

## **APPENDIX X**

### **SAFETY AUDIT**



Road Safety Consulting Ltd

**Road Safety Audit Stage 1**  
**Various Roads, Bognor Regis**  
**Retail Development**  
**Proposed Access Arrangements**

**Date: 11<sup>th</sup> December 2007**

**Report produced for: Cottee Transport Planning**

**Report produced by: Malcolm Gandy**  
**Road Safety Consulting Ltd**

**Reference:RSC/MKG/7193/Bognor**

Road Safety Consulting Ltd  
Drumtarsna  
Borrisoleigh  
Nr Thurles  
Co.Tipperary  
Ireland

Tel/Fax: 00353 504 50825

Directors:  
Malcolm K Gandy  
Hilary E Gandy  
Company Reg. No. 5225549  
Registered Office: Bridgwall Dairy, Sible Hedingham, Halstead, Essex CO9 3RH

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**Document Control Sheet**

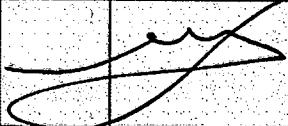
Project Title      Bognor Regis – Retail Development

Report Title      Road Safety Audit Stage 1

Revision      -

Status      Final

**Record of Issue**

| Issue | Status | Author                                                                              | Date     | Check                                                                               | Date     | Authorised | Date     |
|-------|--------|-------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------|----------|------------|----------|
| 1     | Final  | MKG                                                                                 | 12-12-07 | AM                                                                                  | 12-12-07 | HEG        | 12-12-07 |
|       |        |  |          |  |          |            |          |

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## 1 Introduction

- 1.1 This report results from a Stage 1 Road Safety Audit carried out relating to proposed access arrangements for a retail development in Bognor Regis, at the request of Gordon Kruse of Cottee Transport Planning. The Audit was carried out during November/December 2007.
- 1.2 The Audit Team membership was as follows:  
Malcolm Gandy, MIHT;  
Road Safety Consulting Ltd  
  
Akinleye Makinde, BSc (Hons), MSc, DIC, MIHT, AMIHIE  
Road Safety Consulting Ltd
- 1.3 The audit took place at the offices of Road Safety Consulting Ltd on 11<sup>th</sup> December 2007. The audit was undertaken in accordance with the audit brief. The audit comprised an examination of the documents provided by Cottee Transport Planning, and listed in the Annex. These documents consisted of a set of drawings. A visit to the site was made during the morning of 11<sup>th</sup> November 2007. During the site visit the weather was overcast but dry.
- 1.4 The terms of reference of the audit are as described in HD 19/03. The team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.
- 1.5 All comments and recommendations are referenced to the design drawings and the locations have been indicated on plans in Appendix 2.
- 1.6 The proposals for access arrangements for a retail development involve the provision of a new roundabout junction upgrade of an existing roundabout and pedestrian facilities. The audit includes internal site traffic and pedestrian arrangements but excludes an audit of the geometrics for the new Shripney Road/Site access roundabout.

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## **2 ITEMS RAISED BY THIS STAGE 1 AUDIT**

### **2.1 GENERAL**

#### **2.1.1 PROBLEM**

Location – Generally

Summary – No Surface Water Drainage information

There is no information relating to the provision for the drainage of surface water.

#### **RECOMMENDATION**

At the detailed design stage surface water drainage information should be provided.

#### **2.1.2 PROBLEM**

Location – Generally

Summary – Landscaping

Drawings show large areas of tree/shrub planting throughout the scheme. There is concern that visibility at junctions or crossing places may be compromised.

#### **RECOMMENDATION**

It should be ensured that sight lines at junctions and crossing places are clear and unobstructed.

#### **2.1.3 PROBLEM**

Location – Rowan Way Roundabout (Steyning Way, eastern arm) – Marked A on the drawing

Summary – Ramps sited close to roundabout

The ramps are sited close to the roundabout and would be negotiated by turning vehicles. This may cause particular problems for riders of two-wheeled vehicles. A vehicle exiting from the roundabout may slow suddenly and unexpectedly in the path of a circulating vehicle. There is a risk of nose-to-tail type collisions if a vehicle suddenly stops to afford precedence to a pedestrian.

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Drivers of vehicles entering the roundabout may have control difficulties if still partly on a ramp when moving off.

#### RECOMMENDATION

The ramps should be sited further from the roundabout and vehicles should meet them in a straight alignment. (Problem 2.3.2 refers)

## 2.2 JUNCTIONS

### 2.2.1 PROBLEM

Location – Shripney Road – Marked B on the drawing

Summary – Bus right turn lane

There are concerns relating to the bus right turn lane facility and gap in the central reserve. The opening in the reserve and bus turning movements increase the risk of conflict and collision, particularly in darkness or in adverse weather conditions. There is no deceleration lane clear of other traffic, a short direct taper and minimal safety margin between a bus in the turning lane and opposing traffic in the outer lane. The opening allows the possibility of other vehicles making high risk 'U' turns.

#### RECOMMENDATION

There should not be a central reserve opening.

### 2.2.2 PROBLEM

Location – Shripney Road, access/egress for buses – Marked C on the drawing

Summary – Bus turning movements

Buses turning left from the site occupy the whole of the carriageway during the manoeuvre. The dimensions of the access road would not accommodate a bus turning in whilst another was waiting or turning out, or vice versa. There is concern that in moderate to busy traffic conditions there may be minimal opportunities for buses to exit safely and without conflict with other traffic.

#### RECOMMENDATION

The junction should be controlled by traffic signals.

### 2.2.3 PROBLEM

Location – Goods vehicle entry to the service yard – Marked D on the drawing

Summary – Non-goods vehicles entering the service road in error

The entry is necessarily wide to accommodate large vehicles, however, the close proximity to the roundabout and horizontal alignment across the junction may result in non-goods vehicle drivers entering in error. There is a risk of vehicles colliding with the separator island as the guidance marking is likely to wear and the alignment may not be clear in darkness or in adverse weather conditions.

#### RECOMMENDATION

In addition to appropriate signing, the service road should be given a contrasting colour surface from the junction for approximately 15m. The curved alignment of the junction mouth should be clearly shown with a line of granite setts (or similar) (0 to 6mm upstand).

#### 2.2.4 PROBLEM

Location – Goods vehicle egress junction from the service yard – Marked E on the drawing

Summary – Visibility for exiting driver

Drawing No. 0704/07E shows the track of an articulated vehicle exiting the service road. There is concern that the angle required for the vehicle to make the exit manoeuvre is such that a driver may not be able to see to his left at the junction.

#### RECOMMENDATION

The goods vehicle exit route and junction should allow vehicles to position squarely and should ensure clear visibility in each direction.

#### 2.2.5 PROBLEM

Location – Access road from Shripley Road roundabout – Marked F on the drawing

Summary – Access road delays

Internal car park access points commence about 90m along the access road. There is some concern that delays for traffic entering the site along the access road may adversely affect the safe operation and free-flow at the roundabout.

#### RECOMMENDATION

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Anticipated traffic flows should be appraised to ensure that queuing can be accommodated within the site.

## **2.3 NON-MOTORISED USERS**

### **2.3.1 PROBLEM**

Location – Rowan Way Roundabout (western arm) – Marked G on the drawing

Summary – Pedestrian crossing alignment

The alignment results in long (9m) crossings for pedestrians. The risk for pedestrians increases as crossing width increases and it becomes more difficult for them to judge safe crossing opportunities. Pedestrians crossing from the southern side would have their backs to traffic.

#### **RECOMMENDATION**

The crossings should be realigned (as per those shown on the site access roundabout) to take the shortest crossing routes and positioning pedestrians at an appropriate visibility angle.

### **2.3.2 PROBLEM**

Location – Rowan Way Roundabout (Steyning Way, eastern arm) – Marked A on the drawing

Summary – Long single crossing

There is no central refuge. Given the crossing width, available visibility of the roundabout and potential traffic speeds, there is the potential for conflict between pedestrians and vehicles. Pedestrians may come to rely on vehicles stopping for them. There is no tactile paving guidance shown.

#### **RECOMMENDATION**

The uncontrolled pedestrian crossings should utilize the traffic separator island. Tactile paving guidance and dropped kerbs should be provided. (Problem 2.1.3 refers).

### **2.3.3 PROBLEM**

Location – The eastern end of the internal bus lane – Marked H on the drawing

Summary – Footways do not align

The footways on opposite sides of the bus lane do not align. Pedestrians crossing diagonally from the southern side would be facing away from buses turning in.

#### RECOMMENDATION

The footways should be realigned to make a straight crossing alignment.

#### 2.3.4 PROBLEM

Location – Two Car Park areas – Marked I and J on the drawing

Summary – direct footway access to and from the store

The footway links to and from the car parks lead northwards requiring pedestrians to make relatively long detours. It is more likely that pedestrians will attempt to take direct routes. This may result in pedestrians crossing internal roads at locations where visibility is poor.

#### RECOMMENDATION

There should be lateral footways from the car linking with footways shown to the east and west.

#### 2.3.5 PROBLEM

Location – Car Park and area to the north of the access road from Shripley Road roundabout – Marked K on the drawing

Summary – direct footway access and crossings of the access road

There is a footway link and pedestrian crossing location sited at the eastern end close to the internal roundabout and a crossing location at the Shripley roundabout end. These crossings are about 180m apart. It is unclear whether or not there will be pedestrian desire line(s) at other locations along the route but there are no crossing facilities shown.

#### RECOMMENDATION

There should be an assessment of potential pedestrian desire lines. Where justified crossing facilities should be provided.

### 2.3.6 PROBLEM

Location – Internal bus lane – Marked L on the drawing

Summary – Immediate proximity of a pedestrian crossing to the bus stops

When buses are occupying the stops it will not be possible for pedestrians to check for other traffic (other buses or illegal vehicle movements). It would be difficult for pedestrians to judge when buses are moving away. Drivers of buses have a limited view of pedestrians close to the vehicle. Pedestrians would be vulnerable.

#### RECOMMENDATION

The bus stops should be located at least 20m away from the crossing point. High visibility pedestrian guard rail should be provided between the crossing and the bus boarding/alighting points.

### 2.3.7 PROBLEM

Location – Internal car parks generally

Summary – Inter-visibility at pedestrian crossings

There are a number of locations, within the car park areas, where pedestrian crossing are located within lines of parked vehicles. Inter-visibility at these crossing locations will be very limited.

#### RECOMMENDATION

Ideally, there should be build-outs to ensure inter-visibility between pedestrians and drivers.

### 2.3.8 PROBLEM

Location – General

Summary – Tactile and dropped kerbs

There are a large number of pedestrian crossing locations where no tactile paving or dropped kerbs are shown.

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**RECOMMENDATION**

Tactile paving guidance and dropped kerbs should be provided at all crossing locations.

## **2.4 ROAD SIGNS, MARKINGS AND LIGHTING**

### **2.4.1 PROBLEM**

Location – General

Summary – No Street Lighting information

There is no information relating to the provision street lighting.

#### **RECOMMENDATION**

At the detailed design stage full details of street lighting proposals should be provided.

### **2.4.2 PROBLEM**

Location – General

Summary – Carriageway markings alignment

Longitudinal central carriageway markings are shown aligning directly with traffic separator islands. This could result in vehicles colliding with the islands.

#### **RECOMMENDATION**

The longitudinal central carriageway markings should be offset from the edge of islands. The offset should be 300mm except where the speed limit is 40mph or less when the offset may be reduced to 150mm.

*End of Safety Comments*

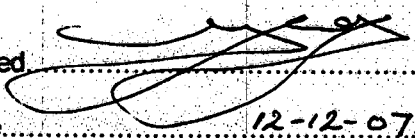
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**3 Auditor Team Statement**

I certify that this audit has been carried out in accordance with HD 19/03.

**Audit Team Leader**  
Malcolm Gandy, MIHT  
Road Safety Consulting Ltd  
Drumtarsna  
Borrisoleigh  
Nr Thurles  
Co. Tipperary  
Ireland

Signed 

Date

12-12-07

**Audit Team Member**  
Akinleye Makinde, BSc (Hons), MSc, DIC, MIHT, AMIHIE  
Road Safety Consulting Ltd  
Drumtarsna  
Borrisoleigh  
Nr Thurles  
Co Tipperary  
Ireland

**APPENDIX 1****List of Drawings**

Drawing No. 0704/1 – Site Location Plan  
Drawing No. 0704/7A – Proposed Access Roundabout  
Drawing No. 0704/7B – Autotrack Analysis  
Drawing No. 0704/7D – Autotrack Analysis  
Drawing No. 0704/7E – Autotrack Analysis  
Drawing No. 0704/8 – Proposed Site Layout  
Drawing No. 0704/8A – Proposed upgrades to the Rowan Way Roundabout  
Drawing No. 0704/8B – Proposed Shripney Road/By-pass/Site Access Roundabout  
Drawing No. 0704/8C – Proposed Bus Lane  
Drawing No. 0704/8 E– Proposed Site Layout  
Drawing No. 0704/8 – Proposed Site Layout  
Drawing No. 0704/8 – Proposed Site Layout  
Drawing No. 0704/8 – Proposed Site Layout  
Drawing No. 0704/8 – Proposed Site Layout  
Drawing No. 0539/11A – Autotrack Analysis Signal junction  
Drawing No. 0539/11B – Autotrack Analysis Signal junction  
Drawing No. 0539/11C – Autotrack Analysis Signal junction

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## APPENDIX 2

Drawing showing Problem Locations

