


**APPENDIX 2.5 - ROAD SAFETY AUDIT (RSA) FOR SECTIONS 2-5 OF THE STRATEGIC
TRAFFIC MANAGEMENT PLAN (STMP) FOR MID WALES WIND FARMS**

MID WALES WIND FARMS SECTIONS 2-5

PROPOSED HIGHWAY WORKS TO FACILITATE THE MOVEMENT OF ABNORMAL INDIVISIBLE LOADS ARRANGEMENT

Stage 1 Road Safety Audit

AUGUST 2013

Revision Status	Prepared by: (Name)	Checked by: (Name)	Approved by: (Signature)	Date Approved:
Original	Mark Barrett	Ian Medd		3 September 2013
Designer's Response				
Authority's Response				
Audit Response				

Client:
SMA

Engineer:
gm
Traffic Consultants Ltd

Date: 3 September 2013

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APPENDIX A Location Plan

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1.0 INTRODUCTION

1.1 General

- 1.1.1 This report results from a Stage 1 Road Safety Audit (RSA) carried out on the various off-site highway works to enable the transportation of Abnormal Indivisible Loads (AIL's) from Ellesmere Port to Mid Wales (Sections 2-5). The routes are part of a strategic Traffic Management Plan (sTMP) which has been developed to address the likely impact of the transportation of wind turbine components to possible wind farm sites in Mid Wales. All traffic movements associated with the transportation of the wind turbine components will be completed under police escort and be carried out during daylight hours. Where required, oncoming traffic will be stopped to allow AILs to negotiate junctions safely. The design has eliminated the need for vehicles to overrun of footways. Any oversail of footways/cycleways will be controlled by the civilian escort that will be accompanying the abnormal load convoy.
- 1.1.2 The RSA was carried out at the request of Stuart Michael Associates Limited.
- 1.1.3 Gm Traffic Consultants Ltd carried out the Audit between 13th June 2013 and 3rd September 2013. The Auditors were:
- Mark Barrett
Ian Medd
- 1.1.4 The Audit Team is independent of the project design team and has had no other involvement with the project.
- 1.1.5 The report has been prepared in accordance with the Design Manual for Roads and Bridges (DMRB) Highways Directive (HD) 19/03.
- 1.1.6 Whilst reference is made to certain design standards, where safety may be compromised by a reduction in standard, this report is not intended to provide a design check. The Auditors have only reported on matters that might have an adverse effect on road safety in the context of the chosen design. No attempt has been made to comment on the justification of the scheme or the appropriateness of the design. Consequently, the Auditors accept no responsibility for the design or construction of the scheme.
- 1.1.7 The Audit consisted of a desktop study and a site visit, which was carried out between 15th June 2013 and 18th June 2013. It was overcast during the site visits and the road surface was dry. Traffic flows were moderate during the time on site.
- 1.1.8 The recommendations in this report are aimed at addressing the road safety problems; however there may be other alternative acceptable ways to overcome a specific problem, when other practical issues are considered. The recommendations contained herein do not absolve the Designer of his/her responsibilities.
- 1.1.9 The LHA response to the RSA should be formally recorded and reported to the Designer and the RSA Team so that a record of the Audit process is contained in

the *As Built* design pack to be provided and retained by the LHA on final completion.

2.0 ITEMS CONSIDERED

2.1 The Auditors have been provided with a Road Safety Audit Brief (MGH/502/revA – June 2013). Within the brief the following documentation has been provided:

Drawing No.	Rev	Title
108526-FIG-2-1	P2	COMMON SECTION OF ROUTE
108526 FIG 2-2	P2	TRAFFIC FLOWS ALONG COMMON SECTION
108526 FIG 2-3a	P2	PASSING PLACES ALONG COMMON SECTION
108526 FIG 2-3b	P4	PASSING PLACE B5069 SOUTH OF OSWESTRY
108526-FIG 2-3c	P4	PASSING PLACE LLYNCLYS CROSSROADS
108526-FIG 2-3d	P4	PASSING PLACE FOUR CROSSES BYPASS
108526-FIG 2-3e	P4	PASSING PLACE ARDLEEN
108526-FIG 2-3f	P4	PASSING PLACE POOL QUAY DEPOT
108526-FIG 2-3g	P4	PASSING PLACE RHALT LANE/THE MOORS
108526-FIG 2-3h	P4	PASSING PLACE LION QUAY
108526-FIG 2-4a	P2	SWEPT PATH ANALYSIS OVERVIEW ALONG COMMON SECTION
108526-FIG 2-4b	P2	SWEPT PATH ANALYSIS ELLESMERE PORT
108526-FIG 2-4c	P2	SWEPT PATH ANALYSIS BELGRAVE ROUNDABOUT
108526-FIG 2-4d	P2	SWEPT PATH ANALYSIS HALTON ROUNDABOUT
108526-FIG 2-4e	P2	SWEPT PATH ANALYSIS GLEDRID ROUNDABOUT
108526-FIG 2-4f	P2	SWEPT PATH ANALYSIS FIVE CROSSES ROUNDABOUT
108526-FIG 2-4g	P2	SWEPT PATH ANALYSIS OSWESTRY ROUNDABOUT
108526-FIG 2-4h	P2	SWEPT PATH ANALYSIS MILE END ROUNDABOUT

Drawing No.	Rev	Title
108526-FIG 2-4i	P2	SWEPT PATH ANALYSIS BUTTINGTON CROSS
108526-FIG 2-6	P2	STRUCTURES ALONG COMMON SECTION
108526-FIG 3-1	P2	ROUTE FROM WELSHPOOL TO SSA B (NORTH)
108526-FIG 3-2	P2	TRAFFIC FLOWS ALONG ROUTE FROM WELSHPOOL TO SSA B (NORTH)
108526-FIG 3-3a	P4	PASSING PLACES ALONG ROUTE FROM WELSHPOOL TO SSA B (NORTH)
108526-FIG 3-3b	P4	PASSING PLACE RAVEN STREET ROUNDABOUT
108526-FIG 3-3c	P4	PASSING PLACE MIDDLE SYLFAEN
108526-FIG 3-3d	P4	PASSING PLACE GELLI LANE
108526-FIG 3-3e	P4	PASSING PLACE GLASCOED
108526-FIG 3-3f	P3	PASSING PLACE LLANFAIR CAEREINION
108526-FIG 3-3g	P5	PASSING PLACE EINION
108526-FIG 3-3h	P4	PASSING PLACE GYLFYLCHAU
108526-FIG 3-3i	P4	PASSING PLACE FOEL
108526-FIG 3-3j	P4	PASSING PLACE DOL-Y-MAEN
108526-FIG 3-4a	B	SWEPT PATH ANALYSIS OVERVIEW ALONG ROUTE FROM WELSHPOOL TO SSA B (NORTH)
108526-FIG 3-4b	P2	SWEPT PATH ANALYSIS WELSHPOOL BYPASS ROUNDABOUT AND SEVERN STREET ROUNDABOUT
108526-FIG 3-4c	P2	SWEPT PATH ANALYSIS A490 ROUNDABOUT AND RAVEN STREET
108526-FIG 3-4d	P2	SWEPT PATH ANALYSIS B4389 HENIARTH

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Drawing No.	Rev	Title
108526-FIG 3-4e	P2	SWEPT PATH ANALYSIS A458 NEAR MELIN-Y-DDOL
108526-FIG 3-4f	P2	SWEPT PATH ANALYSIS A458 WEST OF FOEL
108526-FIG 3-6	P2	STRUCTURES ALONG ROUTE FROM WELSHPOOL TO SSA B (NORTH)
6009/001	A	ACCESS CH.0 - 500m GENERAL ARRANGEMENT-SH.1
6009/003	A	LINES & SIGNS DETAILS FOR MAIN JUNCTION
6009/010	A	ACCESS CH.0-500m LONGTIUDINAL SECTION
6009/011	A	ACCESS CH.0-500m CROSS SECTIONS
108526-FIG 4-1	P2	ROUTE FROM WELSHPOOL TO NEWTOWN
108526-FIG 4-2	P2	TRAFFIC FLOWS ROUTE FROM WELSHPOOL TO NEWTOWN
108526-FIG 4-3a	P3	PASSING PLACES ALONG ROUTE FROM WELSHPOOL TO NEWTOWN
108526-FIG 4-3b	P4	PASSING PLACE A483 /A490 ROUNDABOUT
108526-FIG 4-3c	P5	PASSING PLACE LUGGY BROOK
108526-FIG 4-3d	P5	PASSING PLACE LLIFIOR BRIDGE
108526-FIG 4-3f	P5	PASSING PLACE NEWTOWN EAST
108526-FIG 4-4a	B	SWEPT PATH ANALYSIS OVERVIEW ALONG ROUTE FROM WELSHPOOL TO NEWTOWN
108526-FIG 4-4b	P2	SWEPT PATH ANALYSIS WELSHPOOL BYPASS ROUNDABOUT
108526-FIG 4-4c	P2	SWEPT PATH ANALYSIS WELSHPOOL BYPASS SOUTH
108526- FIG 4-6	P2	STRUCTURES ALONG ROUTE FROM WELSHPOOL TO NEWTOWN

Drawing No.	Rev	Title
108526-FIG 5-1	P2	ROUTE FROM NEWTOWN TO SSA B (SOUTH)
108526-FIG 5-2	P2	TRAFFIC FLOWS ALONG ROUTE FROM NEWTOWN TO SSA B (SOUTH)
108526-FIG 5-3a	P3	PASSING PLACES ALONG ROUTE FROM NEWTOWN TO SSA B (SOUTH)
108526-FIG 5-3b	P6	PASSING PLACE LLANIDLOES ROAD
108526-FIG 5-3c	P5	PASSING PLACE CAERSWS
108526-FIG 5-3d	P4	PASSING PLACE PONTDOLGOCH
108526-FIG 5-3e	P4	PASSING PLACE TALERDDIG
108526-FIG 5-3f	P4	PASSING PLACE DOLFACH
108526-FIG 5-3g	P5	PASSING PLACE NEWTOWN
108526-FIG 5-4a	B	SWEPT PATH ANALYSIS OVERVIEW ALONG ROUTE FROM NEWTOWN TO SSA B (SOUTH)
108526-FIG 5-4b	P2	SWEPT PATH ANALYSIS A483/A489
108526-FIG 5-4c	P2	SWEPT PATH ANALYSIS NEWTOWN A489 ROUNDABOUT
108526-FIG 5-4d	P2	SWEPT PATH ANALYSIS A489/A470 JUNCTION CAERSWS
108526-FIG 5-4e	P2	SWEPT PATH ANALYSIS A470 PONTDOLGOCH
108526-FIG 5-4f	P2	SWEPT PATH ANALYSIS A470 PLAS LLYSYN
108526-FIG 5-4g	P2	SWEPT PATH ANALYSIS A470 TALERDIDD
108526-FIG 5-4h	P2	SWEPT PATH ANALYSIS A470 TIRYMYNACH
108526-FIG 5-4i	P2	34M BLADE DELIVERY SWEPT PATH ANALYSIS A483/A489 JUNCTION
108526-FIG 5-4j	P2	34M BLADE DELIVERY SWEPT PATH ANALYSIS NEWTOWN A489 ROUNDABOUT

Drawing No.	Rev	Title
108526-FIG 5-4k	P2	34M BLADE DELIVERY SWEPT PATH ANALYSIS A489/A470 CAERSWS
108526-FIG 5-4l	P2	34M BLADE DELIVERY SWEPT PATH ANALYSIS A470 PONTDOLGOCH
108526-FIG 5-4m	P2	34M BLADE DELIVERY SWEPT PATH ANALYSIS A470 PLAS LLYSYN
108526-FIG 5-4n	P2	34m BLADE DELIVERY SWEPT PATH ANALYSIS A470 TALERDIGG
108526-FIG 5-4o	P2	34m BLADE DELIVERY SWEPT PATH ANALYSIS A470 TIRYMYNACH
108526-FIG 5-4p	P2	34m BLADE DELIVERY VEHICLE INFORMATION
108526-FIG 5-4q	P2	PASSING PLACE SWEPT PATH ANALYSIS CAERSWS
108526-FIG 5-6a	P1	STRUCTURES ALONG ROUTE FROM NEWTOWN TO B SSA (SOUTH)
108526-FIG 5-6b	P1	CROSS SECTION THROUGH NANT OER BRIDGE
108526-FIG 5-6c	P1	CROSS SECTION THROUGH PONTDOLGOCH BRIDGE

2.2 The Audit Team have not been made aware of any Departure from Standards.

3.0 MATTERS ARISING FROM THIS STAGE 1 AUDIT.

3.1 SECTION 2 – Ellesmere Port to Welshpool

3.1.1 LOCATION: Passing place B5069 South of Oswestry (Figure 2-3b)

No problems were identified at this stage.

3.1.2 LOCATION: Passing place Llynclys Crossroads (Figure 2-3c)

No problems were identified at this stage.

3.1.3 LOCATION: Passing place Arddleen (Figure 2-3e)

No problems were identified at this stage.

3.1.4 LOCATION: Passing place Pool Quay Depot (Figure 2-3f)

No problems were identified at this stage.

3.1.5 LOCATION: Passing place Rhalt Lane/The Moors (Figure 2-3g)

No problems were identified at this stage.

3.1.6 LOCATION: Ellesmere Port – Access on to Merseyton Road (Figure 2-4b)

No problems were identified at this stage.

3.1.7 LOCATION: Belgrave Roundabout (Figure 2-4c)

SUMMARY: Signs in over-run area

Since the drawing was produced new chevron (Chevroflex) has been installed within the proposed over-run area. This may affect the swept path of the transportation vehicles, resulting in the vehicle unable to negotiate the roundabout in one forward movement which may create a hazard for other road users.

RECOMMENDATION

At the detail design stage relocate the chevron signing.

3.1.8 LOCATION: Belgrave Roundabout (Figure 2-4c)

SUMMARY: Miss use of over-run area

No indication is provided of any proposals to deter normal traffic from using the proposed over-run area. This may result in traffic negotiating the southbound A483 approach at excessive speed resulting in an increased risk of conflict.

RECOMMENDATION

Ensure the surface treatment of over-run area is such that it does not indicate it to be part of the circulatory carriageway and is closed for general traffic when not in use for the transportation vehicles.

3.1.9 LOCATION: Halton Roundabout (Figure 2-4d)

SUMMARY: Miss use of over-run area

No indication is provided of any proposals to deter normal traffic from using the proposed over-run area. This may result in traffic negotiating the southbound A483 approach at excessive speed resulting in an increased risk of conflict.

RECOMMENDATION

Ensure the surface treatment of over-run area is such that it does not indicate it to be part of the circulatory carriageway and is closed for general traffic when not in use for the transportation vehicles.

3.1.10 LOCATION: Five Crosses Roundabout (Figure 2-4f)

No problems were identified at this stage.

3.1.11 LOCATION: Oswestry Roundabout (Figure 2-4g)

No problems were identified at this stage.

3.1.12 LOCATION: Mile End Roundabout (Figure 2-4h)

No problems were identified at this stage.

3.1.13 LOCATION: Buttington Cross (Figure 2-4i)

No problems were identified at this stage.

3.2 SECTION 3 – Welshpool to SSA B (North)

3.2.1 LOCATION: High Street, Welshpool

SUMMARY: New traffic island may restrict convoy

Since the drawing was produced a new traffic management layout has been implemented in the centre of Welshpool. A new traffic island has been introduced at the junction of High Street and Jehu Road. The combination of the new island and on-street parking may impede the movement of the convoy and increase the risk of conflicts with other road users.



RECOMMENDATION

Establish if the convoy can negotiate safely past the traffic island if the on-street parking is controlled. Alternatively, review the route through Welshpool to establish if there is another road for the convoy to use.

3.2.2 LOCATION: Passing place Middle Sylfaen (Figure 3-3c)

No problems were identified at this stage.

3.2.3 LOCATION: Passing place Gelli Lane (Figure 3-3d)

No problems were identified at this stage.

3.2.4 LOCATION: Passing place Glascoed (Figure 3-3e)

No problems were identified at this stage.

3.2.5 LOCATION: Passing place Llanfair Caereinion (Figure 3-3f)

No problems were identified at this stage.

3.2.6 LOCATION: Passing place Einion (Figure 3-3g)

No problems were identified at this stage.

3.2.7 LOCATION: Passing place Gylfylchau (Figure 3-3h)

No problems were identified at this stage.

3.2.8 LOCATION: Passing place Foel (Figure 3-3i)

No problems were identified at this stage.

3.2.9 LOCATION: Passing place Dol-y-Maen (Figure 3-3j)

No problems were identified at this stage.

3.2.10 LOCATION: Welshpool By-Pass Roundabout and Severn Street Roundabout (Figure 3-4b)

No problems were identified at this stage.

3.2.11 LOCATION: A490 Roundabout and Raven Street (Figure 3-4c)

No problems were identified at this stage.

3.2.12 LOCATION: B4389 Heniarth (Figure 3-4d)

No problems were identified at this stage.

3.2.13 LOCATION: A458 near Melin-y-Ddol (Figure 3-4e)

No problems were identified at this stage.

3.2.14 LOCATION: A458 West of Foel (Figure 3-4f)

No problems were identified at this stage.

- 3.3 SECTION 4 – Welshpool to Newtown
 - 3.3.1 LOCATION: Passing place A483/A490 Roundabout (Figure 4-3b)
No problems were identified at this stage.
 - 3.3.2 LOCATION: Passing place Luggy Brook (Figure 4-3c)
No problems were identified at this stage.
 - 3.3.3 LOCATION: Passing place Llifior Bridge (Figure 4-3d)
No problems were identified at this stage.
 - 3.3.4 LOCATION: Passing place Newtown East (Figure 4-3e)
No problems were identified at this stage.
 - 3.3.5 LOCATION: Welshpool By-pass Roundabout (Figure 4-4b)
No problems were identified at this stage.
 - 3.3.6 LOCATION: Welshpool By-Pass South (Figure 4-4c)
No problems were identified at this stage.

3.4 SECTION 5 – Newtown to SSA B (South)

3.4.1 LOCATION: Passing place Llanidloes Road (Figure 5-3b)

No problems were identified at this stage.

3.4.2a LOCATION: Passing place Caersws (Figure 5-3c)

SUMMARY: Street furniture in passing place

The feeder pillar associated with the loop detectors in the A489 will be affected by the works and could be struck by transportation vehicles. This could create a hazard for other road users.

RECOMMENDATION

Reposition to a location that will not restrict the movement of the transportation vehicles.

3.4.3 LOCATION: Passing place Pontdolgoch (Figure 5-3d)

No problems were identified at this stage.

3.4.4 LOCATION: Passing place Talerddig (Figure 5-3e)

No problems were identified at this stage.

3.4.5 LOCATION: Passing place Dolfach (Figure 5-3f)

No problems were identified at this stage.

3.4.6 LOCATION: Passing place Newtown (Figure 5-3g)

No problems were identified at this stage.

3.4.7 LOCATION: A483/A489 junction (Figure 5-4b)

No problems were identified at this stage.

3.4.8 LOCATION: A489 roundabout, Newtown (Figure 5-4c)

SUMMARY: Miss use of over-run area

No indication is provided of any proposals to deter normal traffic from using the proposed over-run area. This may result in traffic negotiating the eastbound A489 approach at excessive speed resulting in an increased risk of conflict.

RECOMMENDATION

Ensure the surface treatment of over-run area is such that it does not indicate it to be part of the circulatory carriageway and is closed for general traffic when not in use for the transportation vehicles.

3.4.9 LOCATION: A470 Pontdolgoch (Figure 5-4e)

No problems were identified at this stage.

3.4.10 LOCATION: A470 Plas Llysyn (Figure 5-4f)

No problems were identified at this stage.

3.4.11 LOCATION: A470 Talerdigg (Figure 5-4g)

No problems were identified at this stage.

3.4.12 LOCATION: A470 Tirymynach (Figure 5-4h)

No problems were identified at this stage.

4.0 GENERAL MATTERS

4.1 SUMMARY: Overhanging vegetation.

The presence of overhanging vegetation along the route may create a hazard resulting in transportation vehicles striking overhanging branches.

RECOMMENDATION

The route should be inspected immediately prior to use and any vegetation likely to cause a hazard removed.

4.2 SUMMARY: Misuse of passing place lay-bys.

No indication is given of any measures to prevent misuse of the proposed passing places. Unauthorised traffic using the passing places/lay-bys could prevent convoy system using the facility. This could result in increased queues and subsequent risk to other road users.

RECOMMENDATION

Provide measures to prevent unauthorised use of the passing places to ensure they are clear prior to the arrival of the convoy.

4.3 SUMMARY: Forward visibility to back of traffic queues.

The sinuous alignment of many sections along the route, in particular where the convoy turns right from the A489 east of Newtown to the unclassified road, and unpredictable nature of traffic flows could result in the forward visibility to any queuing traffic being limited. This could result in rear end shunt conflicts.

RECOMMENDATION

At detail design stage provide temporary warning signs alerting motorists to possible queuing at those locations where there will be restricted forward visibility to any queuing traffic.

5.0 AUDITOR STATEMENT

5.1 I certify that this audit has been carried out with reference to HD 19/03.

AUDIT TEAM LEADER

Mark Barrett

gm Traffic Consultants Ltd

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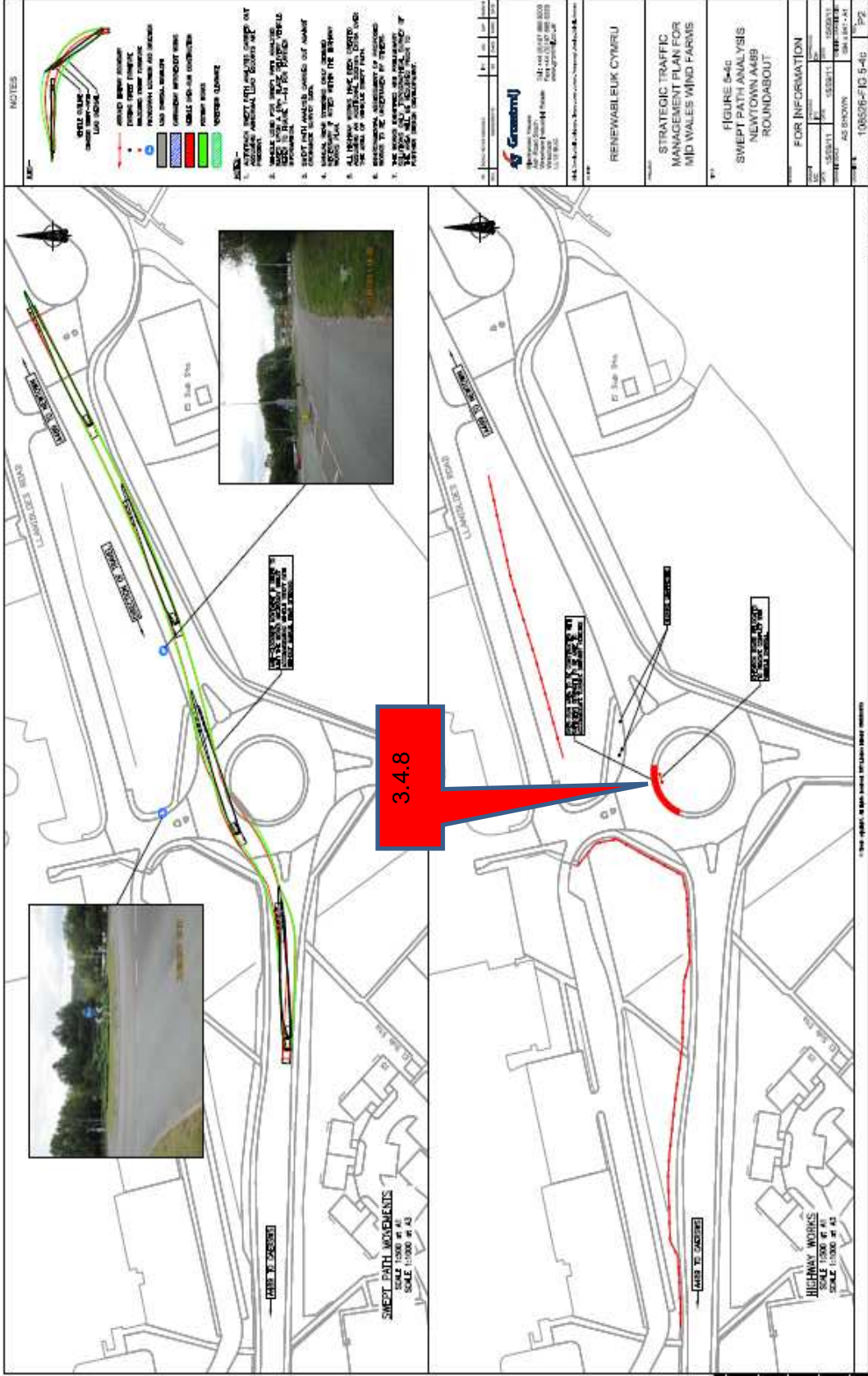
AUDIT TEAM MEMBER

Ian Medd



Signed:

Date: 3 September 2013



APPENDIX B: DESIGNERS RESPONSE

Auditors: Mark Barrett (Team Leader) and Ian Medd (Team Member).

Scheme: Mid Wales Wind Farms – Sections 2-5

Proposed Highway Works to Facilitate the Movement of Abnormal Indivisible Loads

Date Audit Completed: 3 September 2013

This response is to a Stage 1 Road Safety Audit to the design standard detailed within HD19/03 of Volume 5, Section 2, Part 2, of the Design Manual for Roads and Bridges, as detailed by the Highways Agency.

Problem no. in safety audit report	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Alternative measure (detail description)
3.1.7			
3.1.8			
3.1.9			
3.2.1			
3.4.2a			
3.4.8			
4.1			
4.2			
4.3			

Principal Engineer’s Statement:

Road Safety Audit for Mid Wales Wind Farms – Sections 2-5

Proposed Highway Works to Facilitate the Movement of Abnormal Indivisible Loads

I certify that I have considered the items that have arisen in the Stage 1 Road Safety Audit Report and I am content to accept all of its recommendations except for the ones listed above. I have stated my reasons for not accepting them and I seek the Chief Engineer’s endorsement of my proposals.

..... Date.....

Principal Engineer

Chief Engineer’s Decision:

I accept these proposals by the Principal Engineer.

..... Date.....

Chief Engineer