions and PMAs will be carried out as part of the online works.

2.3.2 The number of speed limit changes is to be rationalised as part of the scheme. The existing 40mph speed limit through Llanynghendl is to remain before transitioning to a 60mph national speed limit throughout the online improvements and bypass sections to Cefn Coch. At Cefn Coch the speed limit transitions to 40mph through the village before transitioning to a 60mph national speed limit throughout the remainder of the scheme extents.

2.4 Departures from Standard

2.4.1 The Audit Team have not been provided with any Departures from Standard or Relaxations as part of this Stage 1 Road Safety Audit. However, the existing geometry for the online sections does not comply with current design standards (TD 9/93), therefore it is anticipated that there will be a requirement for a number of Departures from Standard and Relaxations to be issued for approval.

2.4.2 Due to the lack of information provided to the Audit Team in relation to the Departures from Standard, any recommendations outlined within **Section 3** of this report relating to specific locations should be considered.

3 ITEMS RESULTING FROM THIS STAGE 1 ROAD SAFETY AUDIT

3.1 The following road safety issues were identified during this Stage 1 Road Safety Audit.

A GENERAL

A1 CROSS-SECTIONS

A1.1 PROBLEM

Drawing No: Various.

Location: Various.

Summary: Narrow carriageway width leading to Heavy Goods Vehicles (HGV) passing close to one another and potential graze type collisions occurring.

The minimum carriageway width at various locations throughout the scheme extents is detailed as 6.7m with 300mm hard strips either side of the carriageway where bends are less than 400m radius additional widening is to be specified. There is a risk that the tie-in points at the interfaces between the on and off line proposals and between the existing and improved carriageways may create pinch points that may lead to collisions occurring.

RECOMMENDATION

Ensure that all tie-in points have a constant road width at the interfaces.

DESIGN TEAM RESPONSE

Accepted. The A5025 will be improved in stages. The online A5025 works will be constructed in advance of the offline A5025 and so the tie-ins (between the existing and proposed sections of carriageway) will be constructed in phases.

A2 DRAINAGE

A2.1 PROBLEM

Drawing No: Various.

Location: Drainage headwalls located within the verges along the extents of the A5025.

Summary: Drainage headwalls not protected leading to increased collision severity.

Where localised widening results in the edge of the carriageway being located closer to existing headwalls/culverts, there is a risk that vehicles may strike the headwall and lose control.

RECOMMENDATION

Undertake a RRRAP assessment at all headwall locations and provide RRS where necessary at detailed design.

DESIGN TEAM RESPONSE

Accepted. RRS will be provided where there is a risk of collision due to the proximity of the headwalls to the edge of the carriageway.

A3 VISIBILITY

A3.1 PROBLEM

Drawing No: Various.

Location: Various.

Summary: Insufficient visibility at junctions leading to collisions occurring.
Throughout the scheme extents, a number of visibility splays at side road junctions, appear to be below the desired minimum either due to vegetation within the visibility splays, existing alignments or proposed amendments to the alignment. This may lead to vehicles emerging from the junctions into the path of an oncoming vehicle leading to a collision.

RECOMMENDATION

Ensure that adequate visibility is provided at side road junctions throughout the extents of the scheme.

DESIGN TEAM RESPONSE

Accepted. Adequate visibility will be provided at side road junctions throughout the extents of the scheme.

A4 PEDESTRIANS/CYCLISTS

A4.1 PROBLEM

Drawing No: Various.

Location: Various Public Rights of Way (PRoW) along the scheme extents either side of the A5025.

Summary: Lack of connectivity between PRoWs leading to potential pedestrian injuries/collisions.

Existing PRoWs are to be retained as part of the scheme. However, there are a number of locations where it is unclear how the PRoWs, where they are in close proximity, are linked across the A5025. The online improvements may lead to an increase in the speed of traffic that may be detrimental to the safety of pedestrians. Pedestrians may walk along the uneven verges or along the carriageway for short distances or do not have a safe landing where the PRoW emerges onto the carriageway, increasing the likelihood of injuries or collisions with other road users.

RECOMMENDATION

Provide safe links where there is likely to be pedestrians present on the carriageway between all existing and proposed PROWs where they are in close proximity throughout the scheme.

DESIGN TEAM RESPONSE

Accepted. Connectivity between PRoWs and appropriate crossing points will be developed during the detailed design.

A5 ROAD MARKINGS

A5.1 PROBLEM

Drawing No: Various.

Location: Various.

Summary: Incorrect road markings leading to unsafe overtake manoeuvres and head-on collisions.

It has been assumed that the majority of the road markings shown on the drawings are indicative at this stage. There are a number of issues throughout the scheme where the road markings are not in accordance with the guidance contained in Chapter 5 of the Traffic Signs Manual (e.g. Tuck in Arrows and the interface between double white lines systems and single centre lines). Drivers may attempt overtaking manoeuvres at the locations where reduced visibility is present, increasing the likelihood of head on collisions.

RECOMMENDATION

Ensure that all road markings are in accordance with the guidance laid out in Chapter 5 of the Traffic Signs Manual at detailed design stage. This will be reviewed during the Stage 2 Road Safety Audit.

DESIGN TEAM RESPONSE

Accepted. Road markings will be designed in accordance with the guidance laid out in Chapter 5 of the TSM during the detailed design stage.

B SECTION 2 (VALLEY JUNCTION A5/A5025 TO NORTH OF LLANYNGHENDL)

B1 FUTURE WIDENING

B1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21400-P1.

Location: Public Right of Way (PRoW) and field access at approximate chainage 870.000.

Summary: Reconstructed wall located too close to carriageway increasing the likelihood of vehicles striking wall leading to injuries or loss of control collisions occurring.

At approximate chainage 870.000 the widening includes the removal and reconstruction of an existing stone wall along the northern verge. This section of wall appears to be located too close to the carriageway, creating a pinch point. If the wall is positioned too close to the carriageway, drivers may swerve to avoid it, or errant vehicles may strike the hazard leading to injuries or loss of control collisions occurring.

RECOMMENDATION

Ensure that the newly constructed wall is situated a minimum of 700mm away from the carriageway edge.

DESIGN TEAM RESPONSE

Accepted. The wall will be reconstructed so that it is at the back of the verge (i.e. 700mm from the edge of the hard strip, 1000mm from the edge of the carriageway).

B2 NEW//EXISTING ROAD INTERFACE

B2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21402-P1.

Location: Proposed junction to the existing A5025 in Llanfachraeth.

Summary: Potentially high vehicle speeds leading to loss of control collisions or collisions occurring at the junction.

As part of the proposals, the existing speed limits throughout the Audit area are to be rationalised. As part of this rationalisation it is proposed that a 60mph national speed limit is to be introduced approximately 350m south of the proposed junction in Llanfachraeth. This may cause increased speeds on approach to the junction and potential late braking leading to loss of control collisions occurring. There is also the risk that drivers exiting the junction may not judge an approaching vehicles speed correctly and exit into the path of an oncoming vehicle leading to a collision.

RECOMMENDATION

Extend the 40mph speed limit further north, away from the junction.

DESIGN TEAM RESPONSE

Accepted. The proposed extension of the 40mph speed limit will be discussed with the local highway authority (IACC).

B3 JUNCTION LAYOUT

B3.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21402-P1.

Location: Junction 6, approximate chainage 2940.000.

Summary: Tight alignment resulting in collisions.
The alignment of junction 6 is such that the left turn manoeuvre on exit appears to be tight. Large/long vehicles may cross over onto the opposing northbound carriageway, resulting in head on collisions. Alternatively, drivers may slow down almost to a stop to turn left, resulting in shunt type collisions from following traffic. Additionally, the alignment of the southbound carriageway on the approach to junction 6 has little deflection. Vehicles may approach the junction at a higher than appropriate speed which may cause them to leave the carriageway or brake late leading to loss of control collisions occurring as they attempt to leave the A5025 at junction 6.

RECOMMENDATION

Junction 6 should be stopped up and access should be maintained via the B5109.

DESIGN TEAM RESPONSE

Accepted. The proposed stopping-up of the side road will be discussed with the local highway authority (IACC), however there is still a need for a PMA.

B4 PEDESTRIANS/CYCLISTS

B4.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21402-P1.

Location: A5025 between junctions 4 and 5.

Summary: Lack of connectivity between National Cycle Routes increasing the likelihood of cyclist injuries.

The National Cycle Route No. 5 crosses the A5025 between junctions 4 and 5. No provision for cyclists has been provided to ensure that cyclists can cross the A5025 safely. There are concerns that, due to the high number of HGVs that will be travelling along the A5025 in either direction, there is a risk that cyclists may be struck by passing traffic.

RECOMMENDATION

Provide an off carriageway shared facility in accordance with SUSTRANS design guidelines between junctions 4 and 5. Additionally, warning signs to Diag 950 (with supplementary plate 950.1 'cyclists crossing') of TSRGD should also be erected to warn of the possibility of cyclists crossing the carriageway along this section of the A5025.

DESIGN TEAM RESPONSE

Accepted. The current version of this drawing (WN02.05-URS-00-DRG-21402-P2) includes a 2.0m wide cycleway between junctions 4 and 5. Appropriate warning signs will be provided.

C SECTION 4 (NORTH OF LLANFACHRAETH TO SOUTH OF LLANFAETHLU)

No road safety issues have been identified in this section.

D SECTION 6 (NORTH OF LLANFAETHLU TO NORTH OF LLANRHYDDLAD)

D1 NEW//EXISTING ROAD INTERFACE

D1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21600-P1.

Location: Junction 16, Pen Bodowen.

Summary: Existing carriageway surfacing on northbound approach to Pen Bodowen potentially increasing the likelihood of unsafe manoeuvres leading to collisions occurring.

There is a redundant section of carriageway within the verge at Junction 16, Pen Bodowen, which appears to link the A5025 to Chapel Street. It is not clear on the northbound approach where the junction is due to reduced visibility and the lack of a T-junction warning sign. Drivers may mistake this redundant section of carriageway as the junction and attempt to travel along it leading to collisions or injuries occurring.

Additionally, the forward visibility for northbound drivers is restricted. If drivers are attempting to turn right, into junction 16, northbound drivers may not see them until late, resulting in late braking and potential collisions occurring with following vehicles or vehicles turning into the junction.

RECOMMENDATION

Break up the redundant section of carriageway and landscape to prevent vehicle use and provide T-junction warning signs as part of the scheme in both directions.

DESIGN TEAM RESPONSE

Accepted. The redundant section of the carriageway will be broken up and landscaped. Appropriate T-junction warning signs will be provided.

D2 PEDESTRIANS/CYCLISTS

D2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21602-P1.

Location: A5025 between junctions 17 and 18.

Summary: Lack of warning to drivers that cyclists may be crossing the carriageway leading to collisions.

The National Cycle Route No. 566 crosses the A5025 between junctions 17 and 18. No provision for cyclists has been provided to ensure that cyclists can cross the A5025 safely. There are concerns that, due to the high number of HGVs that will be travelling along the A5025 in either direction; there is a risk that cyclists may be struck by passing traffic.

RECOMMENDATION

Warning signs to Diag 950 (with supplementary plate 950.1 'cyclists crossing') of TSRGD should be erected to warn of the possibility of cyclists crossing the carriageway along this section of the A5025.

DESIGN TEAM RESPONSE

Accepted. Proposals to be checked with Sustrans and if acceptable warning signs to Diag 950 (with supplementary plate 950.1 'cyclists crossing') of TSRGD will be erected.

D3 ACCESS

D3.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21602-P1.

Location: Junction 18A and 18B at Llanrhuddlad.

Summary: Number of access/egress points may increase the likelihood of collisions due to high number of manoeuvres.

The section of A5025 through Llanrhuddlad has a high number of junction access and egress points; it is the opinion of the Audit Team that not all of these junctions are required. Junctions 18A and 18B appear to be unnecessary due to the provision of junction 19A. If all these junctions remain open, some of which are access only and some egress only, the potentially high number of movements across the A5025 may lead to collisions occurring.

RECOMMENDATION

Rationalise the number of access and egress points through Llanrhuddlad. Consider closing junctions 18A and 18B and directing all traffic in and out of junction 19A.

DESIGN TEAM RESPONSE

Accepted. The current version of this drawing, WN02.05-URS-00-DRG-21602-P2, shows the proposal to stop up junctions 18B and 18C and maintain access via junction 18A. IACC to raise with local members for awareness of any local issues not addressed.

E SECTION 8 (NORTH OF CEFN COCH TO WYLFA SITE ACCESS)

E1 JUNCTION LAYOUT

E1.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21700-P1.

Location: Junction 22.

Summary: Existing junction provision may lead to unsafe turning manoeuvres increasing the likelihood of collisions.

The existing junction appears to be an access to a single property with a substandard alignment. Drivers turning right into the junction are faced with an acute turn that will need to be carried out at a slow speed. This may lead to collisions with faster moving traffic on the A5025. This junction may be mistaken for the next junction (junction 23) when approaching from the south due to the relative position of the advance direction signs.

RECOMMENDATION

Stop up the substandard road and redirect all traffic to upgraded junction 23.

DESIGN TEAM RESPONSE

Not accepted. It is proposed that junction 22 should be a left only junction (i.e. northbound A5025 traffic turning left) and the road between junction 22 and Nanner Road is one-way only. There is a property on this road and access will need to be maintained.

E1.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21700-P1

Location: New PMA adjacent to Glan Rhyd.

Summary: Slow vehicles emerging from PMA into path of oncoming traffic.

The relocation of the PMA adjacent to Glan Rhyd results in an increase in the vertical distance between the carriageway level and the level of the driveway. This may result in vehicles stopping on a steep gradient at the control line. Large/heavy vehicles may have difficulty in restarting which may result in them emerging into the path of high speed mainline traffic.

RECOMMENDATION

Ensure that there is a level landing at the control line to enable waiting traffic to restart without issue.

DESIGN TEAM RESPONSE

Accepted. It is proposed to relocate the PMA further north so that the gradient down to the property is reduced.

E1.3 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21701-P1

Location: Wylfa site access.

Summary: Insufficient entry path curvature leading to higher than anticipated speeds on entry to the circulatory and potential loss of control collisions occurring.
The entry path curvature for vehicles entering the circulatory wishing to turn left from the western leg and go straight ahead from the north leg to the south leg appears to be greater than the maximum specified in TD16/07. If the entry path curvature is not restricted there is a risk that vehicles may enter the circulatory at a higher than anticipated speed, potentially leading to loss of control or collisions between entry and circulatory traffic occurring.

RECOMMENDATION

Provide the appropriate entry path curvature at each entry to the roundabout to ensure that entry speeds are not excessive.

DESIGN TEAM RESPONSE

Accepted. However, the Wylfa site access has been removed from Section 8 and no longer forms part of the A5025 improvements.

E1.4 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21700-P1.

Location: Existing junction at the southern extent of Section 8.

Summary: Restricted visibility at existing junction provision leading to collisions with oncoming vehicles.

The existing junction at the interface between Section 7 and Section 8 is located immediately after a crest in the road. Visibility to the junction for vehicles approaching from the south and vehicles exiting the junction is restricted due to the crest. This may lead to vehicles emerging from the junction when it is not safe to do so and colliding with oncoming vehicles

RECOMMENDATION

Install ‘Junction Ahead’ warning signs on the southbound approach to the junction.

DESIGN TEAM RESPONSE

Not accepted. This is a PMA, not a road junction. It is accepted that visibility is restricted due to the crest. However the number of vehicles using the access will be very low. There is an alternative

and safer access onto the A5025 south of Cefn Coch. An assessment of the visibility from all PMA's has been undertaken to assess the inherent risks and whether further works are required.

E2 NON MOTORISED PROVISION

E2.1 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21701-P1

Location: Wylfa site access Roundabout.

Summary: Lack of safe cycle crossing points leading to collisions with other traffic.

The cycle provision at the Wylfa site access roundabout appears to only cater for cyclists travelling between the site access and the A5025 to the south. There is no provision for cyclists, from the A5025 north of the proposed junction, to access the off road cycleway on the west side of the A5025, south of the junction. Cyclists may attempt to cross the A5025 at unsafe locations or continue along the carriageway. This may lead to collisions with motorised traffic.

RECOMMENDATION

Ensure that a safe cycle facility is provided for cyclists travelling through the junction from all directions.

DESIGN TEAM RESPONSE

The Wylfa site access has been removed from Section 8 and no longer forms part of the A5025 improvements. However, provision had previously been made for cyclists travelling between a proposed diversion of National Cycle Route 5 (the Copper Trail) and a proposed visitor centre at Wylfa Newydd.

E2.2 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21701-P1

Location: Link between Junction 24b and junction 24c.

Summary: Uneven surface leading to slips and falls.

The existing condition of the link is, at present, unsuitable for use by cyclists. If left in its existing condition there is a risk that cyclists will hit a pothole or slip on the loose surfacing and fall.

RECOMMENDATION

Ensure that the surface is suitable for use by cyclists.

DESIGN TEAM RESPONSE

Accepted. The Wylfa site access has been removed from Section 8 and no longer forms part of the A5025 improvements. The tie-in between Section 8 and the existing road is just to the north of junction 24b (at approximate chainage 15970). However, it is proposed to construct a new 2m wide cycleway in the west verge to the A5025 between Nanner Road and the end of Section 8 to accommodate a proposed diversion of National Cycle Route 5 (the Copper Trail).

E2.3 PROBLEM

Drawing No: WN02.05-URS-00-DRG-21701-P1

Location: Cycle crossing between Junction 23a and junction 24.

Summary: Unsafe crossing location leading to cyclists crossing into the path of an oncoming vehicle leading to a collision.

The proposed cycle crossing location linking the 'Copper Trail' to the off road cycle track adjacent the A5025 is located on a bend (between Junctions 23a and 24). Visibility of the cycle crossing is severely restricted for north/east bound drivers due to the uphill alignment of the A5025, the left hand bend and overgrown vegetation. There is a risk that if the cycle crossing remains in its proposed location, cyclists may potentially cross into the path of an oncoming vehicle leading to a collision.

RECOMMENDATION

Relocate the cycle crossing point to the west, provide on off road cycle track within the southern verge and clear vegetation. Also, install advance warning signs to Diag 950 (with supplementary plate 950.1 'cyclists crossing') of TSRGD to warn of the possibility of cyclists crossing the carriageway along this section of the A5025.

DESIGN TEAM RESPONSE

Accepted. Visibility to/from the cycle crossing will be established during the detailed design. Relocation of the crossing will be investigated. Vegetation clearance will be specified to improve visibility if necessary. Appropriate signing will also be provided.

4 AUDIT TEAM STATEMENT

4.1 I certify that this audit has been carried out in accordance with Road Safety Audit Standard (HD 19/15).

AUDIT TEAM LEADER

Stuart Dungworth CEng FIHE MCIHT RegRSA (IHE)

AECOM Infrastructure and Environmental Ltd.
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Signed: [redacted]

Date: 30h July 2015

AUDIT TEAM MEMBERS

Pete Denton BSc (Hons) DipASM MCIHT MSoRSA

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Signed: [redacted]

Date: 30th July 2015

Jamie Stone BEng (Hons) TMICE MSoRSA

AECOM Infrastructure and Environmental Ltd.
Royal Court
Basil Close
Chesterfield
Derbyshire
S41 7SL
United Kingdom

Signed: [redacted]

Date: 30th July 2015

AUDIT TEAM OBSERVERS

There were no Audit Team Observers present during the site visit.

OTHERS INVOLVED

Neil Edwards BEng (Hons)

Isle of Anglesey County Council
Council Offices
Llangefni
Anglesey
LL77 7TW

APPENDIX A: LIST OF DRAWINGS, DOCUMENTS AND DEPARTURES FROM STANDARD

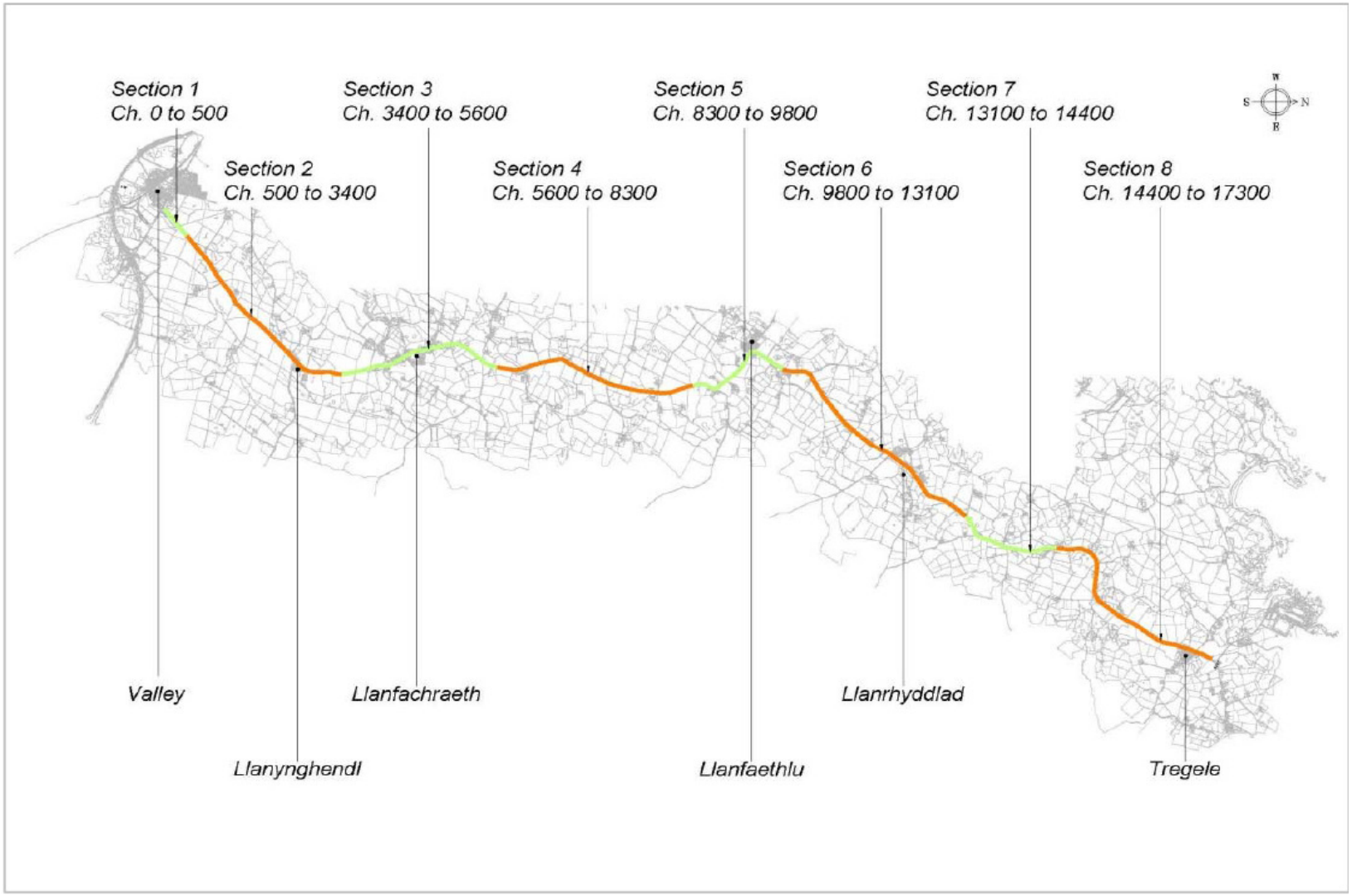
The following documents were submitted as part of the Stage 1 Road Safety Audit:

Document No.	Rev.	Description	Date
WN02.05-URS-00-DRG-21400-P1	P1	Section 2 General Arrangement Sheet 1 of 3	27.05.15
WN02.05-URS-00-DRG-21401-P1	P1	Section 2 General Arrangement Sheet 2 of 3	27.05.15
WN02.05-URS-00-DRG-21402-P1	P1	Section 2 General Arrangement Sheet 3 of 3	27.05.15
WN02.05-URS-00-DRG-21420-P1	P1	Section 2 Existing Services Sheet 1 of 3	27.05.15
WN02.05-URS-00-DRG-21421-P1	P1	Section 2 Existing Services Sheet 2 of 3	27.05.15
WN02.05-URS-00-DRG-21422-P1	P1	Section 2 Existing Services Sheet 3 of 3	27.05.15
WN02.05-URS-00-DRG-21500-P1	P1	Section 4 General Arrangement Sheet 1 of 3	27.05.15
WN02.05-URS-00-DRG-21501-P1	P1	Section 4 General Arrangement Sheet 2 of 3	27.05.15
WN02.05-URS-00-DRG-21502-P1	P1	Section 4 General Arrangement Sheet 3 of 3	27.05.15
WN02.05-URS-00-DRG-21410-P1	P1	Section 2 Proposed Alignment Sheet 1 of 3	27.05.15
WN02.05-URS-00-DRG-21411-P1	P1	Section 2 Proposed Alignment Sheet 2 of 3	27.05.15
WN02.05-URS-00-DRG-21412-P1	P1	Section 2 Proposed Alignment Sheet 3 of 3	27.05.15
WN02.05-URS-00-DRG-21510-P1	P1	Section 4 Proposed Alignment Sheet 1 of 3	27.05.15
WN02.05-URS-00-DRG-21511-P1	P1	Section 4 Proposed Alignment Sheet 2 of 3	27.05.15
WN02.05-URS-00-DRG-21512-P1	P1	Section 4 Proposed Alignment Sheet 3 of 3	27.05.15
WN02.05-URS-00-DRG-21520-P1	P1	Section 4 Existing Services Sheet 1 of 3	27.05.15
WN02.05-URS-00-DRG-21521-P1	P1	Section 4 Existing Services Sheet 2 of 3	27.05.15
WN02.05-URS-00-DRG-21522-P1	P1	Section 4 Existing Services Sheet 3 of 3	27.05.15
WN02.05-URS-00-DRG-21600-P1	P1	Section 6 General Arrangement Sheet 1 of 4	27.05.15

Document No.	Rev.	Description	Date
WN02.05-URS-00-DRG-21601-P1	P1	Section 6 General Arrangement Sheet 2 of 4	27.05.15
WN02.05-URS-00-DRG-21602-P1	P1	Section 6 General Arrangement Sheet 3 of 4	27.05.15
WN02.05-URS-00-DRG-21603-P1	P1	Section 6 General Arrangement Sheet 4 of 4	27.05.15
WN02.05-URS-00-DRG-21610-P1	P1	Section 6 Proposed Alignment Sheet 1 of 4	27.05.15
WN02.05-URS-00-DRG-21611-P1	P1	Section 6 Proposed Alignment Sheet 2 of 4	27.05.15
WN02.05-URS-00-DRG-21612-P1	P1	Section 6 Proposed Alignment Sheet 3 of 4	27.05.15
WN02.05-URS-00-DRG-21613-P1	P1	Section 6 Proposed Alignment Sheet 4 of 4	27.05.15
WN02.05-URS-00-DRG-21620-P1	P1	Section 6 Existing Services Sheet 1 of 4	27.05.15
WN02.05-URS-00-DRG-21621-P1	P1	Section 6 Existing Services Sheet 2 of 4	27.05.15
WN02.05-URS-00-DRG-21622-P1	P1	Section 6 Existing Services Sheet 3 of 4	27.05.15
WN02.05-URS-00-DRG-21623-P1	P1	Section 6 Existing Services Sheet 4 of 4	27.05.15
WN02.05-URS-00-DRG-21700-P1	P1	Section 8 General Arrangement Sheet 1 of 2	17.07.15
WN02.05-URS-00-DRG-21701-P1	P1	Section 8 General Arrangement Sheet 2 of 2	17.07.15
WN02.05-URS-00-SCH-21210-P1	P1	Alternative Site Entrance (South) Location Plan	15.04.15
WN02.05-URS-00-SCH-21211-P1	P1	Alternative Site Entrance (South) General Arrangement	15.04.15
WN02.05-URS-00-SCH-21212-P1	P1	Alternative Site Entrance (South) Indicative Levels	15.04.15
WN02.05-URS-00-SCH-21213-P1	P1	Alternative Site Entrance (South) Long Sections	15.04.15
-	-	Section 8 Cycle Route	-
-	-	Section 8 Cycle Route Cross Section	-
WN02.05-URS-00-DRG-21810-P1	P1	A5025 Highways Improvements Proposed Speed Limit Sheet 1 of 4	27.05.15
WN02.05-URS-00-DRG-21811-P1	P1	A5025 Highways Improvements Proposed Speed Limit Sheet 2 of 4	27.05.15

Document No.	Rev.	Description	Date
WN02.05-URS-00-DRG-21812-P1	P1	A5025 Highways Improvements Proposed Speed Limit Sheet 3 of 4	27.05.15
WN02.05-URS-00-DRG-21813-P1	P1	A5025 Highways Improvements Proposed Speed Limit Sheet 4 of 4	28.04.15
WN02.05-URS-REP-005	01	WYLFA A5025 Highways Improvements: Brief for Stage 1 Road Safety Audit	24.06.15
		10 year collision data for the A5025 between Valley and Cemaes	

APPENDIX B: EXTENTS OF THE SCHEME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Ch. 0 to 500
Section 2
Ch. 500 to 3400
Section 3
Ch. 3400 to 5600
Section 4
Ch. 5600 to 8300
Section 5
Ch. 8300 to 9800
Section 6
Ch. 9800 to 13100
Section 7
Ch. 13100 to 14400
Section 8
Ch. 14400 to 17300
W
S
N
E
Valley
Llanynghendl
Llanfachraeth
Llanfaethlu
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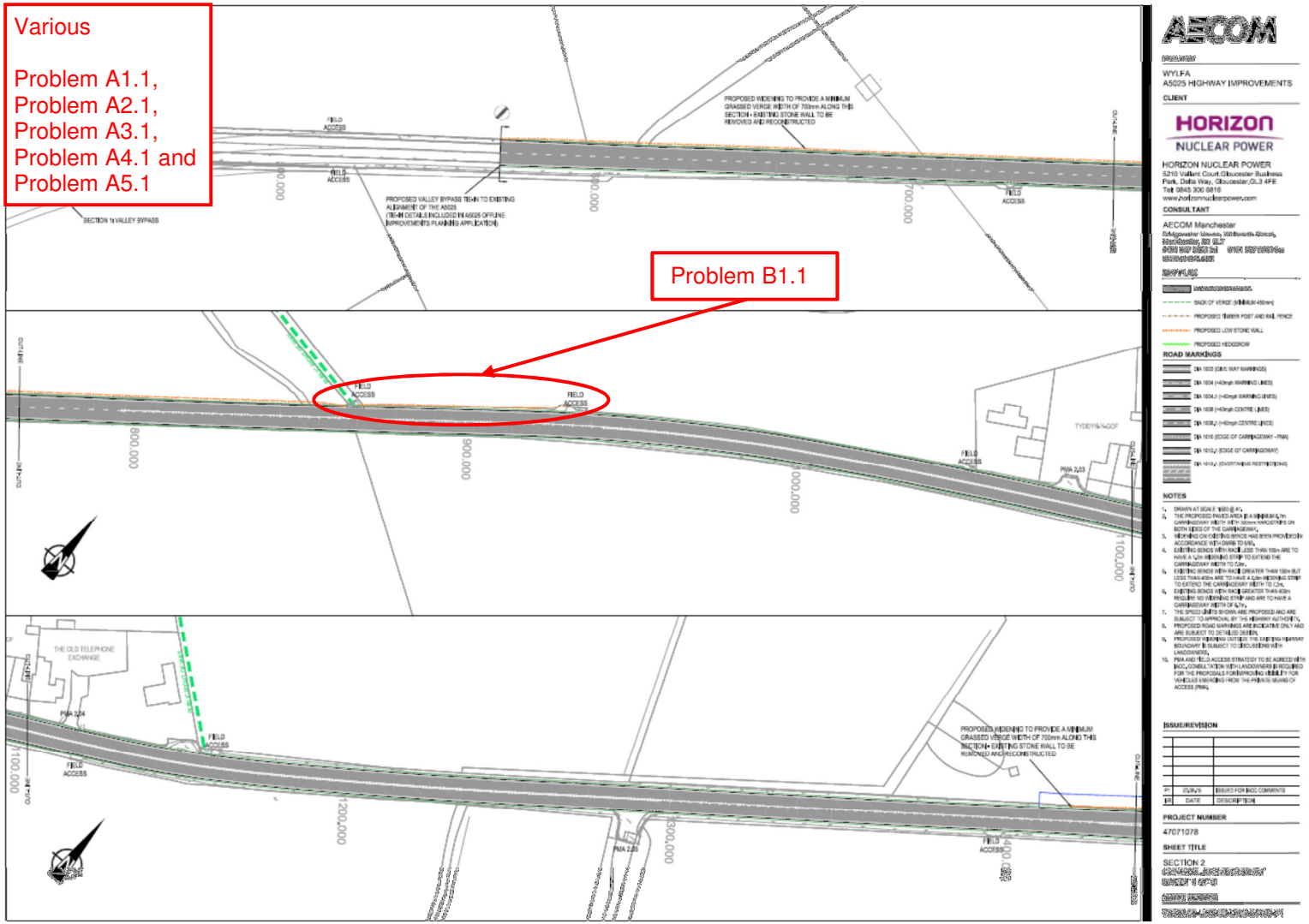
Tregele

APPENDIX C: PROBLEM LOCATION PLANS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Problem A2.1,
Problem A3.1,
Problem A4.1 and
Problem A5.1
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PROPOSED VALLEY BYPASS TIE-IN TO EXISTING ALIGNMENT OF THE A5025 (TIE-IN DETAILS INCLUDED IN A5025 OFFLINE IMPROVEMENTS PLANNING APPLICATION)
SECTION 1 VALLEY BYPASS
FIELD ACCESS
THE OLD TELEPHONE EXCHANGE
PWA 2/24
PWA 2/25
PWA 2/23
AECOM
WYLFA
A5025 HIGHWAY IMPROVEMENTS
CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
ROAD MARKINGS
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ISSUE/REVISION
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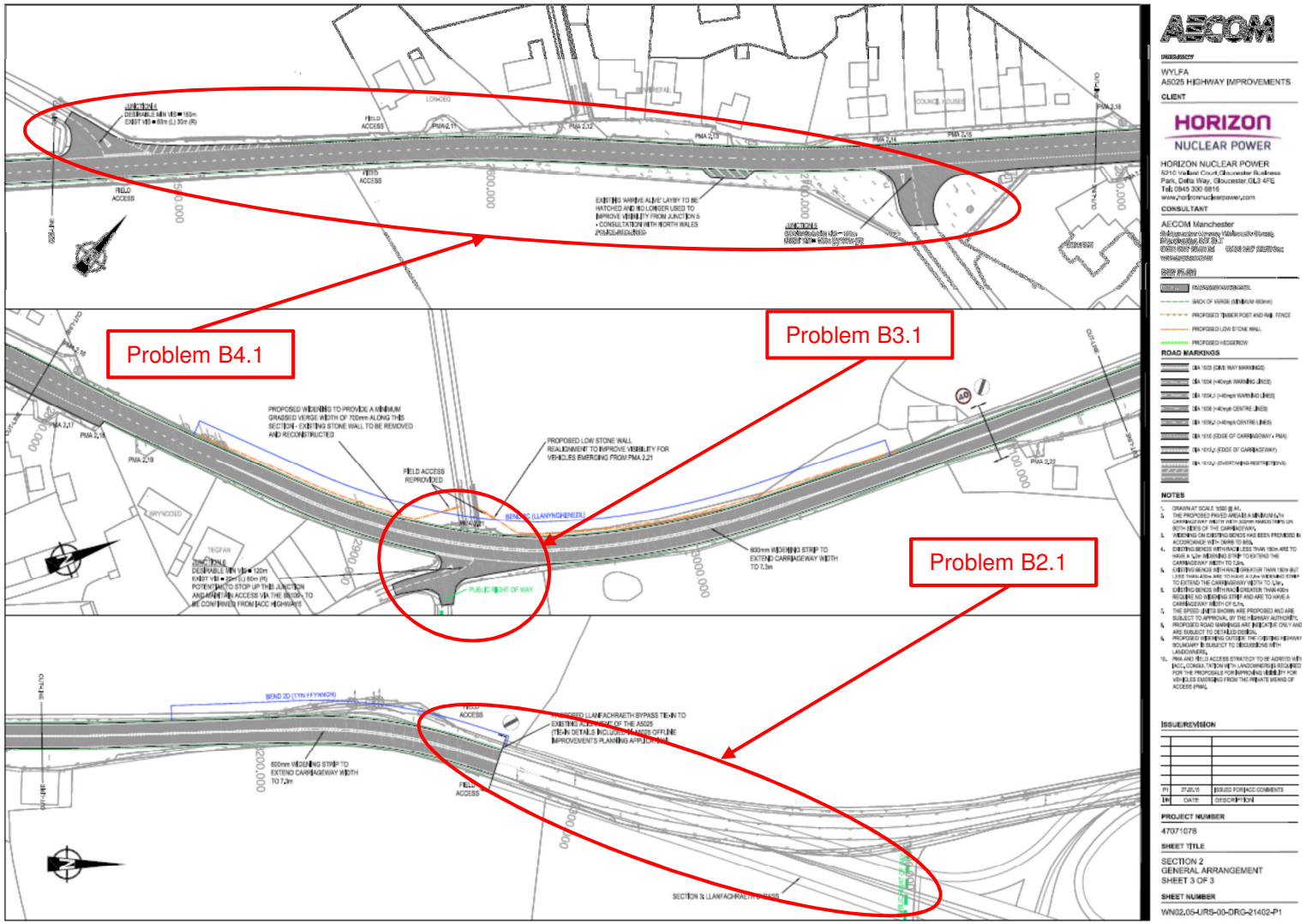
SHEET TITLE
SECTION 2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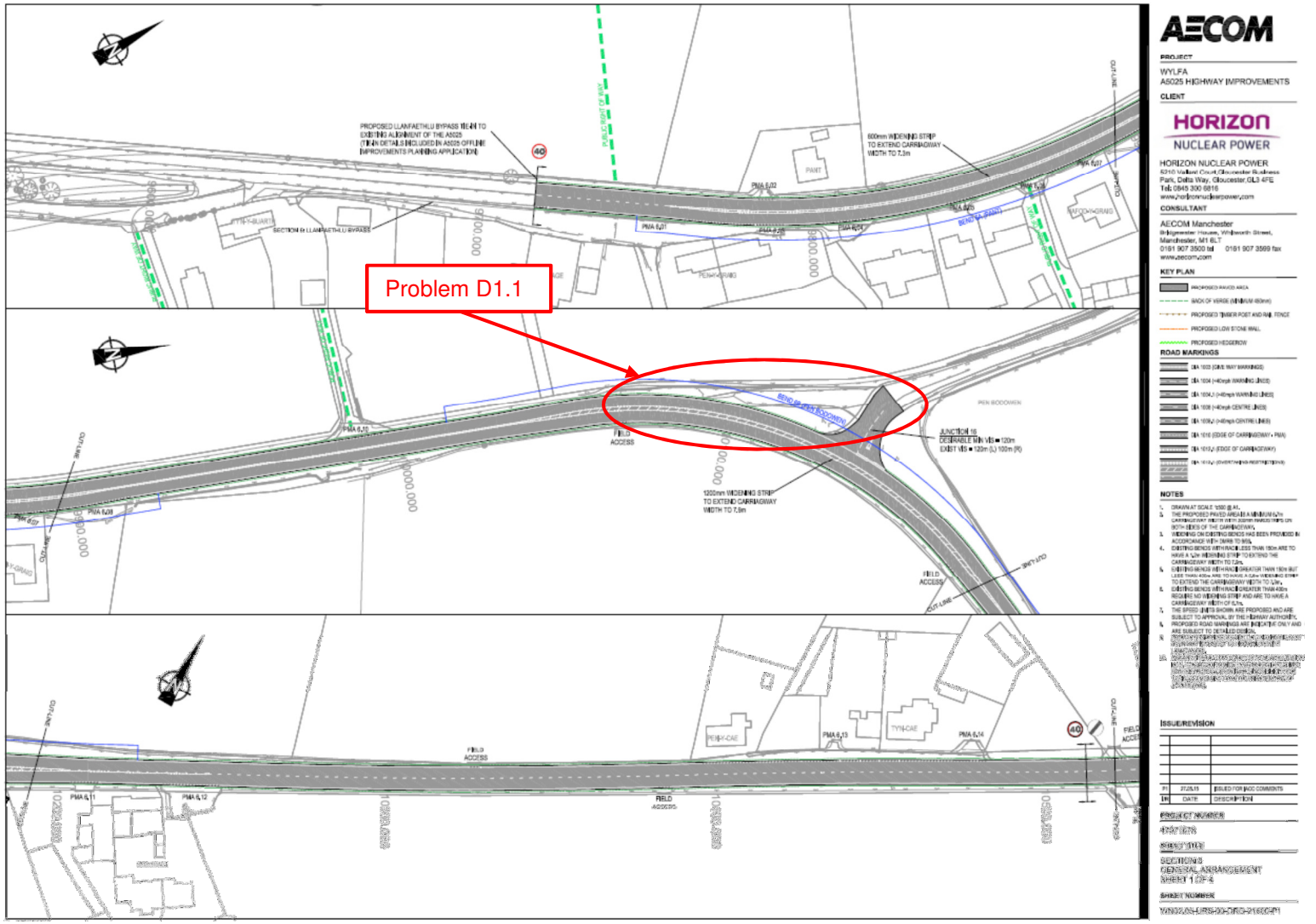
Problem B2.1
WYLFA
A5025 HIGHWAY IMPROVEMENTS
HORIZON NUCLEAR POWER
SECTION 2
GENERAL ARRANGEMENT
SHEET 3 OF 3
WN02.05-URS-00-DRG-21402-P1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NUCLEAR POWER
HORIZON NUCLEAR POWER
CONSULTANT
AECOM Manchester
KEY PLAN
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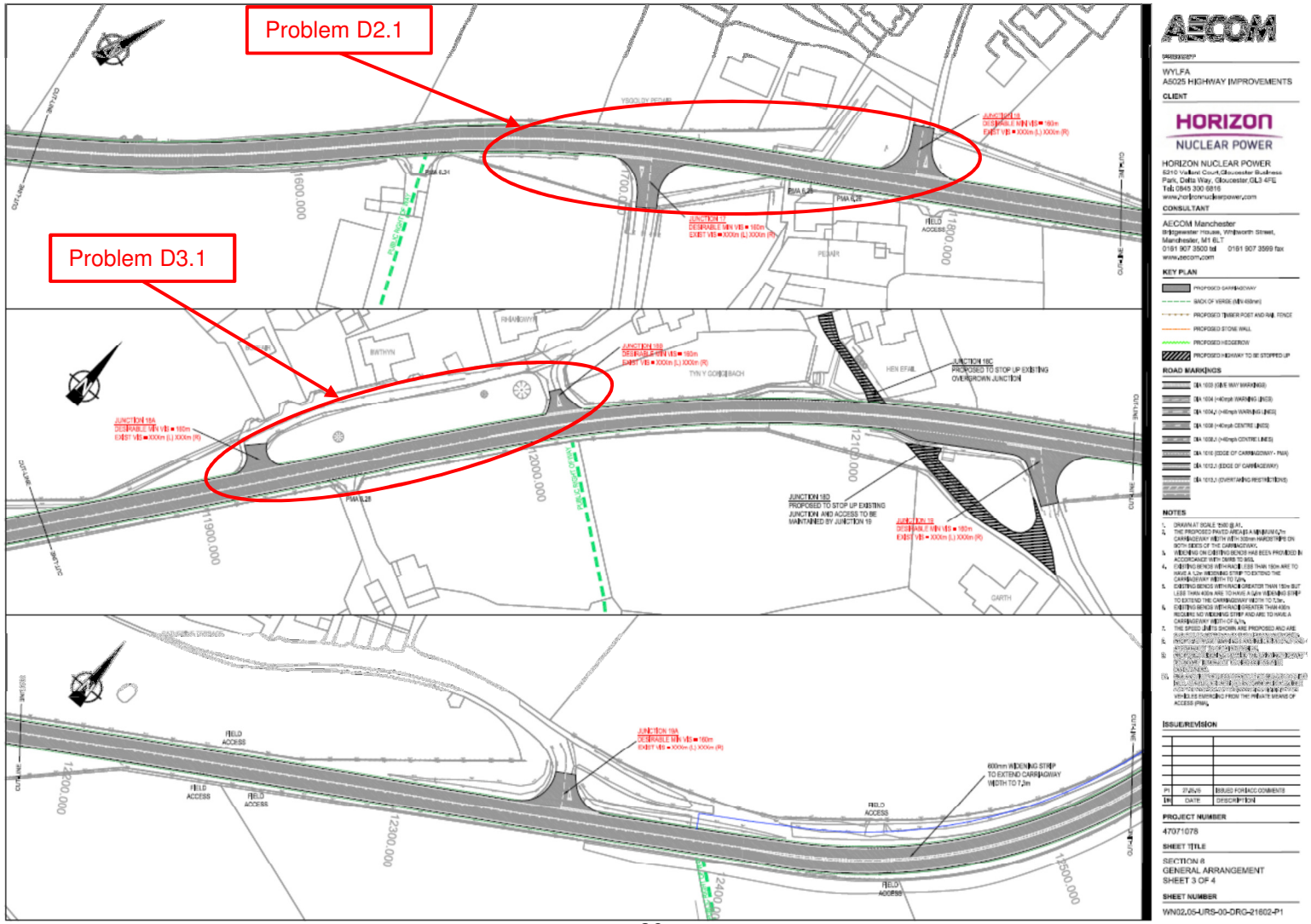
SECTION 3
GENERAL ARRANGEMENT
SHEET 1 OF 4
SHEET NUMBER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CLIENT
HORIZON
NUCLEAR POWER
HORIZON NUCLEAR POWER
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ROAD MARKINGS
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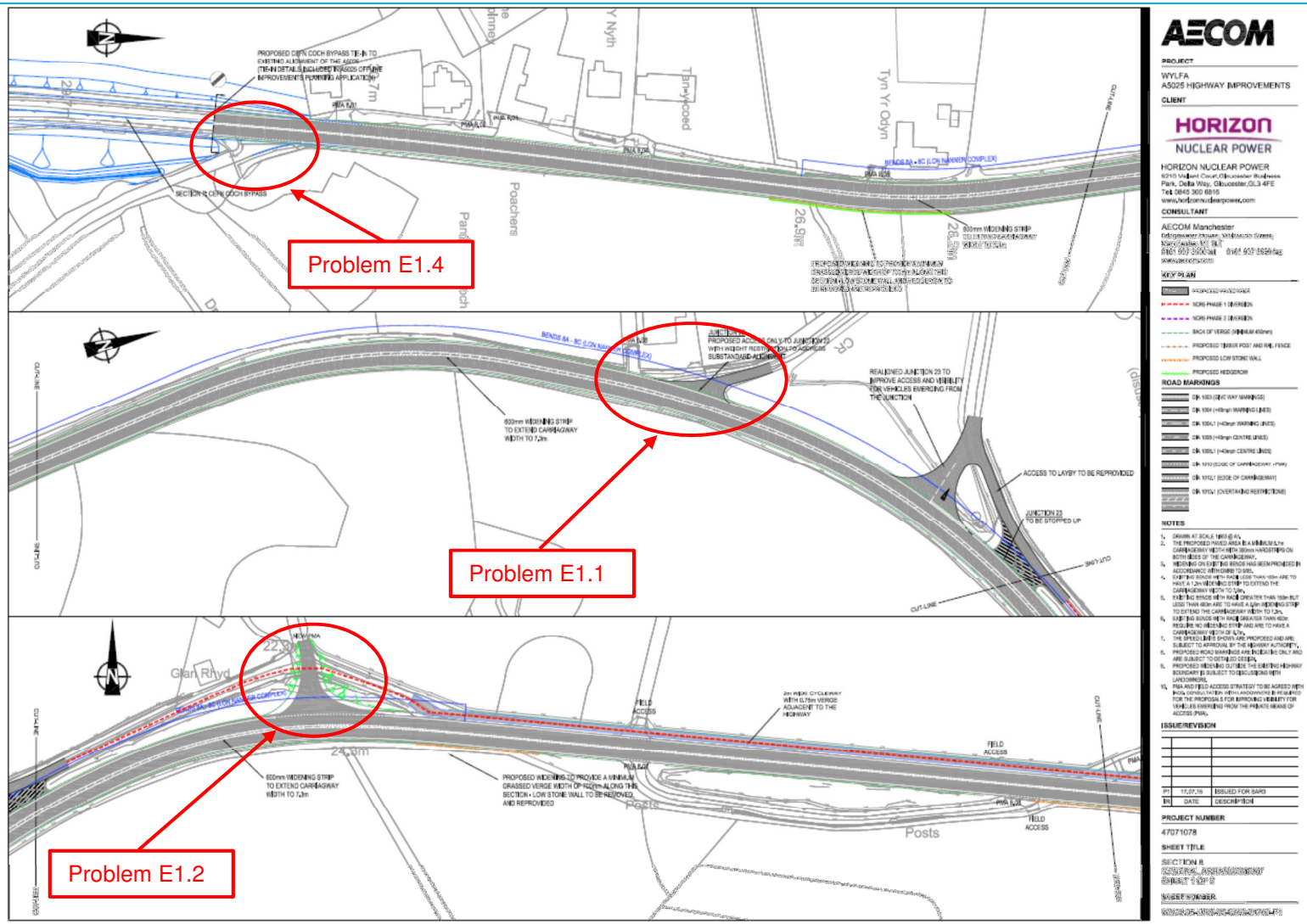
SHEET TITLE
SECTION R
GENERAL ARRANGEMENT
SHEET 3 OF 4
SHEET NUMBER
WN02.05-URS-00-DRG-21602-P1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NUCLEAR POWER
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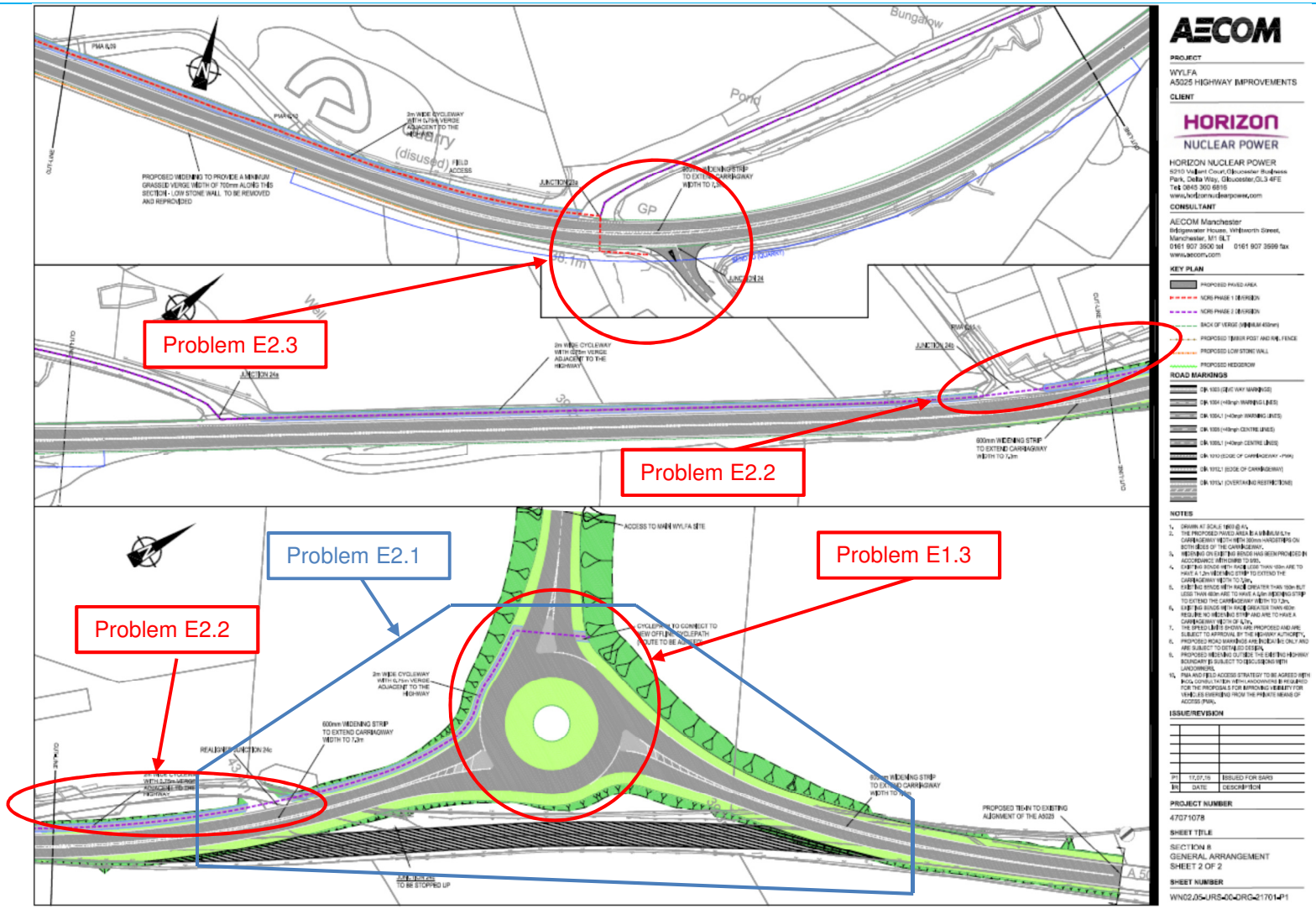
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KEY PLAN
ROAD MARKINGS
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PROJECT NUMBER
47071078
SHEET TITLE
SECTION 8
GENERAL ARRANGEMENT
SHEET 2 OF 2
SHEET NUMBER

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