Road Safety Audit Report

Incorporating
Stage 1 Completion of Preliminary Design.

Proposed Highway Works
Cucumber Lane and Yarmouth Road
Roundabout with A47, Brundall

Client: Bellamy Roberts
Client reference: 5111

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Report Status 1

<table>
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<th>Job no</th>
<th>RSA-17-147</th>
<th>Issue no</th>
<th>1</th>
<th>Date</th>
<th>March 2018</th>
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<td>Prepared by</td>
<td>JDF</td>
<td>Verified by</td>
<td>AJB</td>
<td>Approved by</td>
<td>JDF</td>
</tr>
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<th>CHECKED</th>
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<td>Stage 1 Road Safety Audit drafted for Audit Team discussion</td>
<td>JJF</td>
<td></td>
<td></td>
<td>20th March 2018</td>
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<td>JJF</td>
<td>BN</td>
<td>JJF</td>
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1.0 INTRODUCTION

1.1 This report has been prepared by Fenley Road Safety Limited and results from a Stage 1 Road Safety Audit of a proposal to undertake highway works along Cucumber Lane and Yarmouth Road at the roundabout junction with the A47. It is understood that the works are proposed to mitigate the traffic impact of a residential development of a Memorial Hall in Brundall. The request for the Audit was made by the Design Team, Bellamy Roberts on behalf of the Quantum Group. The Road Safety Audit was carried out during March 2018.

1.2 The Road Safety Audit Team membership approved by a Ms. Davina Galloway, the Asset Manager of Highways England Operations ‘East’, in an email dated 14th March 2018, was as follows:

Audit Team Leader  
Jamie Fenning  
BSc (Hons), MSoRSA, MIHE, Highways England RSA Certificate of Competency  
Road Safety / Highway Engineer

Audit Team Member  
Beth Newiss  
AMCIHT, MSoRSA  
Road Safety Consultant

1.3 The Road Safety Audit took place at the Reading Office of Fenley Road Safety Limited during the week commencing 14th March 2018. The Road Safety Audit was undertaken in accordance with the Road Safety Audit Brief provided by Bellamy Roberts following Approval by Ms. Davina Galloway, the Asset Manager of Highways England Operations ‘East’. The Road Safety Audit comprised an examination of the documents provided and these are identified at Appendix A1.

1.4 The site of the proposed works was visited on Friday 16th March 2018 and commenced at 12:20pm. The Audit Team made site observations for a 90 minute period which included a walk along the footway and verge alongside the proposals as well as drive from each approach of the existing roundabout junction. The weather during the site visit was overcast, the road surface was damp with spots of surface water ponding and visibility was good.

1.5 A number of pedestrians were observed during the site visits with a couple of joggers travelling along the carriageway / southern verge of Yarmouth Road but no cyclists were observed. Vehicular traffic to include domestic, light / heavy goods vehicles and motorcycles were also observed during the site visit, the traffic flow was moderate with minimal queuing observed. Speeds were not recorded by the Audit Team.

1.6 The terms of reference of the Road Safety Audit are as described in HD 19/15 Incorporating Amendment dated May 2017. This Road Safety Audit has been undertaken based on the...
Road Safety Audit Team’s previous experience and knowledge in undertaking Collision Investigation, Road Safety Engineering and Road Safety Audits.

1.7 All comments and recommendations are referenced to the preliminary design drawing supplied with the Audit Brief and the locations of items raised have been illustrated adjacent to the items along with relevant photographs for clarity, where appropriate, as well as on the Location Plan attached at Appendix A2.

1.8 The proposals that are subject to this Road Safety Audit include the proposed widening of Yarmouth Road to extend the existing flare and provide a two lane approach to the roundabout, widening of the Cucumber Lane two lane entry to 9 metres and the provision of spiral road markings on the circulatory carriageway.

1.9 The Audit Team have not been informed of any Departures from Standard for the scheme.

1.10 The scheme has been examined and this report compiled, only with regard to the safety implications for road users of the scheme as presented. It has not been examined or verified for compliance with any other Standards or criteria. However, in order to clearly explain a safety problem or the recommendation to resolve a problem, the Audit Team may on occasion have referred to a design standard for information only. Any audit comments should not be construed as implying that a technical audit has been undertaken in any respect.

1.11 Any recommendations included within this report should not be regarded as being prescriptive design solutions to the problems raised. They are intended only to indicate a proportionate and viable means of eliminating or mitigating the identified problem, in accordance with HD 19/15, and in no way imply that a formal design process has been undertaken. There may be alternative methods of addressing a problem which would be equally acceptable in achieving the desired elimination or mitigation and these should be considered when responding to this report.

1.12 During the site visit associated with this Road Safety Audit, it was noted that the existing Yarmouth Road carriageway is fretting in places, that bollards are not present on the splitter islands and that a path has been formed along the southern side of Yarmouth Road and across the verge to the south of the roundabout to the existing footway along the east side of Cucumber Lane. A further observation also highlights that visibility along Cucumber Lane for vehicles exiting the roundabout, is restricted by a “Welcome to Brundall” gateway sign.

2.0 ITEMS RAISED IN ANY PREVIOUS ROAD SAFETY AUDITS

2.1 The Audit Team have not been made aware that the proposed highway works have been subject to any previous road safety audits.
3.0 ITEMS RAISED IN THIS STAGE 1 ROAD SAFETY AUDIT

A.1 GENERAL

A.1.1 PROBLEM

<table>
<thead>
<tr>
<th>Location</th>
<th>Yarmouth Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>Removal of existing ditch within the northern verge could give rise to surface water ponding</td>
</tr>
<tr>
<td>Acc. Type</td>
<td>Loss of control</td>
</tr>
</tbody>
</table>

An existing ditch is present within the verge to the north of Yarmouth Road that is to accommodate the proposed eastbound lane that appears to be. Should the ditch cater for surface water, the filling of the feature to provide the proposals could give rise to surface water ponding where the existing road gullies cannot drain surface water sufficiently. Surface water ponding gives rise to loss of control incidents.

RECOMMENDATION:

It is recommended that surface water is drained sufficiently.

Location Plan:
### A.2 LOCAL ALIGNMENT

<table>
<thead>
<tr>
<th>A.2.1 PROBLEM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location:</strong> Yarmouth Road</td>
</tr>
<tr>
<td><strong>Summary:</strong> Presence of the private ingress to PFS and McDonald's is not clear to drivers exiting the roundabout</td>
</tr>
<tr>
<td><strong>Acc. Type:</strong> Shunt type incidents</td>
</tr>
</tbody>
</table>

The presence of the existing ingress associated with a PFS and a McDonald's is not clear for drivers exiting the roundabout. Whilst the relocation of the eastbound carriageway does not appear to alter the inside corner radius of Yarmouth Road and therefore the speed of vehicles exiting the roundabout should not increase, the distance between the roundabout exit and ingress is reduced. As such, approaching drivers may not become aware of the ingress at a safe distance which could give rise to heavy braking and shunt incidents as a result.

**RECOMMENDATION:**

It is recommended that appropriate signage is provided.

**Location Plan:**

![Location Plan Image]
### A.2.2 PROBLEM

<table>
<thead>
<tr>
<th>Location:</th>
<th>Cucumber Lane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary:</td>
<td>Reduced exit width tightens the path of a vehicle continuing along Cucumber Lane</td>
</tr>
<tr>
<td>Acc. Type:</td>
<td>Side swipes and head-on collisions</td>
</tr>
</tbody>
</table>

The proposals reduce the width of the exit onto Cucumber Lane and whilst it remains adequate to accommodate a vehicle, the reduction amends the likely path of a southbound vehicle. As such, a vehicle cannot take the exit wide which effectively tightens the inside radius of the bend just to the south. An HGV exiting the roundabout is therefore likely to encroach the northbound lane of cucumber lane which could result in side swipes and head-on collisions.

**RECOMMENDATION:**

It is recommended that the proposals allow for all vehicles to exit the roundabout and continue along to the south safely.

**Location Plan:**

![Location Plan Image]()}
A.3 JUNCTIONS

A.3.1 PROBLEM

Location: A47 approaches

Summary: Proposed spiral circulatory marking provides lane designation without warning

Acc. Type: Side swipes

It is proposed to provide spiral road markings on the circulatory that deter vehicles within the lane 1, from turning right across the path of a vehicles in lane 2. It is understood that this element of the proposal is to be provided following a review of personal injury collision data highlighting that a number of incidents have occurred whilst a vehicle turned across the path of another, however the provision of spiral markings is likely to relocate the conflict point further west on the circulatory or the A47 where vehicles would undertake late lane changes increasing the likelihood of side swipe type incidents.

RECOMMENDATION:

It is recommended that advance signage is provided

Location Plan:
# A.4 NON-MOTORISED USER (NMU) PROVISION

## A.4.1 PROBLEM

**Location:** Cucumber Lane  
**Summary:** Visibility to the proposed crossing point is restricted  
**Acc. Type:** Vehicle pedestrian collision

It is proposed to provide an uncontrolled pedestrian crossing point from a 1.8 metre footway along the eastern side of Cucumber Lane to the existing facility on the west side. However, forward visibility to the crossing point is restricted by an existing “Welcome to Brundall” sign that is located just to the north. As such, drivers exiting the roundabout junction along Cucumber Lane and approaching the crossing point may not become aware of a pedestrian attempting to cross the road at a safe distance and a pedestrian is unlikely to have clear visibility of an approaching vehicle which could result in a pedestrian stepping out into the path of a vehicle and a vehicle pedestrian collision.

**RECOMMENDATION:**

It is recommended that the proposed crossing point is relocated further south

## Location Plan:

![Location Plan Image](image-url)
### A.5 ROAD SIGNS, CARRIAGEWAY MARKINGS AND LIGHTING

<table>
<thead>
<tr>
<th>A.5.1</th>
<th>PROBLEM</th>
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</thead>
<tbody>
<tr>
<td><strong>Location:</strong></td>
<td>Yarmouth Road northern verge</td>
</tr>
<tr>
<td><strong>Summary:</strong></td>
<td>Existing signage is situated where the road widening is to be provided</td>
</tr>
<tr>
<td><strong>Acc. Type:</strong></td>
<td>Vehicle head-on collisions</td>
</tr>
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</table>

The verge to the north of Yarmouth Road accommodates a number of street signs; one warning of two-way traffic, another highlighting the end of a clearway and a directional sign. The Audit Team have not been made aware of any proposals relating to the signage, however the proposed widening is to be provided where the signs are present. The removal of the signs could give rise to head-on collisions where vehicles exiting the A47 roundabout do not become aware of the two-way nature of Yarmouth Road.

**RECOMMENDATION:**

It is recommended that the appropriate signage is provided.

**Location Plan:**

![Location Plan Image]
### A.5.2 PROBLEM

<table>
<thead>
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<th>Location:</th>
<th>Circulatory</th>
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<tbody>
<tr>
<td>Summary:</td>
<td>HGV’s are likely to encroach the adjacent lane</td>
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<tr>
<td>Acc. Type:</td>
<td>Side swipe</td>
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The provision of spiral circulatory road markings gives the appearance that two vehicles to include an HGV and car/LGV can travel around the circulatory carriageway alongside one another, however observations show that an HGV accommodates the entire circulatory when continuing straight from the A47 west to east. The provision of the circulatory markings could therefore give rise to side swipe type incidents where a driver of a car follows their lane alongside an HGV.

**RECOMMENDATION:**

It is recommended that an HGV can be accommodated within the proposed lanes

**Location Plan:**

![Location Plan Image]
A.6.0 STAGE 1 ROAD SAFETY AUDIT TEAM STATEMENT

A.6.1 We certify that this Road Safety Audit has been carried out in accordance with HD 19/15.

Audit Team Leader

Name: Jamie Fenning
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Tel: 07929 857 229
e-mail: jamie@fenley.co.uk

Signed: [Signature]
Date: 20th March 2018

Audit Team Member

Name: Beth Newiss
AMCIHT, MSoRSA
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CO6 1RE

Signed: [Signature]
Date: 20th March 2018
Appendix A1

Drawings and Documents provided for this Stage 1 Road Safety Audit

<table>
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Appendix A2

Item Location Plan