

Note / Memo

# Mobility & Infrastructure

To: Norfolk County Council and South Norfolk District Council

From: Jimoh Ibrahim
Date: 08 November 2022

Copy: Alan Leadbetter, Alan Preslee
Our reference: PC4115-RHD-ZZ-XX-NT-Z-0002

Classification: Project related Checked by: Sarah Simpson

Subject: Stage 1 Road Safety Audit

Royal HaskoningDHV has been commissioned by Storengy UK to provide transport planning advice relating to the revised planning application seeking consent for a proposed Anaerobic Digestion (AD) Plant in Bressingham (Ref: 2022/1108).

HaskoningDHV UK Ltd.

A Transport Statement (TS) Addendum was prepared and submitted to South Norfolk District Council which included proposed off-site highways improvements. The proposed measures included an identified haul route with associated highways improvements to improve the level of safety associated with the movement of Heavy Commercial Vehicles (HCVs) to and from the site.

A suite of passing places and associated works were proposed along the haul route to improve the going along the route for all vehicles, as well as to appropriately accommodate the HCV traffic associated with the AD plant. An independent Stage 1 Road Safety Audit (RSA1) of the proposed off-site highways improvements has been carried out, and the final RSA1 report is attached in **Annex A**.

Potential road safety problems identified by the independent Road Safety Audit Team have been taken into account and the drawings of the proposed off-site works have been revised accordingly. The revisions are detailed in the Designer's Response attached in **Annex B**. A summary of the drawings submitted is set out in **Table 1** which shows which drawings included in the Transport Statement Addendum have been revised in accordance with the Road Safety Audit. All final drawings including the revised drawings are provided in **Annex C**.

Table 1: Summary of Drawing Revisions associated with the Stage 1 Road Safety Audit

| Drawing Number                     | Drawing Title                              | Revision Status | Final Drawing for Approval         |
|------------------------------------|--|-----------------|------------------------------------|
| PC4115-RHD-ZZ-ZZ-DR-D-<br>0002 P01 | Proposed Route Assessment<br>Overview Plan | New revision    | PC4115-RHD-ZZ-ZZ-DR-D-<br>0002 P02 |
| PC4115-RHD-ZZ-ZZ-DR-D-<br>0003 P01 | Proposed Route Assessment (Sheet 1 of 3)   | No revision     | PC4115-RHD-ZZ-ZZ-DR-D-<br>0003 P01 |
| PC4115-RHD-ZZ-ZZ-DR-D-<br>0004 P01 | Proposed Route Assessment (Sheet 2 of 3)   | New revision    | PC4115-RHD-ZZ-ZZ-DR-D-<br>0004 P02 |
| PC4115-RHD-ZZ-ZZ-DR-D-<br>0005 P01 | Proposed Route Assessment (Sheet 3 of 3)   | New revision    | PC4115-RHD-ZZ-ZZ-DR-D-<br>0005 P02 |
| PC4115-RHD-ZZ-ZZ-DR-D-<br>0006 P01 | Swept Path Analysis (Sheet 1 of 3)         | No revision     | PC4115-RHD-ZZ-ZZ-DR-D-<br>0006 P01 |
| PC4115-RHD-ZZ-ZZ-DR-D-<br>0007 P01 | Swept Path Analysis (Sheet 2 of 3)         | New revision    | PC4115-RHD-ZZ-ZZ-DR-D-<br>0007 P02 |

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| Drawing Number                     | Drawing Title                      | Revision Status | Final Drawing for Approval         |
|------------------------------------|------------------------------------|-----------------|------------------------------------|
| PC4115-RHD-ZZ-ZZ-DR-D-<br>0008 P01 | Swept Path Analysis (Sheet 3 of 3) | New revision    | PC4115-RHD-ZZ-ZZ-DR-D-<br>0008 P02 |

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# Annex A

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Stage 1 Road Safety Audit

Client: Storengy UK

Reference: PC4115-RHD-ZZ-XX-RP-SA-0001

Status: Final/00

Date: 03 November 2022





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Document title: Deal Farm, Bressingham

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Reference: PC4115-RHD-ZZ-XX-RP-SA-0001

Status: 00/Final

Date: 03 November 2022

Project name: Deal Farm - Stage 1 Road Safety Audit

Project number: PC4115
Author(s): Vicky Seaton

Drafted by: Vicky Seaton

Checked by: Bryn Buck

Date: 01.11.2022

Approved by: Vicky Seaton

Date: 03.11.2022

#### Classification

Project related

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#### 1 Introduction

Royal HaskoningDHV has been appointed by Storengy UK to undertake a Stage 1 Road Safety Audit. The Audit refers to highway works associated with a haul route for a proposed Anaerobic Digestion (AD) plant at Deal Farm, off Kenninghall Road, Bressingham in Norfolk. The extents of the Road Safety Audit are shown on **Figure 1** of this report.

The Audit Team for this Stage 1 Road Safety Audit is as follows:

#### **Audit Team Leader**

Vicky Seaton, BSc (Hons), MSoRSA, MCIHT, Certificate of Competency, iRAP Accredited Supplier of Coding, Analysis and Reporting Royal HaskoningDHV

## **Audit Team Member** Bryn Buck, MIHE Royal HaskoningDHV

The Road Safety Audit took place on Tuesday 25 October 2022, in accordance with information provided by Sarah Simpson of Royal HaskoningDHV, as designers of the scheme. The Road Safety Audit comprised an examination of documents listed in **Appendix A** of this report, and a site visit.

The Audit Team confirm that the information provided to them as part of the Audit Brief, was sufficient of the purposes of this Stage 1 Road Safety Audit.

A site visit was undertaken on Monday 24 October 2022 between 14:00 and 14:30, during the afternoon interpeak traffic period. Weather conditions during the site visit were sunny and surface conditions were mainly dry, with some surface water ponding in places. Traffic and non-motorised user flows on the existing roads forming the proposed haul route were considered to be representative of the time of day and the location.

The terms of reference for the Road Safety Audit are described in GG 119<sup>1</sup>. The Road Safety Audit 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 design to any other criteria.

The completed highway works would provide 37 passing places on approximately 4.5 kilometres (km) of existing rural roads. The locations of the passing places have been numbered for ease of identification within this Stage 1 Road Safety Audit. The passing places and identification numbers are shown on **Figure 2** of this report. The locations of any problems identified by the Audit Team are shown on **Figure 3** of this report.

It is understood that the audited scheme is at the planning application stage, and as such, there are a number of items that the Audit Team would wish to see that are not available for this Stage 1 Road Safety Audit.

As such, the Design Team should submit a full Stage 2 Road Safety Audit alongside the detailed design package issued to the Local Highway Authority for approval.

<sup>&</sup>lt;sup>1</sup> GG 119 (Formerly HD 19/15) Road Safety Audit, Revision 2, January 2020



Items to be considered within the detailed design may include:

- Drainage.
- Road signs.
- Carriageway markings.
- Pavement and kerbing details.

The Audit Team has not been made aware of any Departures (or Relaxations) from Standard.

A summary of Personal Injury Collision (PIC) data has been provided to the Audit Team within the approved Audit Brief. The information provided within the Audit Brief, which has been taken from the CrashMap<sup>2</sup> website, indicates that there have been no PICs recorded on the proposed haul route during the most recent five-year period (2017-2021).

Notably, the CrashMap database only contains collisions up to June 2021. As such, further details relating to any collisions in the vicinity of the proposed scheme would require independent verification by the Client should the Local Highway Authority have any concerns relating to the collision history at this location.

Any recommendations included within this report should not be regarded as being prescriptive design solutions to the problems identified. They are only to indicate a proportionate and viable means of eliminating or mitigating the identified problem in accordance with GG 119, and in no way imply that a formal design process has been undertaken.

There may be alternative means of addressing a problem which would be equally as acceptable or superior in achieving the desired degree of mitigation, and these should be considered when responding to this report.

<sup>&</sup>lt;sup>2</sup> www.CrashMap.co.uk



# 2 Matters Arising from this Stage 1 Road Safety Audit

# A1 Local Alignment

## A1.1 Visibility

#### A1.1.1 Problem 1

**Location:** Proposed haul route; multiple locations as follows:

- Halford Lane (Location 1, Location 2, Location 3).
- Fersfield Road (Location 17).
- Nordle Corner (Location 22, Location 23, Location 25, Location 28, Location 29).
- Kenninghall Road (Location 30, Location 31).

**Summary:** Insufficient forward visibility in advance or and within the vicinity of the proposed passing places could result in sudden braking leading to the potential for rear end shunts or loss of control collisions.

**Description:** Landscaping, earth banks and the alignment of the existing carriageway currently restrict forward visibility between road users in the vicinity of 10 of the proposed passing places. Failure to provide and maintain adequate forward visibility could result in conflicts between oncoming vehicles or sudden braking leading to rear end shunts or loss of control collisions

Photograph 1 - Nordle Corner (Location 23/25)



Photograph 2 – Kenninghall Road (Location 31)



#### Recommendation – A1.1.1

It is recommended that drawings are prepared demonstrating that forward visibility requirements can be met and where any alterations to landscaping or the proposed geometry may be required. If it is not possible to provide adequate forward visibility, it may be necessary to relocate the passing place to a location where sufficient forward visibility can be achieved.



# A1.2 New/ Existing Road Interface

A1.2.1 Problem 2

**Location:** Proposed haul route; multiple locations as follows:

- Halford Lane (Location 1, Location 2).
- The Valley (Location 9, Location 10, Location 11, Location 14).
- Nordle Corner (Location 24, Location 25, Location 26).
- Lady's Lane (Location 30).
- Kenninghall Road (Location 32).

**Summary:** Collisions with street furniture/ trees could lead to the potential for collapse on the infrastructure, leading to injuries or to subsequent collisions.

**Description:** The proximity of the passing places to existing signs, telegraph poles and trees could lead to collisions with these items as vehicles are manoeuvring into the facilities. Collisions with street furniture and trees could result in injuries or to damage to the infrastructure leading to collapse and subsequent collisions.

#### Recommendation - A1.2.1

The locations of the passing places (or where possible, street furniture) should be located to reduce the potential for collisions with existing infrastructure.



A1.2.2 Problem 3

**Location:** Proposed haul route; multiple locations as follows:

- Halford Lane (Location 4, Location 7).
- The Valley (Location 9, Location 10, Location 11, Location 12, Location 13).
- Lady's Lane (Location 29, Location 30).
- Kenninghall Road (Location 32, Location 34).
- Common Road (Location 35).

**Summary:** Proximity of proposed passing places to drainage ditches could result in vehicles inadvertently leaving the carriageway with the potential for injury.

**Description:** Some of the passing places appear to be located immediately adjacent to deep drainage ditches. Vehicles manoeuvring into/ out of the passing places could inadvertently leave the carriageway to the nearside, sliding into the ditches or entering the adjacent fields, resulting in the potential for injuries to vehicle occupants.

Photograph 3 - Image of Kenninghall Road looking east towards Common Road, showing deep drainage ditches adjacent to proposed passing places at Locations 33 and 35 (shown by arrows)



#### Recommendation - A1.2.2

The locations of the passing places should be located to reduce the potential for vehicles to enter ditches whilst entering/ leaving the passing places.



A1.2.3 Problem 4

**Location:** Proposed haul route; multiple locations as follows:

- Halford Lane (Location 2, Location 4).
- The Valley (Location 9, Location 10).

**Summary:** Vehicles overhanging the main carriageway could lead to side swipe collisions with passing traffic leading to the potential for damage and secondary collisions elsewhere on the highway.

**Description:** Earth banks are present adjacent to four of the proposed passing places. The presence of these boundary features could restrict the available space to provide a passing place of sufficient width to accommodate a vehicle without overhanging the main carriageway. Vehicles overhanging the main carriageway could lead to swipe collisions with passing traffic resulting in the potential for damage and secondary collisions elsewhere on the highway.

Photograph 4 - Image of Halford Lane looking north, showing levels difference between carriageway and adjacent field



Photograph 5 - Image of The Valley looking east, showing earth bank to the south of the carriageway



#### Recommendation - A1.2.3

The width of the proposed passing places should be sufficient to accommodate a vehicle fully, without overhanging the adjacent carriageway. Where existing boundary features are unable to be modified to accommodate the passing places, consideration should be given to relocating the passing place.



## A2 General

#### A2.1 Public Utilities

A2.1.1 Problem 5

**Location:** Halford Lane (Location 6).

**Summary:** Service chamber covers of incorrect loading specification could collapse due to vehicle overrunning, leading to the potential for vehicle damage and resulting loss of control collisions.

**Description:** A service chamber cover is currently sited within the western verge of Halford Lane within the extents of a proposed passing place (Location 6). The proposals would result in the existing chamber cover being subject to overrunning by vehicular traffic. If the loading properties of the cover is not sufficient, it could become damaged or collapse, leading to vehicle damage and the potential for loss of control collisions.

Photograph 6 - Image of Halford Lane looking north, showing service chamber cover within the extents of the proposed passing place (Location 6)



#### Recommendation - A2.1.1

Where service chamber covers previously sited within the verge are to be exposed to vehicle movements, these should be of sufficient standard to accommodate the appropriate vehicle loadings.



A2.1.2 Problem 6

Lady's Lane/ Kenninghall Road, adjacent to passing place Location 31.

**Summary:** Reduced conspicuity of the location of a fire hydrant could lead to high severity injuries or significant damage to property in an emergency situation.

**Description:** A fire hydrant marker is present on the grassed island at the junction of Lady's Lane and Kenninghall Road. Drawing PC4115-RHD-ZZ-ZZ-DR-D-0008 indicates that the island would be removed in order to accommodate HGV movements. Information provided to the Audit Team does not provide details in relation to the relocation of the hydrant marker or whether it may be necessary to relocate access to the hydrant itself. Failure to relocate the sign to a suitable location could result in delays in obtaining access to the hydrant during an emergency situation, leading to the potential for high severity injuries or significant damage to property.

Photograph 7 - Image of Lady's Lane/ Kenninghall Road junction, showing hydrant sign on grassed island



#### Recommendation - A2.1.2

The Designers should liaise with the relevant Water Officer at Norfolk County Council in relation to the requirement to relocate the fire hydrant marker.



#### A3 Junctions

## A3.1 Layout

A3.1.1 Problem 7

Location: Proposed haul route; multiple locations as follows:

Fersfield Road/ Hall Lane.

Nordle Corner/ Algar Road.

Lady's Lane/ Kenninghall Road.

**Summary:** Unclear priorities at the junctions could result in collisions between road users.

**Description:** Drawings provided to the Audit Team indicate that the proposals would require the removal of the existing grassed traffic islands present at the above-named junctions. No details have been provided in relation to proposed carriageway markings at the amended junctions, reducing road user awareness of prioritise and give-way requirements. Reduced awareness of priorities at the junctions could result in multiple collision types including nose-to-nose or side impact collisions, and rear end shunts due to sudden braking.

Photograph 8 - Images showing existing layouts of Kenninghall Road/Lady's Lane junction and Nordle Corner/Algar Road junction





## Recommendation - A3.1.1

It is recommended that appropriate carriageway markings are provided at the amended junctions, increasing road user awareness of the priorities at each junction, reducing the potential for collisions.

# A4 Walking, Cycling and Horse-Riding

The Audit Team did not identify any walking, cycling and horse-riding related safety problems as part of this Stage 1 Road Safety Audit.



# A5 Traffic Signs, Carriageway Markings and Lighting

No details relating to traffic signs, carriageway markings or lighting were provided to the Audit Team in association with the Stage 1 Road Safety Audit. During the site visit, the Audit Team noted that there are existing signs in locations where passing places are proposed. In instances where existing signage is to be relocated, the proposed new locations should be clearly visible to all road users and that sufficient clearance is provided between the signs and moving vehicles.



## 3 Audit Team Statement

We certify that this Road Safety Audit has been carried out in accordance with GG 119.

#### **Audit Team Leader**

Vicky Seaton, BSc (Hons), MSoRSA, MCIHT, iRAP Acc. Supp Signed: V Seaton

Principal Transport Planner

Royal HaskoningDHV Dated: 03.11.2022

6th Floor Cornerblock 2 Cornwall Street Birmingham B3 2DX United Kingdom

#### **Audit Team Member**

Bryn Buck, AMIHE Senior Technician & Road Safety Auditor

Senior Technician & Road Safety Auditor Signed: B. Buck Royal HaskoningDHV

Date: 03.11.2022

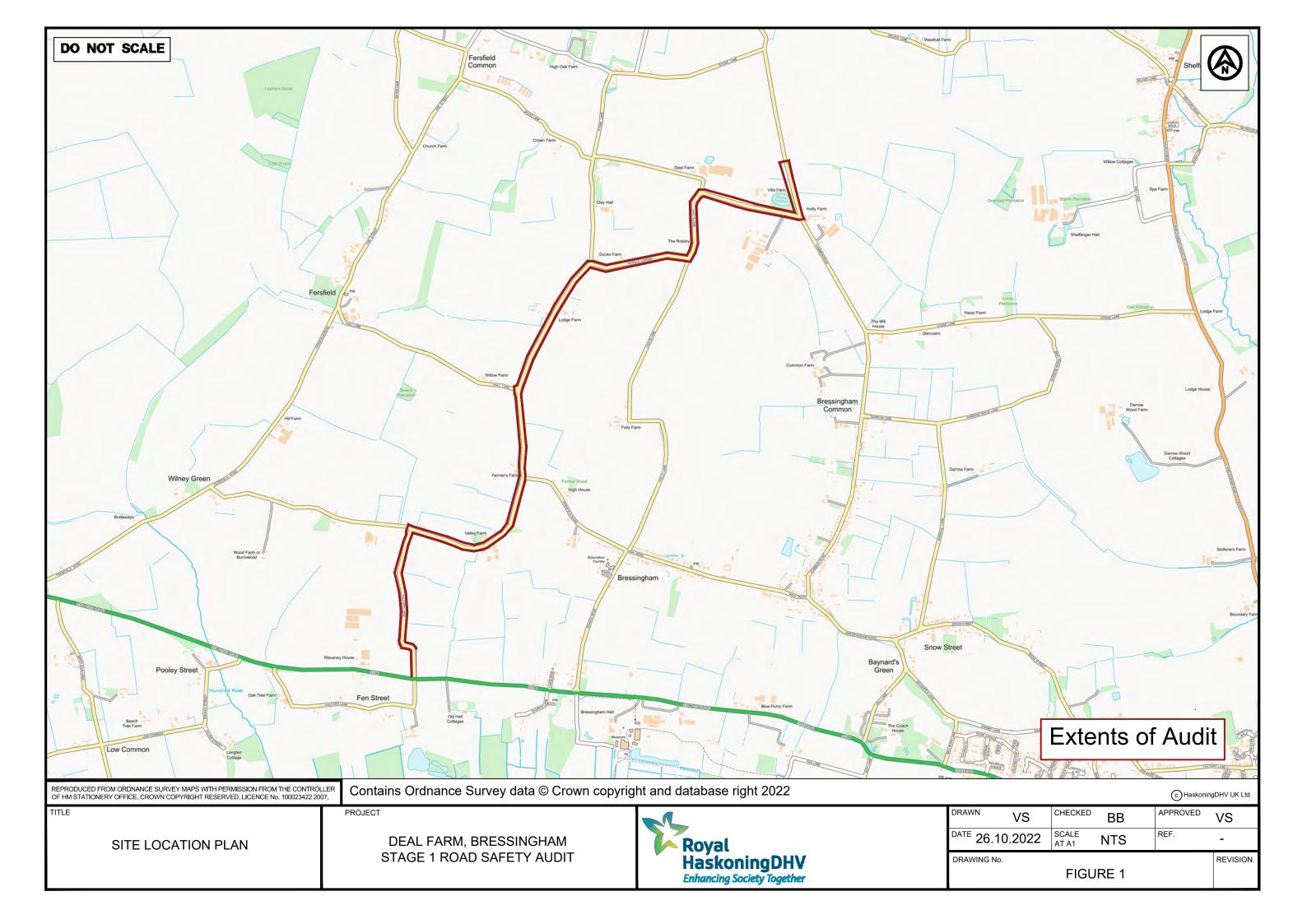
9<sup>th</sup> Floor, Manchester One Portland Street

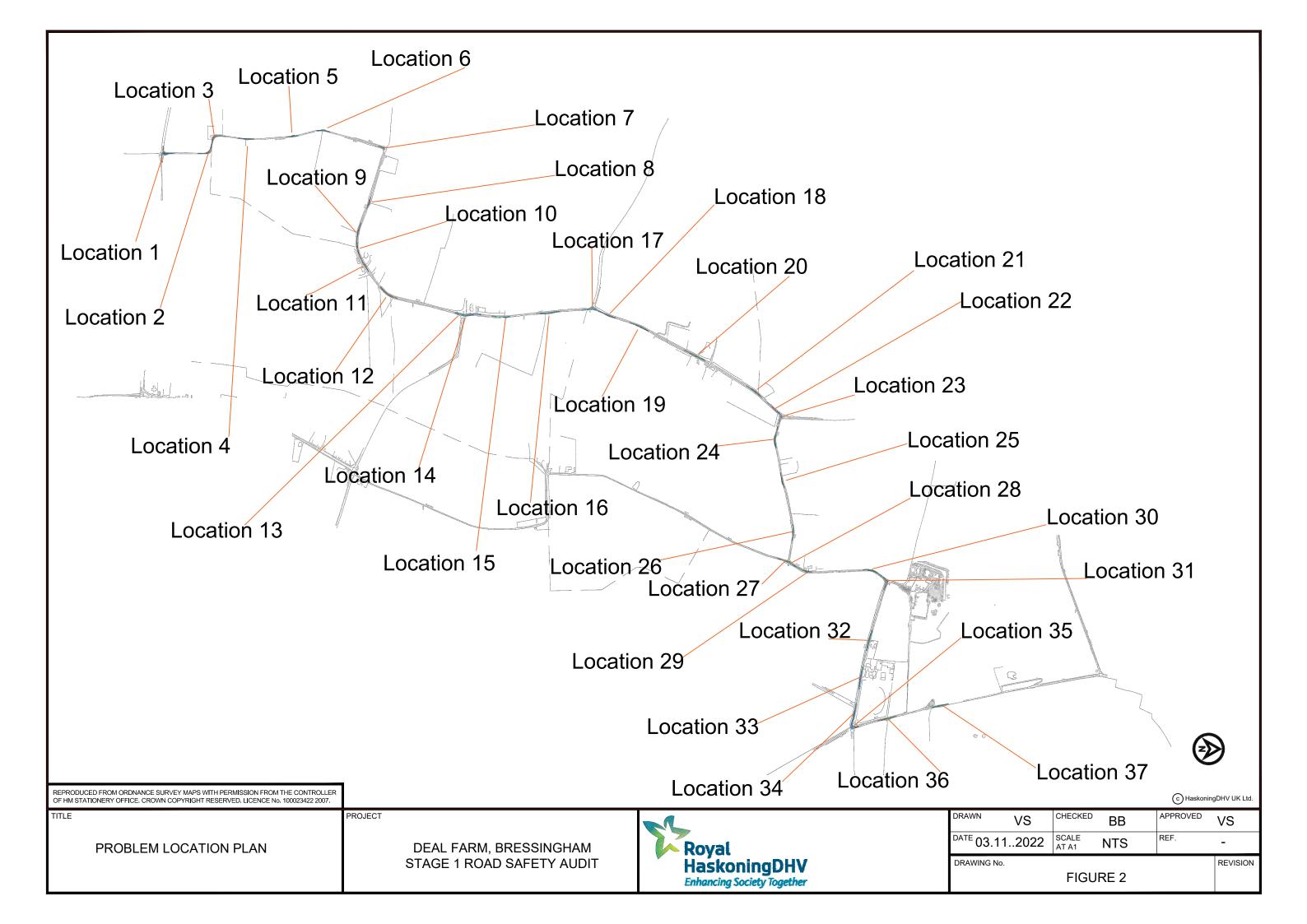
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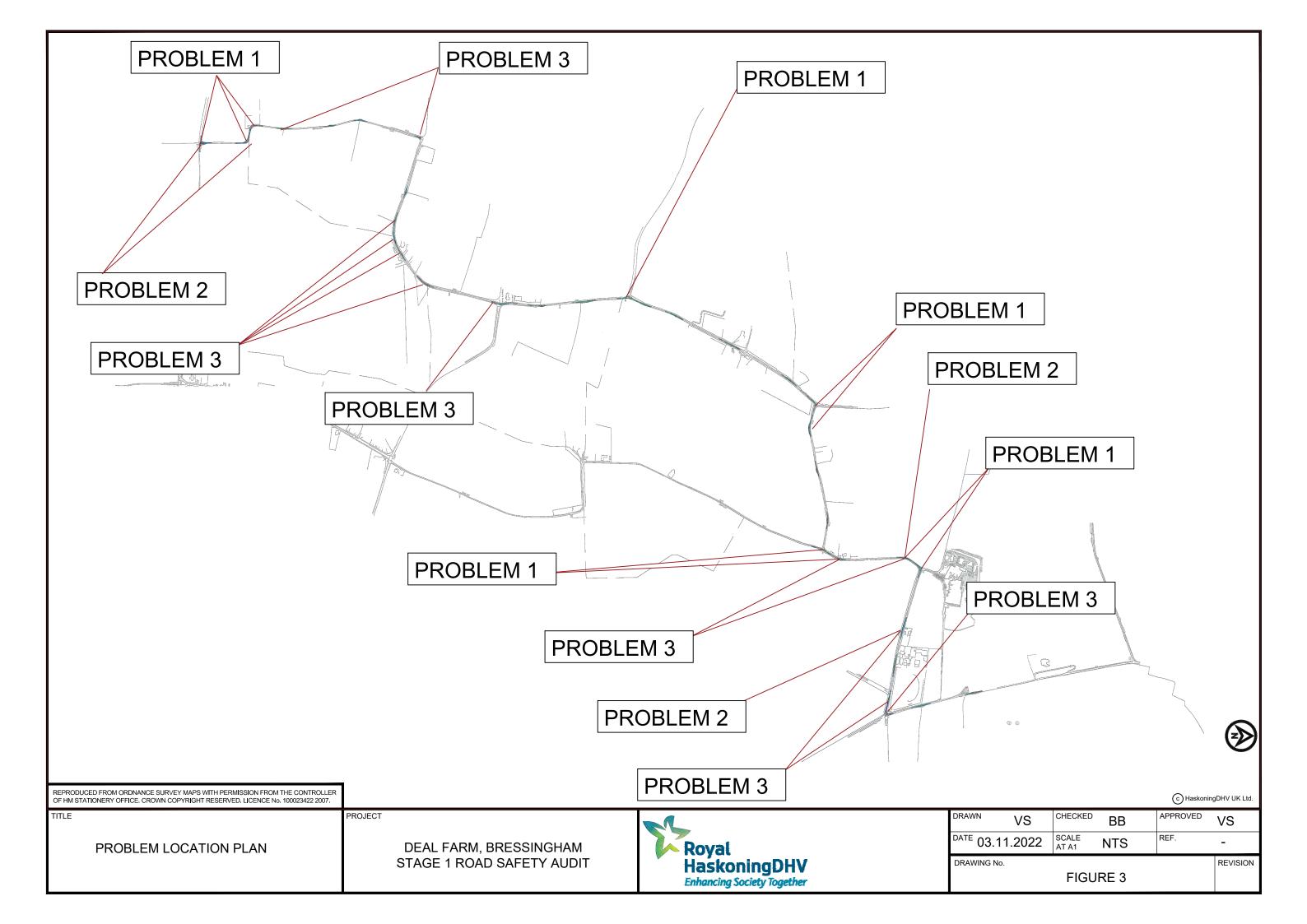
**United Kingdom** 

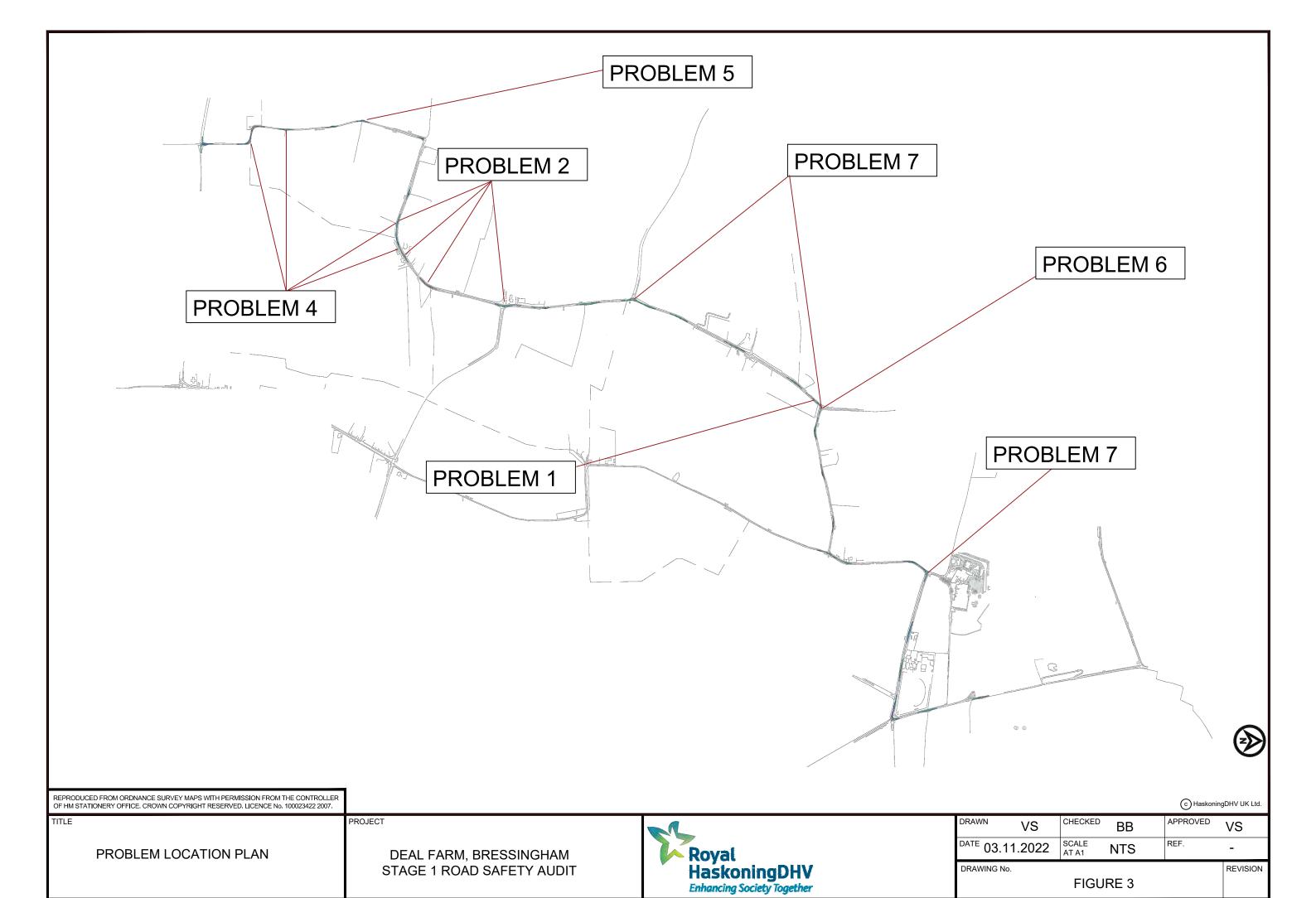
# **Figures** Figure 1 – Site Location Plan Figure 2 - Passing Place Location Plan Figure 3 – Problem Location Plan











Appendix A

Documents Forming the Audit Brief



# **APPENDIX A**

# **Documents Forming the Audit Brief**

#### **DRAWING NUMBER**

#### PC4115-RHD-ZZ-ZZ-DR-D-0002 P01 PC4115-RHD-ZZ-ZZ-DR-D-0003 P01 PC4115-RHD-ZZ-ZZ-DR-D-0004 P01 PC4115-RHD-ZZ-ZZ-DR-D-0005 P01 PC4115-RHD-ZZ-ZZ-DR-D-0006 P01 PC4115-RHD-ZZ-ZZ-DR-D-0007 P01 PC4115-RHD-ZZ-ZZ-DR-D-0008 P01

#### **DRAWING TITLE**

Proposed Route Assessment – Overall Plan Proposed Route Assessment – Sheet 1 of 3 Proposed Route Assessment – Sheet 2 of 3 Proposed Route Assessment – Sheet 3 of 3 Swept Path Analysis – Sheet 1 of 3 Swept Path Analysis – Sheet 2 of 3 Swept Path Analysis – Sheet 3 of 3

#### **DOCUMENTS**

| $\boxtimes$ | Safety Audit Brief               |
|-------------|----------------------------------|
|             | Site Location Plan               |
|             | Traffic signal details           |
|             | Departures from standard         |
|             | Previous Road Safety Audits      |
|             | Previous Designer Responses      |
| $\boxtimes$ | Collision data                   |
|             | Collision plot                   |
| $\boxtimes$ | Traffic flow                     |
|             | Pedestrian flow / modelling data |
|             | Speed survey data                |
|             | Other documents                  |

# **DETAILS** (where appropriate)

Email dated 21.10.2022



# **Annex B**

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# STAGE 1 ROAD SAFETY AUDIT RESPONSE

Audit No: PC4115-RHD-ZZ-XX-RP-SA-0001

Auditor(s): Vicky Seaton

Scheme: PC4115 Deal Farm

Date Audit completed: 04 November 2022

**Designers Response:** 

| Paragraph<br>No. in<br>Safety Audit<br>Report | Problem<br>Accepted<br>(yes/no) | Recommended<br>Measure<br>accepted<br>(yes/no) | Description / alternative measure  |
|---|---------------------------------|--|--|
| A1.1.1  | Yes                             | Yes  | Visibility check have been done and shown on the drawings. At detailed design stage, any vegetation/ obstruction to the visibility should be cleared; to be reviewed with the topographical survey and highway boundary.   |
| A1.2.1  | Yes                             | Yes  | At detailed design stage, review/refine location of passing bay with the topographical survey and highway boundary.  |
| A1.2.2  | No                              |  | A kerb is proposed at the edge of the passing bay. The kerb will keep the vehicles safe and away of the ditch. A short pipe culvert will be proposed for sections where the passing bay is on top of existing ditch. The latter to be reviewed at detailed design stage with the topographical survey. |
| A1.2.3  | No                              |  | As shown on the swept path analysis drawings, an oil tanker and a large car can pass side by side. This was prepared on an OS base and to be checked with topographical survey at detailed design stage.   |
| A2.1.1  | Yes                             | Yes  | Existing chamber covers to be upgraded, if need, to accommodate vehicular loading. To be addressed at detailed design stage.   |
| A2.1.2  | Yes                             | Yes  | At detailed design stage, designer to liaise with the relevant authority for fire hydrant relocation.  |
| A3.1.1  | Yes                             | Yes  | Give way marking added to the three junctions.  Drawings updated.  |

Signed Joseph Matar

Date 04 November 2022



# **Annex C**

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