

ROAD SAFETY AUDIT RESPONSE REPORT

A27 / A29 FONTWELL AVENUE / ARUNDEL ROAD ROUNDABOUT IMPROVEMENT

STAGE 1

30 August 2017

PREPARED BY:

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AUTHORISATION SHEET

Project: A27 / A29 Fontwell Avenue / Arundel Road junction improvement

Report Title: Stage 1 Road Safety Audit Response Report

PREPARED BY:

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Position: Design Team Leader

Signed: *Tim Wall*

Organisation: i-Transport for Wates Developments

Date: 30 August 2017

APPROVED BY:

Name: David Bowie

Position: Project Sponsor

Signed:

Organisation: Highways England

Date:

Route Number: A27

Road Name: Arundel Road

Scheme: A27 / A29 Fontwell Avenue / Arundel Road junction improvement

Road Safety Audit: Stage 1

1 INTRODUCTION

- 1.1 This Road Safety Audit Response Report relates to the Stage 1 Road Safety Audit Report for the A27 / A29 Fontwell Avenue / Arundel Road junction improvement. The Stage 1 Road Safety Audit was produced by M & S Traffic Ltd (reference IT/11324/1/BS) and is dated 27 August 2017.
- 1.2 The Stage 1 Road Safety Audit Brief comprised of a set of the preliminary design drawings, a summary of the general details of the scheme including traffic flows, 5-year crash data, predicted queue lengths, Non-Motorised User context and Audit Reports, assembled by the Design Team for the scheme and sent by the Overseeing Organisation Project Sponsor (David Bowie) to the Road Safety Audit Team for examination. The Road Safety Audit Report was prepared and issued by the Road Safety Audit Team Leader, Bryan Shawyer of M & S Traffic Ltd.
- 1.3 The Arun Local Plan and Fontwell applications developed an improvement scheme to partially signalise the A27/A29 roundabout junction, which has been agreed with Highways England. To accommodate additional traffic, a further improvement is proposed (the proposed scheme) and comprises delivery of an additional (third) entry lane to the A27 East arm, and associated alterations to the Arundel Road approach.
- 1.4 The Design Team have carefully considered the problems and recommendations in the Stage 1 Road Safety Audit Report. This Road Safety Audit Response Report includes all of the problems and recommendations raised by the Road Safety Audit Team, as well as the Design Team's response to these issues.

KEY PERSONNEL

1.5 Overseeing Organisation

Project Sponsor – David Bowie (Highways England)

1.6 Road Safety Audit Team

Road Safety Audit Team Leader – Bryan Shawyer (M & S Traffic Ltd)

Road Safety Audit Team Member – Martin Morris (M & S Traffic Ltd)

1.7 Design Organisation

Design Team Leader – Tim Wall (i-Transport LLP)

Design Team Member – Matthew Craddy (i-Transport LLP)

Design Team Member – Zane Beswick (i-Transport LLP)

Design Team Member – Scott Harvey (i-Transport LLP)

2 ITEMS RAISED AT THE STAGE 1 ROAD SAFETY AUDIT

2.1 GENERAL

2.2 PROBLEM

Location: A - A27 southwest bound approach to junction.

Summary: Presence of a ditch may compromise road safety.

There is an existing ditch between the proposed additional entry lane and the restaurant / hotel complex, see figure 1 below, where no protection system is proposed. Vehicles that lose control and exit the carriageway may decelerate rapidly, where injuries may be severe in nature. In addition, in winter months the ditch could hold water, which could further impede the escape of vehicle occupants.

Recommendation:

That a Road Restraints Risk Assessment Process (RRRAP) should be undertaken to determine the aggressiveness of the ditch and whether protection is needed.

Design Team Response:

Agreed – The recommendations of the Stage 1 Road Safety Audit Team, to undertake an RRRAP assessment to determine necessary protection from the ditch, will be carried out at the detailed design stage. This is noted on Drawing ITB11320-GA-015 Rev C.

If it is determined that a Vehicle Restraint System is required to protect the ditch, this will be included in the design and considered at the Stage 2 Road Safety Audit.

2.3 PROBLEM

Location: B - A27 southwest bound approach to junction

Summary: Tree line and vegetation could lead to rear end shunt accidents.

On the A27 southwest bound approach to the roundabout, there are trees and vegetation in the nearside verge, which may restrict forward visibility to queuing vehicles at the stop line, particularly in the spring and summer months. This could lead to rear end shunt collisions on this approach.

Recommendation:

That adequate forward visibility should be provided on the approach to the stop-line and that a regular maintenance programme should be employed.

Design Team Response:

Agreed – Vegetation within the SSD envelope will be cleared and replaced with species that will not inhibit future visibility to the primary signal heads, and which will reduce maintenance requirements in the future (i.e low growth species vegetation). This is noted on Drawing ITB11320-GA-016 Rev A.

2.4 PROBLEM

Location: C - Circulatory carriageway between Arundel Road and Fontwell Avenue

Summary: Insufficient drainage could lead to loss of control accidents.

The carriageway alignment between Arundel Road and Fontwell Avenue is proposed to be changed with the kerblines being brought forward. However, there is a gully on the existing alignment, see figure 2 below, where no drainage provision is proposed. Surface water on the circulatory carriageway could lead to loss of control accidents, particularly under braking conditions.

Recommendation:

At detailed design stage, the drainage provision should be provided for assessment.

Design Team Response:

Agreed – At the detailed design stage a full drainage design will be prepared and will identify any changes required to ensure the new carriageway areas are adequately drained, and that the risk of surface water ponding is reduced. This will require relocation of the gully on the existing circulatory carriageway to a position where it will accept surface water, and is noted on Drawing ITB11320-GA-015 Rev C.

This will be further considered by the Stage 2 Road Safety Audit.

2.5 PROBLEM

Location: D - A27 southwest bound approach to junction

Summary: Ironwork in running lane could lead to loss of control accidents

On the A27 southwest bound approach to the roundabout, there is a manhole cover that is likely to be in the braking area on approach to the signal stop-line. This could lead to loss of control collisions under braking, particularly for two-wheeled vehicles

Recommendation:

That the manhole cover should be treated with a non-slip coating.

Design Team Response:

Agreed – The final solution will be determined at detailed design stage when the drainage design is completed, but will comprise either:

- a) Coating the manhole with non-slip surfacing; or***
- b) Relocating the manhole outside of the proposed carriageway area.***

This is noted on Drawing ITB11320-GA-015 Rev C.

2.6 THE ALIGNMENT

2.7 PROBLEM

Location: E – Arundel Road

Summary: Excessive entry path curvature may compromise road safety

Entry path curvatures were provided for assessment, where the entry path from Arundel Road to the A27 for the east to west movement is greater than 100m, which is greater than the permitted maximum though it is recognised that the approved scheme also has an entry path curvature of 145m. An entry path radius exceeding 100m could lead to high entry speed and possible loss of control accidents, or conflict with circulating traffic and potential side swipe accidents.

Recommendation:

That the entry path curvature should be decreased through further deflection.

Design Team Response:

Agreed – The Arundel Road approach has been reconsidered with a view to improving deflection. Drawing ITB11320-GA-015 Rev C identifies a revised alignment which:

- ***Introduces a central hatched medium strip on Arundel Road;***
- ***Realigns the Arundel Road roundabout entry by around 1m to the north; and***
- ***Reconfigures the Arundel Road central traffic island and associated hatching.***

The revised alignment achieves a maximum EPC of 100m, which is a significant improvement on the permitted improvement scheme (145m), and complies with design standards. Drawing ITB11320-GA-017 Rev A demonstrates achievable EPC.

In addition, to aid conspicuity and reduce approach speeds, additional signage will be located on Arundel Road and is noted on Drawing ITB11320-GA-015 Rev C.

Amending the Arundel Road entry to the roundabout impacts on the conflict entry angle to A29 Fontwell Lane, which has therefore been recalculated as 21 degrees, as shown on Drawing ITB11320-GA-017 Rev A.

2.8 THE JUNCTIONS

2.9 No Problems Raised

2.10 NON-MOTORISED USERS (NMUs)

2.11 PROBLEM

Location: F – A29 Fontwell Avenue

Summary: Insufficient pedestrian facilities could lead to pedestrian accidents

The A29 Fontwell Avenue arm of the roundabout currently has uncontrolled pedestrian facilities, see figure 3 below. However, no dropped kerb provision is proposed, where pedestrians, particularly the mobility impaired may trip, which could lead to pedestrian accidents.

Recommendation:

That dropped kerbs should be provided in accordance with Department for Transport guidelines

Design Team Response:

Agreed – Dropped kerbs and tactile pavements will be provided to improve crossing of A29 Fontwell Avenue, as shown on Drawing ITB11320-GA-015 Rev C.

2.12 SIGNING AND LIGHTING

2.13 PROBLEM

Location: G – A27 southwest bound approach to the junction

Summary: Insufficient visibility to signal heads could lead to fail to stop accidents

The Stopping Sight Distance (SSD) to the offside signal head is proposed at 196m, although this is below the required 295m, it is the same as with the approved scheme relating to Fontwell Meadows. Further, the SSD to the nearside signal head is proposed at 90m. In the event of the offside signal failure or queuing traffic obscuring the signal aspect, there is concern that approaching traffic will have insufficient time to react to a red aspect, which could lead to fail to stop accidents

Recommendation:

That the speed limit on the approach to the junction should be lowered and that the nearside signal head should also be located on a mast arm to increase conspicuity to approaching traffic.

Design Team Response:

Agreed – The visibility to the nearside primary signal head will be improved through provision of a mast arm mounted signal head, and the offside primary signal will be provided as a double height signal head to ensure it is visible above queued traffic, all as shown on Drawing ITB11320-GA-015 Rev C.

SSD is equivalent to the approved scheme, and so a speed limit reduction is not considered necessary. Notwithstanding this, subject to HE agreement, a Traffic Regulation Order to reduce the speed limit on this section of the A27 will be progressed.

2.14 PROBLEM

Location: H – A27 southwest bound approach to the junction

Summary: Proposed road markings could lead to lane change and side-swipe type accidents

On the southwest bound approach to the roundabout all three lanes have straight ahead arrow markings with the nearside lane also a turn left aspect. Road users may enter the nearside lane believing that they can still gain access to the A27, when instead they will be directed to the A29 Fontwell Avenue. This may lead to late lane change merge type collisions.

Recommendation:

It is recommended that the lane designation should be made clearer and be complemented with Advance Directional Signage, and that full details of signage and lane markings should be provided at Stage 2 Road Safety Audit.

Design Team Response:

Agreed – Road destination markings are to be added to clarify lane designation. Additional advanced directional signage will also be included on the westbound approach to the east of the subway, and provided for audit at Stage 2.

These works, including illustrative destination markings, are indicated on Drawing ITB11320-GA-015 Rev C and ITB11320-GA-016 Rev A.

All signing and lining will be considered at the Stage 2 Audit.

2.15 PROBLEM

Location: I – A27 southwest bound approach to the junction

Summary: Sun dazzle could lead to red light running accidents

The signal heads are on an east west alignment, where sun dazzle could lead to red light running accidents, particularly if drivers cannot see the red / amber aspects.

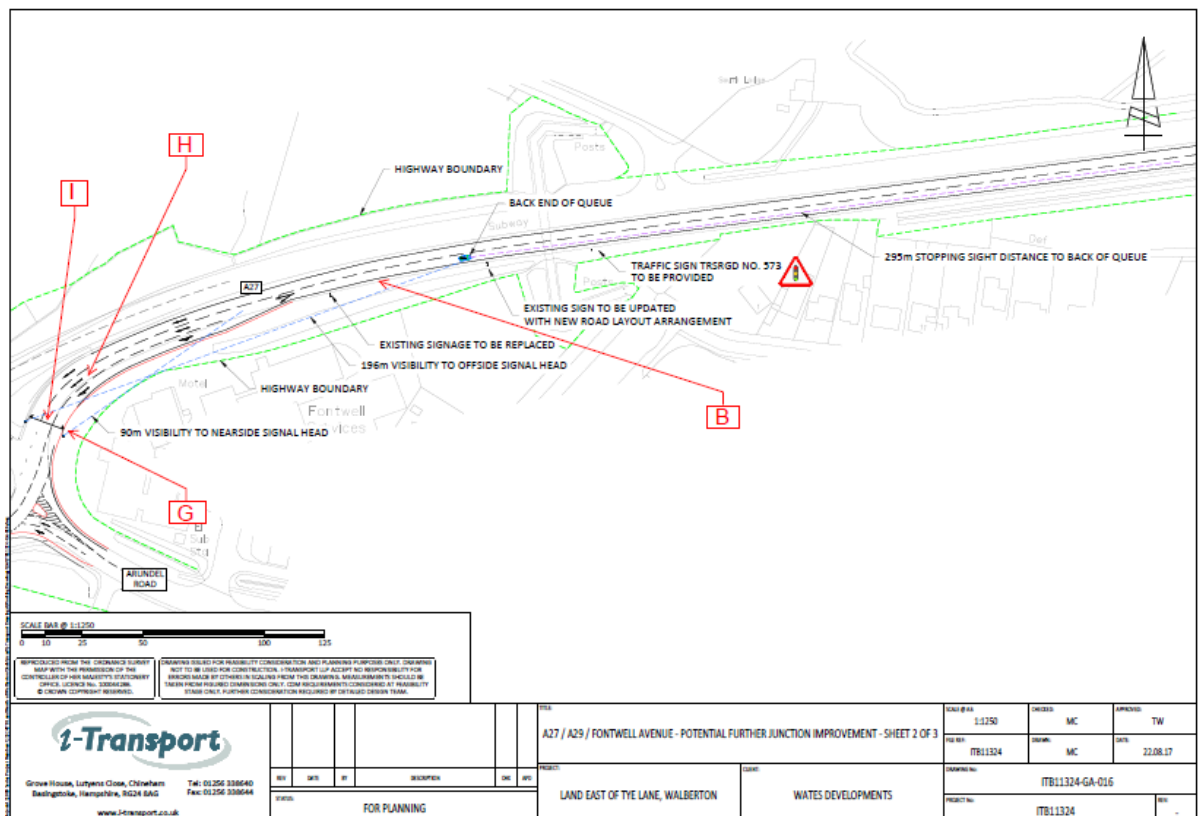
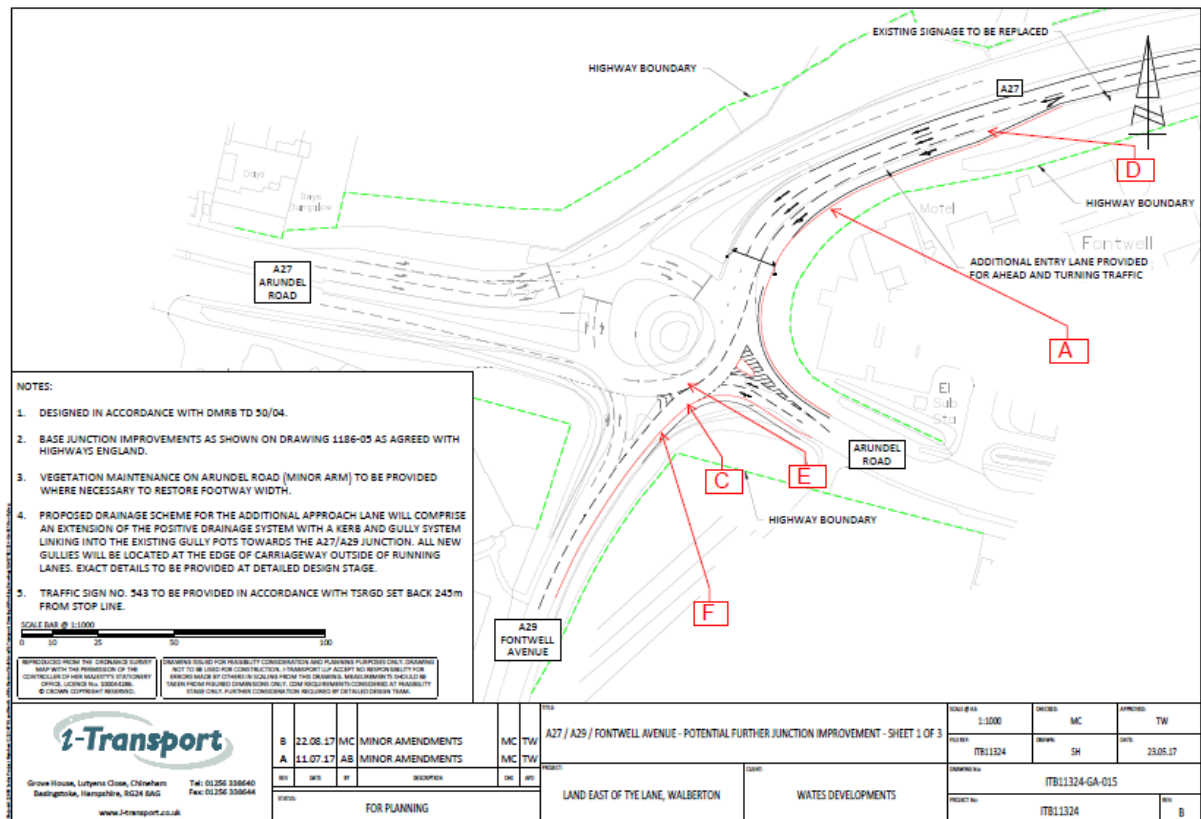
Recommendation:

That traffic signal hoods should be fitted.

Design Team Response:

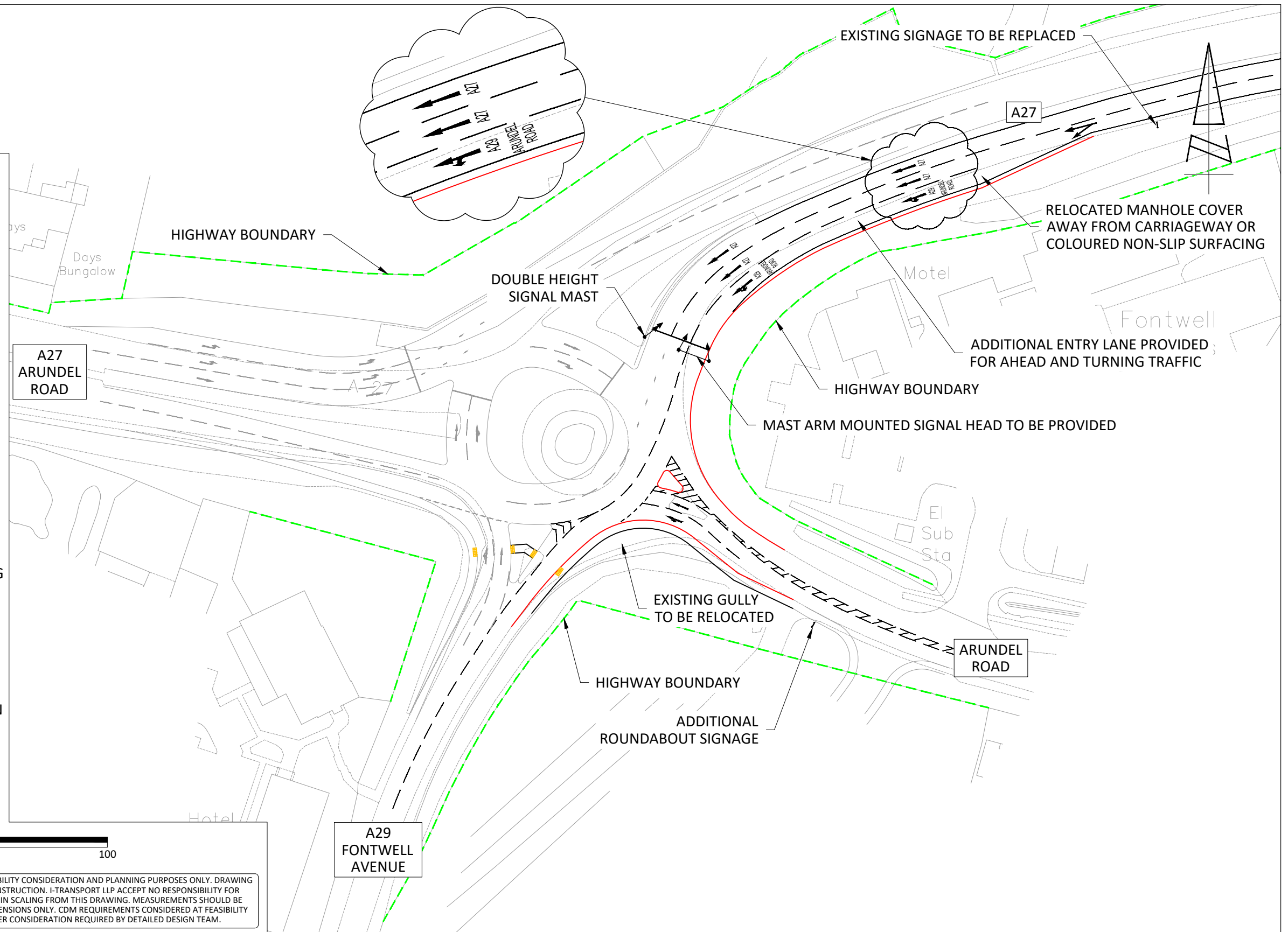
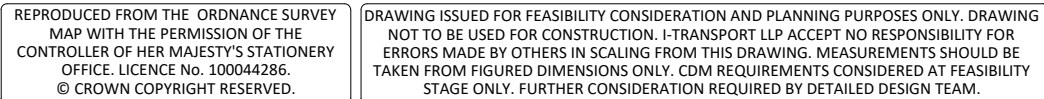
Agreed – Traffic signal hoods to be fitted. A note is included on Drawing ITB11320-GA-015 Rev C to identify this.

Appendix A – Problem Location Plan from Stage 1 Road Safety Audit



Appendix B – Updated Design Drawings to reflect Designers Response

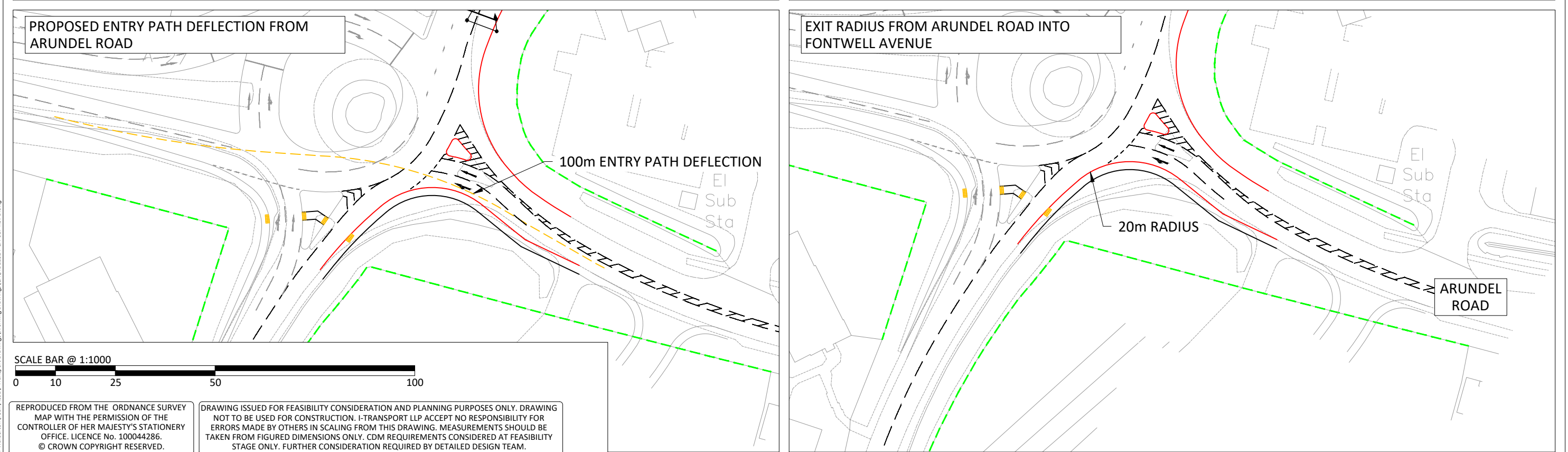
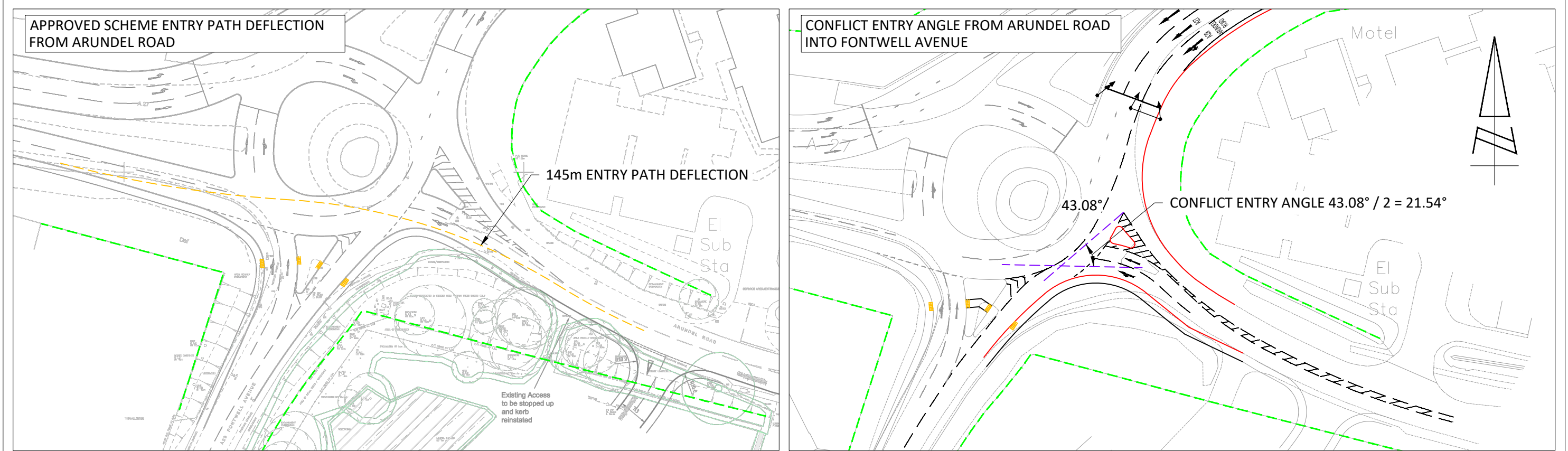
1. DESIGNED IN ACCORDANCE WITH DMRB TD 50/04.
2. BASE JUNCTION IMPROVEMENTS (DRAWING 1186-05) AGREED WITH HIGHWAYS ENGLAND.
3. VEGETATION MAINTENANCE ON ARUNDEL ROAD (MINOR ARM) TO BE PROVIDED WHERE NECESSARY TO RESTORE FOOTWAY WIDTH.
4. PROPOSED DRAINAGE SCHEME FOR THE ADDITIONAL APPROACH LANE WILL COMPRISE AN EXTENSION OF THE POSITIVE DRAINAGE SYSTEM WITH A KERB AND GULLY SYSTEM LINKING INTO THE EXISTING GULLY POTS TOWARDS THE A27/A29 JUNCTION. ALL NEW GULLIES WILL BE LOCATED AT THE EDGE OF CARRIAGEWAY OUTSIDE OF RUNNING LANES. EXACT DETAILS TO BE PROVIDED AT DETAILED DESIGN STAGE.
5. TRAFFIC SIGN NO. 543 TO BE PROVIDED IN ACCORDANCE WITH TSRGD SET BACK 245m FROM STOP LINE.
6. RRRAP ASSESSMENT TO BE UNDERTAKEN FOR A27 SOUTHWEST BOUND APPROACH TO DETERMINE NEED FOR VEHICLE RESTRAINT SYSTEM.
7. SIGNAL HOODS TO BE FITTED.



C	30.08.17	MC	UPDATES AS PER STAGE 1 RSA COMMENTS	MC	TW
B	22.08.17	MC	MINOR AMENDMENTS	MC	TW
A	11.07.17	AB	MINOR AMENDMENTS	MC	TW
REV	DATE	BY	DESCRIPTION	CHK	APD
STATUS: FOR PLANNING					

TITLE: A27 / A29 / FONTWELL AVENUE - POTENTIAL FURTHER JUNCTION IMPROVEMENT - SHEET 1 OF 3	
PROJECT: LAND EAST OF TYE LANE, WALBERTON	CLIENT: WATES DEVELOPMENTS

SCALE @ A3: 1:1000	CHECKED: MC	APPROVED: TW
FILE REF: ITB11324	DRAWN: SH	DATE: 23.05.17
DRAWING No: ITB11324-GA-015		
PROJECT No: ITB11324		REV: C



 Grove House, Lutyens Close, Chineham Basingstoke, Hampshire, RG24 8AG www.i-transport.co.uk							TITLE:		SCALE @ A3: 1:1000		CHECKED: MC		APPROVED: TW		
		B	30.08.17	MC	UPDATES AS PER STAGE 1 RSA COMMENTS CONFLICT ANGLE REVISED	MC	TW	A27 / A29 / FONTWELL AVENUE - POTENTIAL FURTHER JUNCTION IMPROVEMENT - SHEET 3 OF 3		FILE REF: ITB11324		DRAWN: MC		DATE: 22.08.17	
		A	24.08.17	SH		ZB	TW			DRAWING No: ITB11324-GA-017					
		REV	DATE	BY	DESCRIPTION	CHK	APD	PROJECT: LAND EAST OF TYE LANE, WALBERTON		CLIENT: WATES DEVELOPMENTS		PROJECT No: ITB11324		REV: B	
		STATUS: FOR PLANNING													

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