



Burnley Pendle Growth Corridor Junction P Dunkenhalgh Way / Petre Road Junction

Lancashire County Council

Stage 1 Road Safety Audit

CA307/ 1328|0

7 August 2015



Burnley Pendle Growth Corridor Junction P Dunkenhalth Way / Petre Road Junction

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Figure A.1 Flag sign opposite Petre Road, obscured by vegetation

Figure A.2 On street parking on Blackburn Road, on westbound approach to Petre junction

Figure A.3 Advance Direction Sign on westbound approach to the junction obscured by adjacent trees

Figure A.4 Vegetation overgrowing the footway to the south of Blackburn Road

The cover photograph shows a view looking north towards the junction.

1. Introduction

- 1.1 Jacobs has been commissioned by Lancashire County Council (LCC) to carry out a Stage 1 Road Safety Audit (RSA) on the proposed alterations to the junction of Dunkenhalth Way / Petre Road.
- 1.2 The scheme involves the signalisation of an existing T-Junction.
- 1.3 This is the first RSA to be carried out on this proposed scheme.
- 1.4 The audit took place on site and at the Shrewsbury office of Jacobs and was carried out in the Safety Engineering Section. The Audit was carried out by:

Paul Bartley, Traffic and Safety Engineering, Jacobs, Shrewsbury

Ciaron Morgan, Traffic and Safety Engineering, Jacobs, Shrewsbury

Dan Byles, Traffic and Safety Engineering, Jacobs, Shrewsbury (Office based)

- 1.5 The audit was undertaken in accordance with the audit brief and consisted of an examination of the following drawings/documents provided by the project sponsor.

<i>Drawing Number</i>		<i>Drawing Title</i>
1	CHM1MW413-3 Rev 0	Junction P – Dunkenhalth Way / Blackburn Road Junction General Arrangement Area 2

- 1.6 Ciaron Morgan the audit team leader accompanied by Paul Bartley the audit team member carried out a site visit on the afternoon of 21st July 2015. The weather conditions were mild and cloudy and the road surface was dry. The ambient air temperature was 18° centigrade during the site visit. Traffic conditions were light. Digital photographs were taken during the site visit and may be incorporated within the report.
- 1.8 No traffic flow, collision data or speed data was supplied to the auditors for the purpose of this proposed scheme.
- 1.9 The Audit 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. 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 in the compliance of the design to 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.
- 1.10 All of the problems identified are considered to be of sufficient importance to require action.
- 1.11 In addition to safety related concerns a section has been included for general observations.

- 1.12** All signs and road markings are referenced in accordance with the 'Traffic Signs Regulations and General Directions 2002' (TSRGD) and amendments thereof. 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'.
- 1.13** It has been assumed that the authority 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 onus on providing 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 1980 Highways Act, the 2006 Road Traffic Act and increasingly under the more wide-ranging 1998 Human Rights Act.
- 1.14** 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 AADT, speed limits, collision history etc. If this is the case then all workings need to be clearly documented within the project file.
- 1.15** 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.

2. Concerns

2.1 Road Safety Audit Comment

Problem

It is unclear if vehicles will be able to negotiate the junction safely and there is a possibility that it would be difficult for any vehicles larger than a standard car to travel side by side in adjacent lanes. This could result in side swipe type collisions between larger vehicles or between heavy goods vehicles and powered or non-powered two wheeled vehicles.

Summary

Concern is expressed that lane encroachment could result in side swipe type collisions.

Recommendation

It is recommended that it should be demonstrated using Autotrack templates that all vehicle types and manoeuvres are possible using the junction without lane encroachment.

2.2 Road Safety Audit Comment

Problem

Concern is expressed that no signal staging diagrams have been provided for the junction and it is therefore unclear how the right turn movements will be controlled. This could lead to vehicle collisions resulting in injury to motorists.

Summary

Concern is expressed that no signal phasing diagrams have been provided.

Recommendation

It is recommended that the signal phasing diagrams are provided at detailed design.

2.3 Road Safety Audit Comment

Problem

Concern is expressed that the drawing appears to indicate an inconsistent approach to the cycle provision on all approaches to the junction. In particular, Advance Stop Lines (ASL) have not been included on either the west or eastbound main road approaches. Failure to provide ASL's for cyclists can lead to side swipe type collisions between cyclists and other vehicles.

Summary

Concern is expressed that there are inconsistent cycle facilities on all approaches to the junction.

Recommendation

It is recommended that ASL's and appropriate cycle lanes are provided on all approaches to the junction.

2.4 Road Safety Audit Comment

Problem

The nose of the refuge located on Petre Road appears to extend too far into the carriageway and may impede the path of cyclists causing possible side swipe collisions between vehicles and cyclists.

Summary

Concern is expressed that the nose of the refuge on Petre Road extends into the running lane of the junction.

Recommendation

It is recommended that the nose of the refuge should be set back 1.5m from the channel line of the carriageway as per TD 50/04 paragraph 2.38.

2.5 Road Safety Audit Comment

Problem

Concern is expressed that the alignment of the traffic islands located on Blackburn Road would force vehicle travelling both east and westbound to deviate from a straight path to avoid hitting the islands, resulting in loss of control type collisions.

Summary

Concern is expressed that alignment of the traffic islands causes vehicles to be directed towards an oncoming traffic island.

Recommendation

It is recommended that the traffic islands are re-aligned to deflect drivers away from the nosing of the traffic islands.

3. General Observations

3.1 Road Safety Audit Observation

No pedestrian facilities are provided for crossing Blackburn Road, it is unclear if pedestrians are likely to cross at this location; if they do, then a facility should be provided to safely allow pedestrians to cross Blackburn Road.

3.2 Road Safety Audit Observation

It is observed that there is a gas vent pipe located in the verge at the north-western corner of the junction. Consideration should be given to ensure that this does not affect the design of the junction, with regard to its removal or accommodation.

3.3 Road Safety Audit Observation

The Advance Direction Sign (ADS) for the Blackburn Road / Dunkenhagh crossroads is obscured by trees, which have also discoloured the sign. The vegetation requires cutting back in advance of the sign and a review of the sign layout undertaken to ensure that it reflects the layout of the junction ahead.

3.4 Road Safety Audit Observation

It is observed that the existing lighting columns are located at the back of footway and therefore are within the canopy of the adjacent trees. Consideration should be given to cutting the trees to ensure that the carriageway receives the required level of lighting. Also any new lighting associated with the design should be considered with respect to the position and canopy of the existing trees.

3.5 Road Safety Audit Observation

The footway which runs along the south side of Blackburn Road is overgrown by vegetation from the adjacent property and requires cutting back, in order to be able to be used by pedestrians. In addition, the flag type sign opposite Petre Road is hidden within this vegetation from the adjacent property and is difficult to clearly read. This vegetation should be cut back.

3.6 Road Safety Audit Observation

It was observed that visitors to the business park off Petre Road, parked on Blackburn Road Blackburn Road on the westbound side of the road opposite house number 156. Should vehicles continue to park there in the future they may affect the flow of traffic approaching the junction and become a hazard when passed by westbound vehicles. (Refer to photo A.2).

3.7 Road Safety Audit Observation

It is noted that the close proximity of the Dunkenhagh Way / Blackburn Road junction may result in times when the queues in the 'internal reservoirs' extend into the junctions. Consideration should be given to the provision of linked junction control to ensure management of traffic through the two junctions.

3.8 Road Safety Audit Observation

It is noted that no signal equipment has been shown at the junction and so the auditor is unable to comment about its safe provision with respect to location and type.

4. Value+ & Sustainability

The auditors have identified where cost savings can be made within the design without adversely affecting the safety of the design. Approximate anticipated cost savings have also been indicated if known.

4.1 Value+ & Sustainability Comment

None were identified at this stage of the audit.

5. 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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Position:	Traffic & Safety Engineer	Date:	7 th August 2015
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Appendix A. Photographs



Figure A.1 : Flag sign opposite Petre Road, obscured by vegetation



Figure A.2 : On street parking on Blackburn Road, on westbound approach to Petre junction



Figure A.3 : Advance Direction Sign on westbound approach to the junction obscured by adjacent trees



Figure A.4 : Vegetation overgrowing the footway to the south of Blackburn Road

Burnley Pendle Growth Corridor Junction Q – Dunkenhalgh Way / Henry Street Junction

Lancashire County Council

Stage 1 Road Safety Audit

CA307/ 1321|0

7 August 2015



Burnley Pendle Growth Corridor Junction Q – Dunkenhalgh Way / Henry Street Junction

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 File name: n/a

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0	7/08/2015	DRAFT	CM	DB	PB

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Figure A.1 Evidence of corrosion to signal infrastructure

Figure A.2 Yellow box marking covering the extents of the junction crossroads

Figure A.3 Damaged pedestrian guardrail on northbound Dunkenhagh Way

Figure A.4 Flag type direction signs requiring renewal

Figure A.5 Photograph showing existing worn studs to be refurbished

Figure A.6 Advanced Direction Sign (ADS) requiring renewal on the northbound approach to the crossroads

Figure A.7 Staggered railing which allows easy passage for cyclists on approach to the pedestrian crossing on Hyndburn Road

Figure A.8 Pedestrian guardrail which restricts access to signal chamber, in the verge of the north-eastern corner of the crossroads

The cover photograph shows a view looking south towards the junction.

1. Introduction

- 1.1 Jacobs has been commissioned by Lancashire County Council (LCC) to carry out a Stage 1 Road Safety Audit (RSA) on the proposed alterations to the junction of Dunkenhagh Way and Henry Street.
- 1.2 The scheme involves layout changes of an existing signalised crossroads.
- 1.3 This is the first RSA to be carried out on this proposed scheme.
- 1.4 The audit took place on site and at the Shrewsbury office of Jacobs and was carried out in the Safety Engineering Section. The Audit was carried out by:

Paul Bartley, Traffic and Safety Engineering, Jacobs, Shrewsbury

Ciaron Morgan, Traffic and Safety Engineering, Jacobs, Shrewsbury

Dan Byles, Traffic and Safety Engineering, Jacobs, Shrewsbury (Office based)

- 1.5 The audit was undertaken in accordance with the audit brief and consisted of an examination of the following drawings/documents provided by the project sponsor.

<i>Drawing Number</i>		<i>Drawing Title</i>
1	CHM1MW414-2 Rev 0	Junction Q – Dunkenhagh Way / Henry Street Junction General Arrangement

- 1.6 Ciaron Morgan the audit team leader accompanied by Paul Bartley the audit team member carried out a site visit on the afternoon of 21st July 2015. The weather conditions were mild and cloudy and the road surface was dry. The ambient air temperature was 18° centigrade during the site visit. Traffic conditions were light. Digital photographs were taken during the site visit and may be incorporated within the report.
- 1.8 No traffic flow, collision data or speed data was supplied to the auditors for the purpose of this proposed scheme.
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- 1.14** 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 AADT, speed limits, collision history etc. If this is the case then all workings need to be clearly documented within the project file.
- 1.15** 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.

2. Concerns

2.1 Road Safety Audit Comment

Problem

Concern is expressed that it is unclear if vehicles will be able to negotiate the junction safely and there is a possibility that it would be difficult for any vehicles larger than a standard car to travel side by side in adjacent lanes. This could result in side swipe type collisions between larger vehicles or between heavy goods vehicles and powered or non-powered two wheeled vehicles.

Summary

Concern is expressed that lane encroachment could result in side swipe type collisions.

Recommendation

It is recommended that it should be demonstrated using Autotrack templates that all vehicle types and manoeuvres are possible using the junction without lane encroachment.

2.2 Road Safety Audit Comment

Problem

Concern is expressed that no signal staging diagrams have been provided for the junction and it is therefore unclear how the right turn movements will be controlled. This could lead to vehicle collisions resulting in injury to motorists.

Summary

Concern is expressed that no signal phasing diagrams have been provided.

Recommendation

It is recommended that the signal phasing diagrams are provided at detailed design.

2.3 Road Safety Audit Comment

Problem

Concern is expressed that it is unclear from the drawing if the signals across the dedicated left turns are to only be used when called by pedestrians. Also there is a potential for confusion between the signal stop line and the give way marking at both locations which could lead to drivers obeying the green signal, but failing to give way and colliding with vehicles on Manor Place and/or Henry Street.

Summary

Concern is expressed that vehicles passing a green signal on the dedicated left turn lanes may fail to give way when they get to the junction.

Recommendation

It is recommended that consideration should be given to the phasing of the signal and if the give way is required, further emphasis of the give way would be required.

3. General Observations

3.1 Road Safety Audit Observation

Cycle facilities have not been provided at this junction, consideration should be given to if there is an identified need for cycle facilities.

3.2 Road Safety Audit Observation

The pedestrian crossings on the Blackburn Road are shown as being straight across crossings which will need to be called via an all Red pedestrian stage. If this is the case it will add to the junction delay and therefore consideration could be given to not provide staggered crossings on the side road.

Further details are required as to why a different layout is used on main road compared to side road in the absence of a staging diagram or modelling information.

3.3 Road Safety Audit Observation

It is noted that there is no proposal to provide the yellow box marking that is currently found on site, it was observed during the site visit that the junction currently suffers from congestion, it is considered that the removal of the yellow box marking will lead to vehicles waiting in the centre of the junction causing further congestion on all arms of the junction.

3.4 Road Safety Audit Observation

It is observed that the existing crossing infrastructure on site is in poor condition and it has been assumed signal poles, signal equipment, tactiles and guard railing will be replaced as part of the proposed works.

3.5 Road Safety Audit Observation

There are advance stack and flag type signs located around the junction which would benefit from being reviewed, with regard to the most appropriate location to mount them. Furthermore it was observed a number of signs would benefit from being consolidated. It was also noted that certain signs (Church and Clayton-le-moors) still have the old blue border, which require replacing to conform to current standards.

3.6 Road Safety Audit Observation

It was observed that the adjacent vegetation on Hyndburn Road requires cutting back as it overhangs the footway.

3.7 Road Safety Audit Observation

There is a footpath which leads from the vicinity of the electrical substation on Jubilee Road to the eastern crossing point of Hyndburn Road, which has a staggered fence in order to slow pedestrians and cyclists as they approach the crossing and Hyndburn Road. It is recommended that the stagger is adjusted to make the passage of cyclists more difficult in order to slow them down, so that they do not pass through the access too quickly and overshoot onto Hyndburn Road.

3.8 Road Safety Audit Observation

It is observed that there are illuminated bollards to TSRGD Diag No. 611, located on the splitter islands of Hyndburn Road and Henry Street and Dunkenhagh Way and Manor Place. These bollards should be plain faced as Diag No. 611 states that "Vehicular traffic may reach the same destination by preceding either side of the sign" which is not the case in these locations. Therefore the new design for the junction should take this into consideration and the bollards are replaced.

3.9 Road Safety Audit Observation

It is observed that lining at the junction is in need of refurbishment; in particular the crossing studs are worn.

3.10 Road Safety Audit Observation

It is observed that a section of guard rail located in the verge, on the northern corner of the junction, between Dunkenhagh Road and Manor Place, straddles a service cover thereby preventing it being lifted easily. It is recommended that a section of bespoke railing is provided to mitigate this issue as part of the detailed design.

3.11 Road Safety Audit Observation

No signal equipment has been shown at the junction and so the auditor is unable to comment about its safe provision with respect to location and type.

4. Value+ & Sustainability

The auditors have identified where cost savings can be made within the design without adversely affecting the safety of the design. Approximate anticipated cost savings have also been indicated if known.

4.1 Value+ & Sustainability Comment

It is observed that there is an illuminated keep left bollard and keep left sign located on the southern central island for northbound traffic on Hyndburn Road. There is potential to only use the keep left bollard at this location.

5. 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

Distribution of report:

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

Appendix A. Photographs



Figure A.1 : Evidence of corrosion to signal infrastructure



Figure A.2 : Yellow box marking covering the extents of the junction crossroads



Figure A.3 : Damaged pedestrian guardrail on northbound Dunkenhalgh Way



Figure A.4 : Flag type direction signs requiring renewal



Figure A.5 : Photograph showing existing worn studs to be refurbished



Figure A.6 : Advanced Direction Sign (ADS) requiring renewal on the northbound approach to the crossroads



Figure A.7 : Staggered railing which allows easy passage for cyclists on approach to the pedestrian crossing on Hyndburn Road



Figure A.8 : Pedestrian guardrail which restricts access to signal chamber, in the verge of the north-eastern corner of the crossroads