



# M9 Junction 2 NB Drainage Investigation

## M9 J2-3 NB Drainage

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**Document Control Sheet**

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# 1 Introduction

## 1.1 Scheme Overview

**1.1.1** The scheme is located on the northbound carriageway of the M9 motorway after Junction 2 at Old Philpstoun. This location has been identified following several drainage related indents over a period of time.

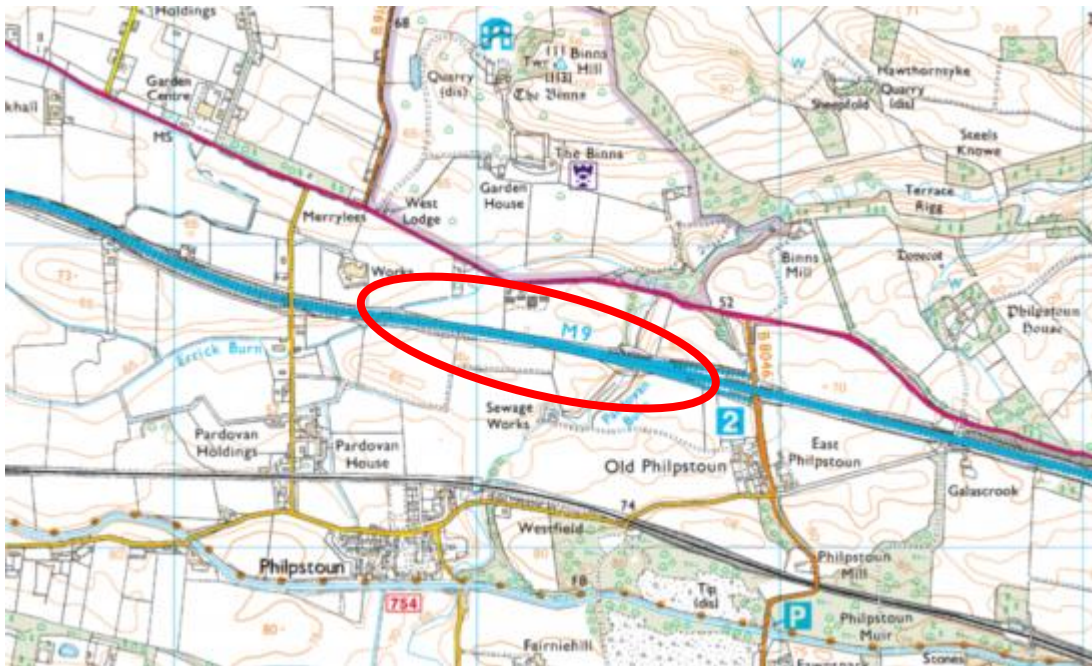


Figure 1 – Site Location Plan

## **2 Investigation**

### **2.1.1 Desk Study - Inventory**

2.1.2 A detailed desk study was undertaken to determine the existence of all drainage within this section of the M9 motorway.

2.1.3 Investigation of the IRIS inventory database found:

- 25 Gullies, which are located in the NB H/S.
- 1 Culvert, which is located at approx. Ch. 420m.
- 9 Manholes, which are located in the central reserve.
- Filter drain, which is located in the central reserve.

2.1.4 The IRIS inventory investigation found no record of ditches within the extents of the scheme. The manholes within the scheme extents are used as inspection pits for the existing drainage.

### **2.2 As Built Records**

- It was determined that despite an extensive search no As Built records existed for this section of the M9 motorway.

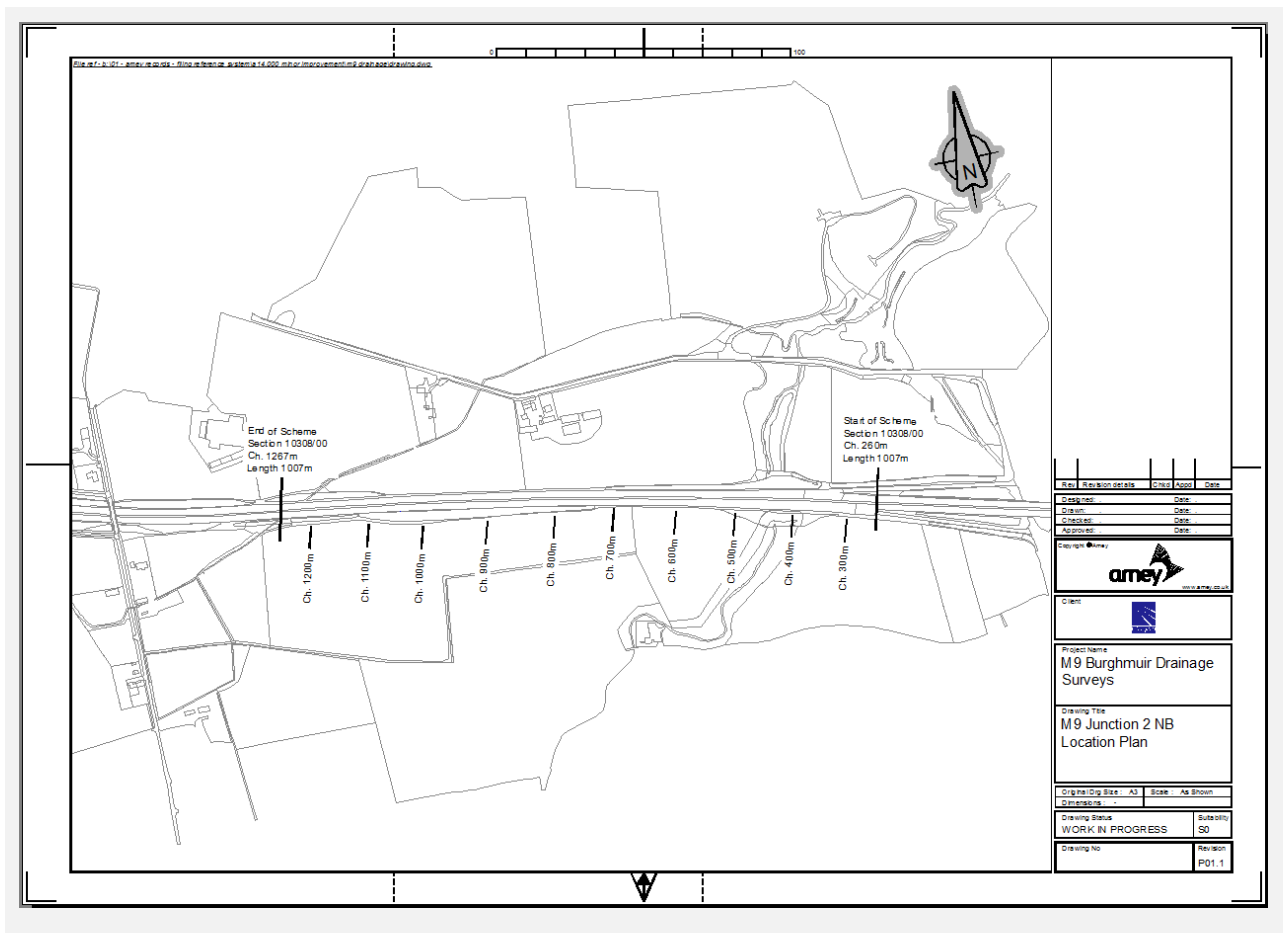
### **2.3 Accident Information**

- Accident information was also investigated to determine the number and causes of traffic accidents at this location.
- A separate study is being undertaken by SRS to review this information.

### 3 On Site Investigations

3.1.1 On site investigation including lifting of manhole covers to determine the size and condition of the carrier drains. Gullies were also inspected to ensure they were free running. During this inspection, it was noted that the majority of gullies within this section were side entry which historically does not catch the flow of surface water efficiently, due to the gradient and crossfall of the hardshoulder and carriageway.

**Figure 2 - Detailed site investigation location plan.**



## 4 Findings

- 4.1.1 The investigation confirmed that the drainage is functioning as it was designed and there were no blocked gullies found during the investigation.
- 4.1.2 The site inspection also confirmed that due to the positioning of the drainage, particularly the existence of the side entry gullies at certain locations, compromised the effectiveness of the drainage system.
- 4.1.3 At key points within this section of the M9 Motorway, at changes in the vertical alignment of the main carriageway the existing drainage provided does not ensure efficient catchment of the surface water. This allows the surface water to flow over both lanes of the main carriageway northbound.
- 4.1.4 This is determined as the prime cause of the accidents at this section of the M9 Motorway.

**Figure 3** – Example photos

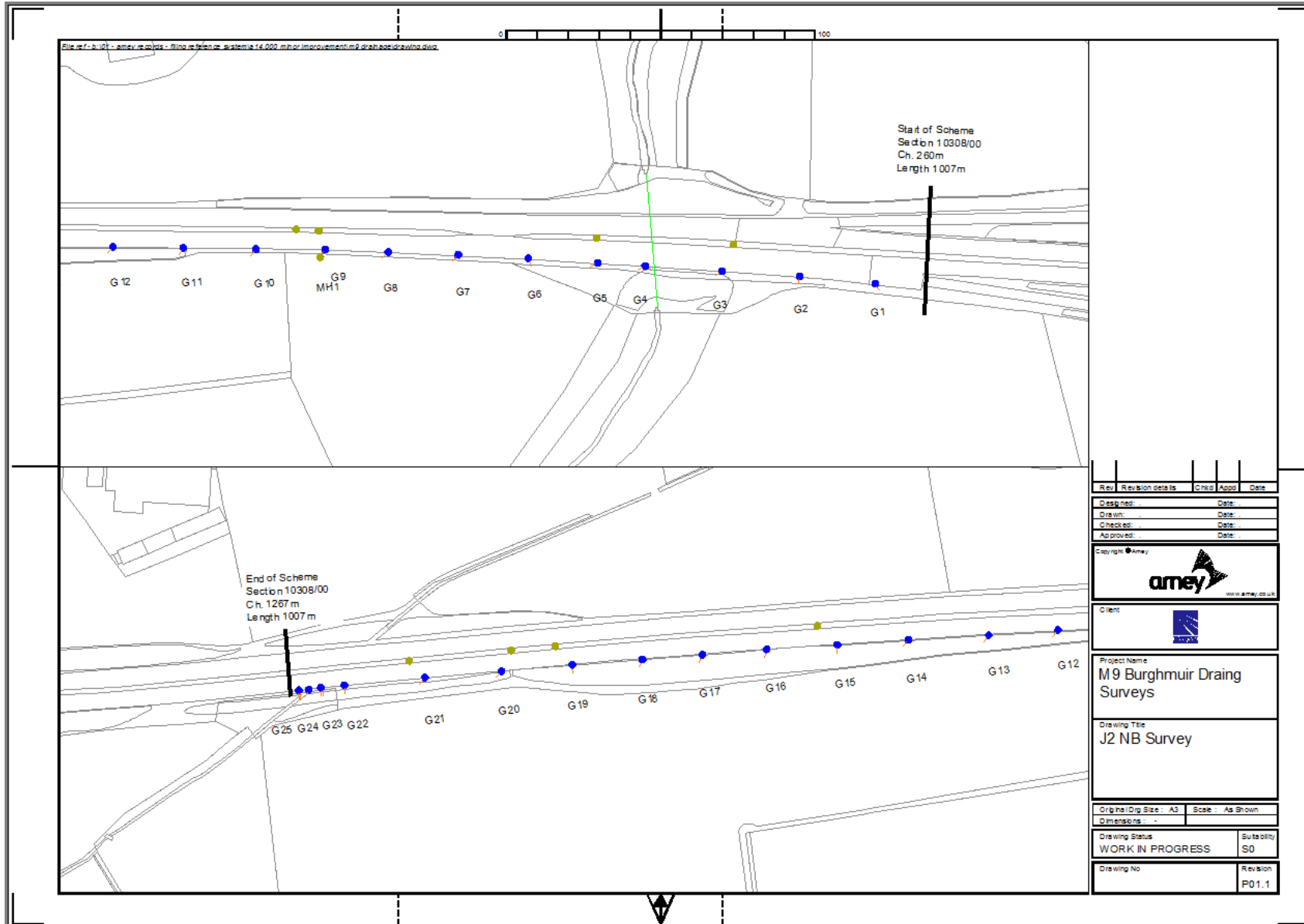


*Junction 2 looking SB* – Photo shows surface water flowing across the carriageway from the Northbound Hardshoulder.

## **5 Conclusion**

- 5.1.1 The existing carriageway drainage within this section of the M9 Motorway, whilst fully functional is deemed to be inadequate due to the existence of side entry gullies at key locations where the carriageway alignment changes.
- 5.1.2 A separate Strategic Road Safety study concluded that the prime cause of accidents at this section of the M9 motorway were related to the flow of surface water across the carriageway.
- 5.1.3 At key points within this section of the M9 Motorway, at changes in the vertical alignment of the main carriageway the existing drainage provided does not ensure efficient catchment of the surface water. This allows the surface water to flow over both lanes of the main carriageway northbound.
- 5.1.4 In order to rectify the present drainage problem, it is proposed to undertake minor drainage alterations within this section of the M9 motorway. This proposal comprises of the removal of sections of existing kerb and side entry gullies to be replaced by filter drainage. This will ensure catchment of the surface water minimising the flow of surface water across the main carriageway. Gullies 18 to 25 will be removed and the filter drainage will replace this existing drainage which will ensure the catchment of the flow of the surface water.
- 5.1.5 It is recommended that this proposal to amend the existing drainage is taken forward via routine maintenance.





Rev	Revision details	Chkd	Appd	Date



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**M9 Burghmuir Draing Surveys**

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**J2 NB Survey**

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