

**LAND OFF PUMP LANE  
RAINHAM  
KENT  
ME8 7TJ**

**TOWN AND COUNTRY PLANNING ACT 1990  
APPEAL REFERENCE: APP/A2280/W/20/3259868**

**APPEAL BY A C GOATHAM & SON**

**INQUIRY DOCUMENT: Mott Macdonald Road Safety Audit**

**PREPARED BY:**

**Mott Macdonald for the Appellant**

**8<sup>th</sup> April 2021**

**INQUIRY DOCUMENT REF: CD40**

# **Pump Lane, Lower Rainham**

Road Safety Audit  
Stage 1

8 April 2021



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# Pump Lane, Lower Rainham

## Road Safety Audit Stage 1

8 April 2021



# Issue and Revision Record

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A	08/04/2021	T J Blaney	M S Ring	J T Pearson	First Issue
					

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# 1 Introduction

This report describes a Stage 1 Road Safety Audit carried out on off-site mitigation works associated with a proposed development on land in the vicinity of Pump Lane, Lower Rainham.

The audit was carried out at the request of David Tucker Associates.

The audit took place at the Bristol office of Mott MacDonald and consisted of a detailed examination of the submitted documentation and drawings listed in **Appendix A**.

It is confirmed that this is a Stage 1 Road Safety Audit and that the audit was undertaken upon completion of the preliminary design work.

The Road Safety Audit Team, as approved by the David Tucker Associates' Project Sponsor, Jacqueline Aggiss, consisted of:

Tim Blaney	BSc (Hons), CMILT, MCIHT, MSoRSA (Certificate of Competency in Road Safety Audit, July 2012) Audit Team Leader, Mott MacDonald
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Matthew Ring	BSc (Hons), MCIHT, MSoRSA (Certificate of Competency in Road Safety Audit, April 2016) Audit Team Member, Mott MacDonald
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A visit to the various sites was completed by both Auditors on Wednesday 31<sup>st</sup> March 2021 between 10:00 and 12:00 hrs. During this visit the weather was sunny and the road surface was dry. Heavy traffic flows were observed on the A2 whilst moderate flows were present at the A289 / B2004 roundabout; pedestrian activity was observed at all locations whilst no cyclist activity occurred during the site visit. The site visit was undertaken during a period of travel restrictions associated with the ongoing Covid-19 Pandemic. As such, traffic levels may be lower than typically expected.

This Road Safety Audit was carried out in accordance with Highways England's Departmental Standard GG119. The Road Safety Audit 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.

The comments and suggestions for road safety improvements made in this report seek to address 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. Consequently, the auditors accept no responsibility for the design or construction of the scheme.

All the issues raised in this report are considered to be required for action. The comments contained in the report are based on safety related concerns and, as such, the design engineer will need to consider carefully how to respond to each of the issues. The Audit Response Report should be completed by the Design Team and kept on file for future reference.

Key Plans indicating the location of any identified safety related issues are provided in **Appendices B, C and D**.



A previous Stage 1 Road Safety Audit of the proposed development was undertaken by Mott MacDonald during the Autumn of 2019 (Doc. Ref: 398911-TPN-ITD-077-B). This included the modifications to the Yokosuka Way / Lower Rainham Road roundabout. The Audit Team has reviewed the previous Stage 1 Road Safety Audit together with the associated submitted documents to familiarise themselves with the larger scheme.

### **Scheme Description**

The scheme consists of three areas where improvements are proposed:

*Yokosuka Way – Lower Rainham Road, Gillingham* – The approach to the roundabout on the eastern arm of the existing roundabout is proposed to be widened to accommodate two lanes, with kerb realignments on the southern side of Lower Rainham Road and amendments to the central splitter island to facilitate this. Minor kerb realignment on the western Lower Rainham Road arm of the roundabout is also proposed.

*A2 London Road* – an existing Toucan Crossing is to be relocated to the north-west and staggered refuge island provided. An additional lane on the north-westbound A2 will extend to the south of the crossing point, whilst the two lane A2 southbound exit from Bowater Roundabout will be formally extended towards the crossing point.

*A2 Will Adams Roundabout* – modifications to the existing circulatory carriageway markings and slight amendments to the traffic island kerb alignment on the southern side of the roundabout to accommodate three lanes of traffic on the southern circulatory carriageway.

## 2 Items Raised at Previous Audits

This section describes road safety related issues identified during previous Road Safety Audit that are considered to remain outstanding.

A previous Stage 1 Road Safety Audit (Doc. Ref: 398911-TPN-ITD-077-B) of the proposed development included the proposed modifications to the Yokosuka Way / Lower Rainham Road roundabout. The audit raised one issue relating to the eastbound Lower Rainham Road entry to the roundabout. The scheme has subsequently been modified to address this issue and the Audit Team are of the opinion that the issue is no longer considered to be outstanding.

## 3 Items Raised at this Stage 1 Audit

This section describes road safety related issues identified by the Audit Team during this Stage 1 Road Safety Audit that are associated with the scheme as presented in **Appendix A**.

### 3.1 Yokosuka Way / Lower Rainham Road Roundabout

The Audit Team did not identify any road safety related issues associated with this element of the scheme.

### 3.2 A2 London Road – Toucan Crossing Improvements

#### 3.2.1 Problem 3.2.1

*Location: North-westbound approach to Toucan Crossing.*

*Summary: Existing ADS may restrict forward visibility to nearside traffic signals.*

Two existing ADS are present on the north-westbound approach to the new crossing location. One of these will need to be relocated to accommodate the additional traffic lane, but it is unclear if the south-eastern most sign will be repositioned. The presence of these signs within the verge may restrict forward visibility to the nearside traffic signals increasing the risk of inappropriate approach speeds and possible crossing overshoot related collisions.

**Figure 1: Existing ADS in advance of proposed crossing point.**



Source: Mott MacDonald

### Recommendation

It is recommended that both ADS are appropriately positioned so that they do not impede forward visibility to the nearside traffic signals whilst being suitably located to provide lane choice guidance for motorists approaching the roundabout.

### 3.2.2 Problem 3.2.2

*Location: Southern side of A2 London Road.*

*Summary: Close proximity of vegetation and street furniture may lead to conflicts.*

The southern kerb of the A2 London Road is to be realigned to accommodate an additional lane of traffic in the north-westbound direction. A number of trees together with street lighting columns and other infrastructure are present within the verge. It is unclear what vegetation clearance and street furniture relocation is to be undertaken in association with the kerb realignment works.

The Audit Team is concerned that failure to remove vegetation and relocate street furniture to an appropriate offset from the realigned kerblines will create insufficient clearance from the edge of the carriageway, increasing the likelihood of items being struck by passing vehicles.

**Figure 2: Existing trees and street furniture.**



Source: Mott MacDonald

### Recommendation

It is recommended that vegetation and street furniture items are offset a minimum of 450mm from the realigned kerblines.



### 3.2.3 Problem 3.2.3

*Location: Southern side of A2 London Road.*

*Summary: Unclear construction method may result in inappropriate drop from footway / cycleway.*

An additional lane of traffic is to be provided in the north-westbound direction utilising the existing verge area on the southern side of the A2 London Road. A footway / cycleway runs parallel to the A2 at this location but at a notably higher level. The ground between the footway / cycleway and the new carriageway will require some form of retention or re-grading and it is unclear what construction method and new gradient will be used.

The Audit team are concerned that a steeper gradient or retaining structure may present a hazard to pedestrians or cyclists should they leave the paved surface and increase the risk of slips, trips and falls resulting in personal injury or increase the risk of falls into the carriageway.

**Figure 3: Existing traffic signals ahead sign at proposed access.**



Source: Mott MacDonald

### Recommendation

It is recommended that a review of the gradient of the embankment provided between the widened carriageway and existing footway is undertaken with the view to introducing measures such as a level margin and suitably graded slope or, if this cannot be provided, segregation such as pedestrian guardrail to prevent falls into the carriageway.

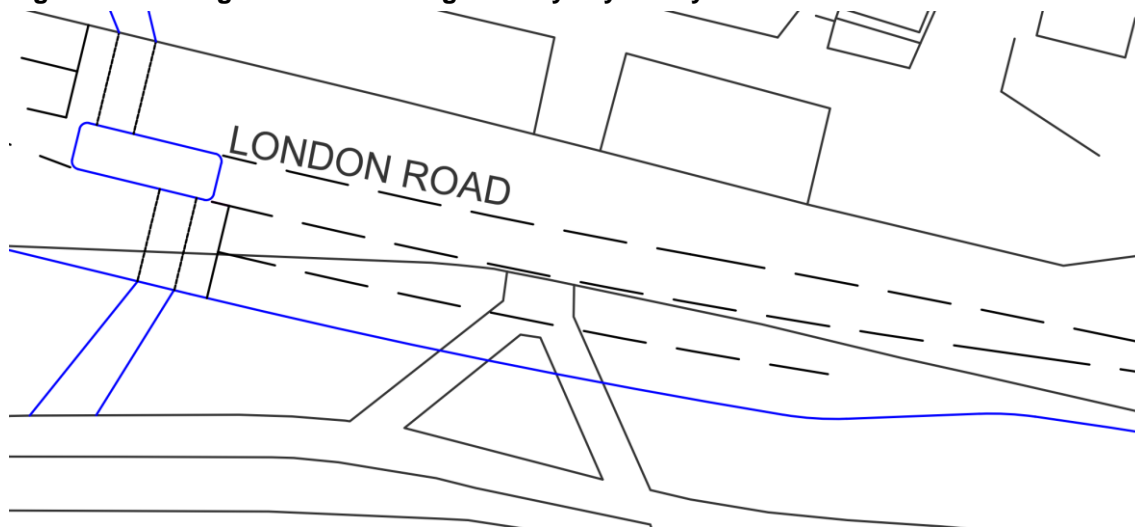
### 3.2.4 Problem 3.2.4

*Location: Existing Toucan Crossing location.*

*Summary: Existing footway / cycleway associated with current crossing position should be removed.*

There is no indication if the existing footway / cycleway leading to the current crossing point are to be removed. Failure to remove the links may lead to pedestrians or cyclists attempting to cross at the existing crossing away from the relocated Toucan Crossing, increasing their vulnerability to being struck by passing vehicles.

**Figure 4: Existing Toucan Crossing footway / cycleways.**



Source: David Tucker Associates

### **Recommendation**

It is recommended that the existing footway / cycleway links leading to the current Toucan Crossing are removed.

### 3.2.5 Problem 3.2.5

*Location: Proposed Toucan Crossing.*

*Summary: Traffic signal loops associated with Bowater Roundabout located at proposed crossing position.*

Existing traffic signal carriageway loops for the Bowater Roundabout are located at the proposed position of the new Toucan Crossing. It is unclear if the loops will be relocated / modified and what impact this will have on the operation of the roundabout signals.

The presence of a Toucan Crossing at this location may have a detrimental impact on the operation of the existing signals increasing the risk of inappropriate traffic queues and, as a result, the risk of rear end shunt related collisions.

Furthermore, queuing back and across the crossing may increase the risk of pedestrians and cyclists crossing through stationary traffic without waiting for a green pedestrian signal. This increases the risk of collisions with traffic passing through the crossing which may not be anticipating the need to stop.

**Figure 5: Existing traffic signal loops at propose crossing location.**



Source: Mott MacDonald

### Recommendation

It is recommended that the impact the proposed crossing location has on the Bowater Roundabout signals is assessed and the design modified if necessary.



### 3.2.6 Problem 3.2.6

*Location: Proposed Toucan Crossing.*

*Summary: Level difference between carriageway and adjacent footways / cycleways.*

On both sides of the A2 London Road the carriageway is notably lower / higher than the adjacent footways / cycleways. This requires 'ramps' leading from the footway / cycleways to the Toucan Crossing. It was noted that the gradient leading to the existing Toucan Crossing appeared inappropriate and a person using a mobility scooter was observed having difficulty crossing in a north-south direction. Failure to provide suitably graded approaches to the crossing point may hinder its safe use leading to collisions or trips / falls.

**Figure 6: Proposed location of Toucan Crossing.**



Source: Mott MacDonald

### Recommendation

It is recommended that the gradient of the footway / cycleway links is no greater than 1 in 12 and that level landings are provided either side of the proposed crossing.



### 3.3 Will Adams Roundabout

#### 3.3.1 Problem 3.3.1

*Location: Southern circulatory carriageway of roundabout.*

*Summary: Lack of 'confirmation' carriageway arrow markings may lead to collisions.*

Faded 'confirmation' carriageway arrows are present on all entries to the roundabout and on all sides of the circulatory carriageway except on the southern circulatory carriageway. The proposed modifications will result in an additional carriageway lane at this location and the lack of 'confirmation' arrows may lead to driver hesitation or late lane changes increasing the risk of collisions.

**Figure 7: Lack of confirmation arrows on southern circulatory carriageway.**



Source: Mott MacDonald

#### **Recommendation**

It is recommended that 'confirmation' carriageway markings are provided on the southern circulatory carriageway. It would also be beneficial to refresh all existing markings.

### 3.3.2 Problem 3.3.2

*Location: Southern circulatory carriageway of roundabout.*

*Summary: Proposed lane arrangement on widened circulatory carriageway may result in inappropriate swept path movements at the roundabout.*

Three carriageway lanes are to be provided on a widened southern circulatory carriageway with two ahead lanes for the A2 and a right turn lane to continue around the roundabout. To accommodate the additional lane, the splitter island on the southern arm of the roundabout is to be modified but no other kerb realignment is proposed.

The Audit Team is concerned that the provision of an additional lane and the horizontal alignment of the southern circulatory carriageway is such that large vehicles continuing onto the westbound A2 may straddle two lanes of traffic increasing the risk of side swipe type collisions.

Furthermore, the audit team are concerned that vehicles in lane 1 of the widened roundabout circulatory carriageway may not anticipate the changes in direction required when navigating the roundabout to make the ahead movement. The audit team are concerned that, if travelling at higher than assessed speeds, there is an increased risk of vehicles colliding with the kerb or the verge / street furniture.

**Figure 8: Southern circulatory carriageway of roundabout.**



Source: Mott MacDonald

### Recommendation

It is recommended that swept path analysis is undertaken for this junction to demonstrate that the proposed arrangements can accommodate anticipated vehicle types. If this is not possible, the geometry of the southern side of the roundabout should be modified accordingly.

### 3.3.3 Problem 3.3.3

*Location: A2 London Road westbound entry.*

*Summary: Existing carriageway arrow markings require amendment.*

Three lanes of traffic are present on the A2 London Road westbound entry to the roundabout; these are designated as Lane 1 - 'Left turn only', Lane 2 - 'Ahead only', and Lane 3 - 'Ahead and right'. The proposed modifications to the roundabout will result in the lanes becoming Lane 1 - 'Ahead and Left', Lane 2 - 'Ahead only', and Lane 3 - 'Right turn only'. The design drawings do not indicate that these markings will be modified; failure to do so will result in incorrect lane choice and driver confusion increasing the risk of collisions.

**Figure 9: Existing carriageway arrow markings on westbound entry to roundabout.**



Source: Mott MacDonald

### Recommendation

It is recommended that the carriageway arrow markings on the A2 London Road Westbound entry are appropriately modified to provide consistency with the other proposed changes.

## 4 Audit Team Statement

We certify that this audit has been carried out in accordance with Highways England's Departmental Standard GG119.

### Road Safety Audit Team Leader

**T J Blaney** BSc (Hons), CMILT, MCIHT, MSoRSA  
(Certificate of Competency in Road Safety Audit, July 2012)

Signed:



Date: 08<sup>th</sup> April 2021

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Signed:



Date: 08<sup>th</sup> April 2021

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# Appendices

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## A. List of Drawings & Documents Examined

**Table 4.1: Drawings**

Drawing Number	Revision	Drawing Title
20230-10	B	Proposed improvements, Yokosuka Way – Lower Rainham Road
20230-17	B	Pedestrian crossing improvement – East of Bowater
20230-18	B	Will Adams Roundabout

Source: David Tucker Associates

**Table 4.2: Documents**

Document Number	Revision	Document Title
398911-TPN-ITD-077	B	Stage 1 Road Safety Audit – Pump Lane

Source: David Tucker Associates



No Problems Identified

Not to Scale

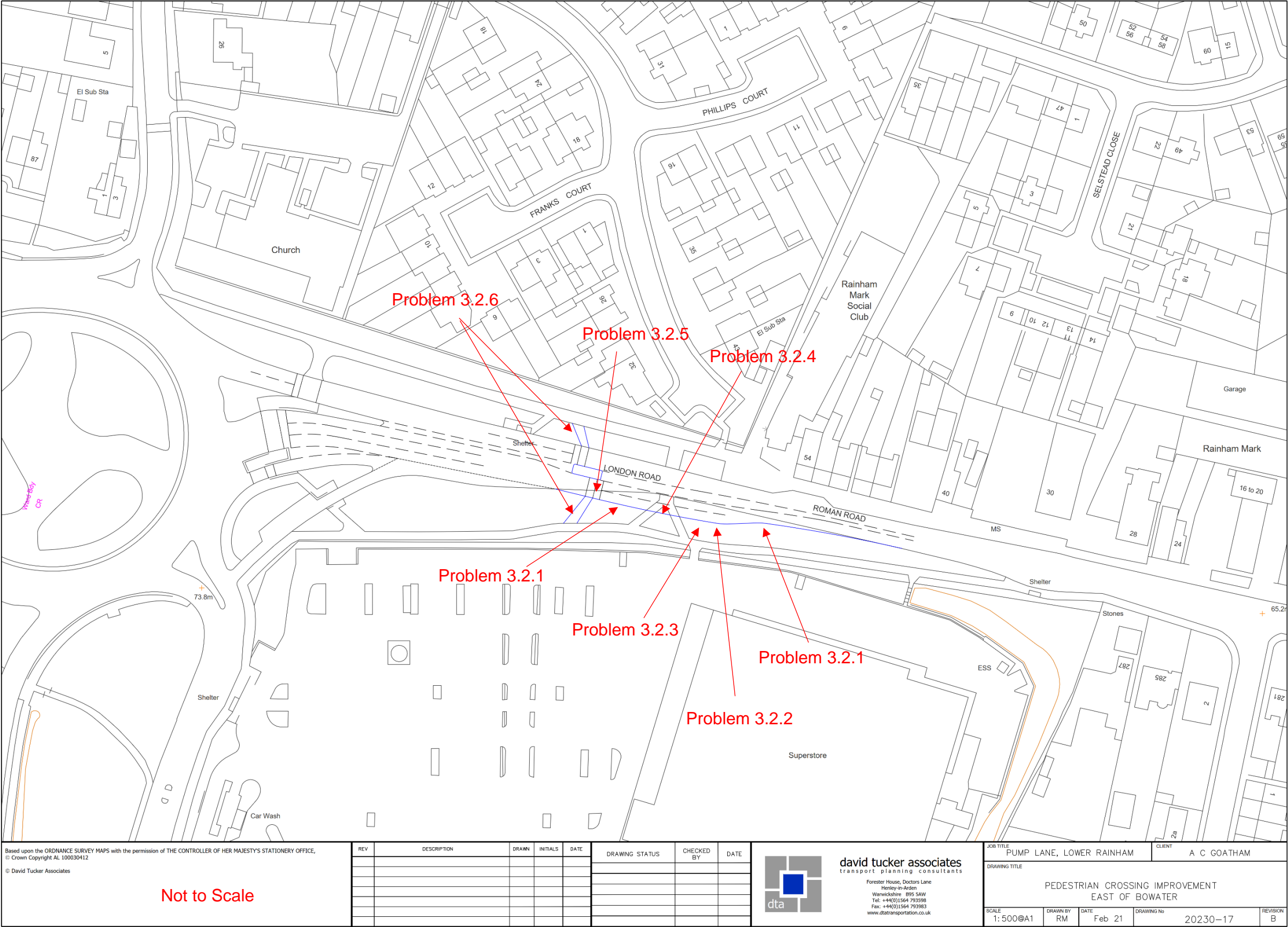
REV	DESCRIPTION	DRAWN	INITIALS	DATE	DRAWING STATUS	CHECKED BY	DATE

JOB TITLE		PUMP FARM		CLIENT		GOATHAM	
DRAWING TITLE							
Proposed Improvements Yokosuka Way – Lower Rainham Road							
SCALE	DRAWN BY	DATE	DRAWING No	REVISION			
1:250@A1	RJM/JA	Feb 2021	20230-10	B			

Based upon the ORDNANCE SURVEY MAPS with the permission of THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE,  
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C. Location Plan – A2 London Road Toucan Crossing





D. Location Plan – Will Adams Roundabout

