



# MetroWest+

## Portishead Branch Line (MetroWest Phase 1)

TR040011

**Applicant: North Somerset District Council**  
**8.13, Construction Traffic Management Plan**  
**The Infrastructure Planning (Applications: Prescribed Forms and Procedure)**  
**Regulations 2009, regulation 5(2)(q)**  
**Planning Act 2008**

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**Date: March 2021**





*This document was submitted in duplicate as part of the Developer's Application: one document can be found in Appendix 16.1 of the Environmental Statement (Transport Assessment, Appendix K; the other is this stand alone document. It was intended that the document contained within the Environmental Statement would not be updated. However, both been updated and are identical, though bearing different document reference numbers.*



# Document history

## Portishead branch Line DCO Scheme (MetroWest Phase 1) Environmental Statement Transport Assessment Appendix K: CTMP – Construction Traffic Management Plan

**Reference Number:** 674946.CS.70.01/TA  
**Client name:** West of England Councils

This document has been issued and amended as follows:

Version	Date	Description	Created by	Verified by	Approved by
01	February 2016	Draft 1	SM/JE	HS	HS
02	April 2016	Draft 2	SM/JE	HS	HS
03	November 2016	Draft 3	SM/ÁK	HS	HS
04	September 2017	Final Draft	SM/ÁK	HS	HS
05	July 2018	Final	SM/ÁK/HH	HS	HS
06	April 2019	Final	GW	HS	HS
07	August 2019	Final – with comments from NRIL	GW	HS	HS
08	March 2021	Final	GW	HS	HS

# Contents

Section	Page
<b>Acronyms and Abbreviations.....</b>	<b>iv</b>
<b>1 Introduction.....</b>	<b>1-1</b>
1.1 Background.....	1-1
1.2 Aim of this document .....	1-1
1.3 Structure .....	1-2
<b>2 Overview of Construction Works .....</b>	<b>2-1</b>
2.1 Outline construction strategy .....	2-1
Nationally Significant Infrastructure Project .....	2-1
Associated development.....	2-1
Other MetroWest Phase 1 works .....	2-2
2.2 Components of construction works and transport.....	2-2
Ballast transport.....	2-9
<b>3 Access to the Scheme .....</b>	<b>3-1</b>
3.1 Introduction .....	3-1
3.2 Strategic and Local Road Network .....	3-1
3.3 Compound access .....	3-2
3.4 Haul roads .....	3-2
3.5 Local highway issues and constraints.....	3-2
<b>4 Compounds.....</b>	<b>4-1</b>
4.1 Overview.....	4-1
4.2 Compounds and access details .....	4-1
4.3 Compound operations and facilities .....	4-1
<b>5 Construction Traffic Generation &amp; Impacts Assessment .....</b>	<b>5-1</b>
5.1 Introduction .....	5-1
5.2 Approach to assessment .....	5-1
5.3 Overview of the transport of ballast materials .....	5-1
5.4 Overview of the transport of non-ballast materials and personnel .....	5-2
5.5 Impact on the highway .....	5-4
<b>6 Mitigation, Monitoring &amp; Enforcement.....</b>	<b>6-1</b>
6.1 Overview.....	6-1
6.2 Detailed Construction Traffic Management Plan.....	6-1
6.3 Delivery routes.....	6-3
6.4 Abnormal loads.....	6-9
6.5 Traffic management measures; Compounds .....	6-9
6.6 Traffic management measures; Highway Network .....	6-9
6.7 Closures and diversions.....	6-10
6.8 Monitoring .....	6-10
6.9 Construction workers Travel Plan .....	6-11

## **Tables**

Table 2.1: Components of construction works

Table 3.1: Breakdown of the LRN

Table 4.1: Construction Compounds

Table 4.2: Construction Compound facilities, working hours and timescales

Table 5.1: Vehicle movements during construction

Table 5.2: Highway routes and compounds

Table 5.3: Trips to compounds

Table 6.1: Main vehicle routes during construction

## **Figures**

Figure 3-1: Construction access hierarchy

Figure 4-1: MetroWest Phase 1 Compounds – Portishead to Gordano

Figure 4-2: MetroWest Phase 1 Compounds – Gordano to Bower Ashton

Figure 4-3: MetroWest Phase 1 Compounds – Avon Gorge through to Parson Street Junction

Figure 5-1: Movements by category

Figure 6-1: MetroWest Phase 1 Construction Delivery Routes – Portishead and Gordano

Figure 6-2: MetroWest Phase 1 Construction Delivery Routes – Gordano, Pill and Avon Gorge

Figure 6-3: MetroWest Phase 1 Construction Delivery Routes – Avon Gorge and Ashton Vale

Appendix A - Detailed traffic movements

Appendix B - M5 junction 19 traffic movements – plots

Appendix C - M5 junction 19 traffic movements – profiles

# Acronyms and Abbreviations

CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
ES	Environmental Statement
FOC	Freight Operating Company
HGV	Heavy Goods Vehicle
LEP	Local Enterprise Partnership
LGV	Light Goods Vehicle
LRN	Local Road Network
LWR	Light Weight Rail
NMU	Non-motorised User
NRIL	Network Rail Infrastructure Limited
NSDC	North Somerset Council
NSIP	Nationally Significant Infrastructure Project
NTC	New Track Construction
PRoW	Public Right of Way
RRV	Road Rail Vehicle
SRN	Strategic Road Network
TA	Transport Assessment
TDM	Travel Demand Management
TMWG	Traffic Management Work Group
TOC	Train Operating Company
TRO	Traffic Regulation Order
TTRO	Temporary Traffic Regulation Order
UB	Underbridge
WoE	West of England



## SECTION 1

# Introduction

## 1.1 Background

- 1.1.1 The MetroWest Phase 1 project comprises the delivery of infrastructure and passenger train operations to introduce new/enhanced rail passenger services across Bristol with a service pattern between Portishead, Bath Spa and Severn Beach, with intermediate stops. This will entail upgrading the existing freight only line between Parson Street junction and Portbury Dock junction (Pill), reinstatement of the current disused line between Portbury Dock junction and Portishead, and various minor works to facilitate the operation of the Phase 1 train services. A new station will be required at Portishead and the former station at Pill will be re-opened.
- 1.1.2 The Planning Act 2008 introduced the Development Consent Order ("DCO") as the means of seeking planning permission for developments categorised as Nationally Significant Infrastructure Projects ("NSIP"); the scheme is classed as an NSIP. The Portishead Branch Line (MetroWest Phase 1) Development Consent Order Scheme ("the DCO Scheme") comprises the re-construction of the disused railway line between Portishead and Pill, construction of a new station at Portishead, refurbishment of the disused station in Pill and the enhancement works to the Portbury freight line.
- 1.1.3 CH2M (now Jacobs) has been appointed to prepare a Transport Assessment ("TA") in support of the DCO Scheme. As part of the TA, an Outline Construction Traffic Management Plan ("CTMP") has been prepared.
- 1.1.4 Land, planning and other consents are delivered through the DCO process. The Traffic Regulation Orders ("TROs") and Temporary Traffic Regulation Orders ("TTROs") for the scheme will be submitted and decided as part of the DCO process.

## 1.2 Aim of this document

- 1.2.1 The aim of the CTMP is to outline the specific transport impacts arising from the construction works and to provide a framework for addressing these impacts. The CTMP only considers the construction phase of the DCO Scheme and has been prepared to ensure that the construction process, and management and mitigation measures, minimise the impact on existing users of the public highway network. The CTMP should be read alongside the Environmental Statement ("ES") and TA which support the DCO. The primary objectives of the CTMP are to:
- Ensure that movement of people and materials are achieved in a safe, efficient, timely and sustainable manner;
  - Keep freight and construction traffic to a minimum during network peaks to reduce the impact on the highway network during the busy periods;
  - Ensure that the impact and disruption to the local communities and tourists is minimised;
  - Minimise construction trips where possible;

- Ensure the continued monitoring, review and subsequent improvement of the CTMP and mitigation measures;
- Limit the impacts on the Strategic Road Network ("SRN") and the Local Road Network ("LRN"); and,
- Limit the impacts on the natural and built environment.

1.2.2 This version of the CTMP is based on the latest assessment of the required works as identified in Section 8 of the TA.

## 1.3 Structure

1.3.1 The CTMP is divided into the following sections:

- **Section 2 Overview of the Construction Works** – This section provides a summary of the main construction activities.
- **Section 3 Access** – Within this part, the access to the site from the Strategic and Local Road Networks has been discussed
- **Section 4 Compounds** – Within this part, the various access points and construction compounds have been presented.
- **Section 5 Traffic generation and transport impacts** – This section identifies the scale of the impact at each identified location.
- **Section 6 Mitigation, Monitoring and Enforcement**– The final section outlines the measures that will be adopted to minimise the construction impacts on the highway, users and local residents and businesses.

## SECTION 2

# Overview of Construction Works

## 2.1 Outline construction strategy

- 2.1.1 The Outline Construction Strategy for the DCO Scheme outlines the various components and activities of the building works. Its purpose is to provide guidance and likely options for construction in order to help inform the DCO process. The full construction strategy for the project will be produced by appointed Network Rail Infrastructure Limited (NRIL) contractors as the project progresses into detailed design and construction. Whilst this document does not seek to replicate this, it is important to summarise the main components in order to understand the transport related impacts of the works.
- 2.1.2 The overall DCO Scheme will comprise the NSIP and Associated development, both of which include construction within the DCO red line boundary, as well as some other works outside the area.

### Nationally Significant Infrastructure Project

- 2.1.3 The works required to commission the Portishead Branch Line comprise the reconstruction of 4,800 metres of disused railway from Quays Avenue in Portishead to the existing operational railway at Portbury Junction, to the east of the M5 Motorway. A further 690 metres of new track will be laid through Pill village, parallel to the existing operational railway line from Portbury Dock. A new junction east of Pill Viaduct (Pill Junction) will be constructed, where the new line will connect with the existing operational railway. These works comprise the NSIP part of the DCO Scheme for which the development consent order is sought.
- 2.1.4 The disused section of the railway between Portbury Junction and Portishead became heavily over grown, with self-seeded trees, shrubs and scrub. The formation of the original railway between Portishead and Portbury Junction, where the track bed is joined by the operational railway, is in a dis-used state, but is largely intact. There is no physical track connection at Portbury Junction and the route from Portbury Junction to Portishead is not part of the national rail network. Repairs are also required to bridges and culverts, as well as new telecommunication and signalling works.

### Associated development

- 2.1.5 Associated development includes other works required for the DCO Scheme as follows:
- Construction of new stations and car parks at Portishead and Pill;
  - Improvements to highway infrastructure around the stations;
  - Improvements to pedestrian and cycle networks around the stations;
  - Construction of a new pedestrian footbridge close to Trinity Primary School;

- Improvements works at the Ashton Vale Road/Winterstoke Road junction;
- Installation of construction and maintenance accesses and compounds;
- Various work elements on the railway between Pill and Ashton junction; and
- Replacement of the signalling between Portbury Dock to Portbury Dock Junction, within the land of the Bristol Port Company.

### Other MetroWest Phase 1 works

- 2.1.6 Construction works outside the DCO Scheme redline boundary will be undertaken on existing NRIL land under general permitted development rights. The main elements of the works are:
- Parson Street Junction upgrade - including signalling, cabling and associated equipment to Ashton junction;
  - Bedminster down relief line – including a partial reinstatement; and
  - Bathampton turnback – construction of a new turnback facility east of Bath
- 2.1.7 The current programme assumes that construction would commence in Winter 2022/23 with the scheme opening in Autumn 2024.

## 2.2 Components of construction works and transport

- 2.2.1 Table 2.1 sets out the main components of the construction works and potential transport methods that could be used. NRIL's Construction Strategy contains more details of potential approaches. Note the durations and times of day are indicative and are subject to the Contractors methodology.
- 2.2.2 A specific, and significant, issue related to the scheme is the transport of ballast, both removal of old ballast and delivery of new. This is included in Table 2.1 and is also discussed further at the end of this section of the CTMP.
- 2.2.3 When planning the works listed, where possible utilities works will be coordinated with other utilities works. Planning the logistics for the abnormal loads listed above will need to be discussed and agreed with the Local Planning Authority ("LPA") and Highways England.

**Table 2.1: Components of construction works**

<b>Component</b>	<b>Transport and Access</b>	<b>Indicative scheduling and duration</b>
Disused Line – Enabling Works	Haul routes to be established in order to undertake works	-
Disused Line - Excavation	The old ballast will be transported by rail and there will be local HGV movements. The assumed likely methodology will involve a one-way haul system using freight removals from Portbury Docks or Avonmouth Docks sidings with the use of Portbury Hundred and Lodway compounds. This is subject to agreement from the Port Authorities and a contingency option is to stockpile at the compounds and then load into an engineering train once the new line has been constructed. (see text for further discussion of this component).	Approximately 3-5 months, primarily day time working, depending on methodology and sequencing and this is subject to a number of assumptions including weather conditions, methodology and ground conditions. The work will primarily take place during the day time from 6am to 6pm although possibly also including night-time works as 24 hour working may be necessary due to programme constraint.
Disused Line – Construction of new track formation and bottom ballast	See above – similar to excavations. The formation and new ballast materials will be brought into Portbury Docks or Avonmouth Docks sidings. This is subject to agreement from the Port Authorities. Alternatively, the materials could be sourced from sites within the sub-region. The materials would then be transported to the Portbury Hundred, Lodway, (and potentially Portishead Station) compounds via HGV movements.	Based on current indicative designs, it is estimated to take approximately 4 to 6 months to complete track formation and bottom ballast, however this is subject to a number of assumptions including weather conditions, methodology and ground conditions. The work will primarily take place during the day time from 6am to 6pm although possibly also including night-time works as 24 hour working may be necessary due to programme constraint.
Disused Line – Culverts	Additional access will be required around the inlet and outlet points of the culverts.	Approximately 3-6 weeks per culvert, although more complex works may take considerably longer.  These works could either take place after all the excavation works are completed or at the same time if a staged approach is used. This will

**Table 2.1: Components of construction works**

<b>Component</b>	<b>Transport and Access</b>	<b>Indicative scheduling and duration</b>
		be determined by the contractor's methodology ahead of construction.
Disused Line – Rail and sleepers	Long Welded Rail (LWR) lengths could be delivered via an engineering train in the area of the Pill new station. Exact methodology will be confirmed by the Contractor.	Based on indicative methodology, duration is approximately 2-3 months. This is based on primarily day time working, although possibly also including night-time works with some 24-hour activities.
Disused Line – Installation of lineside equipment	Delivery by road either to the compound or directly to the site.	Lineside civils will most likely be installed after the track formation has been completed. Timing will also need to be sequenced with the construction of Portishead Station. This work will be primarily day time working, although possibly also including night-time work with some 24 hour activities.
Disused Line – Fencing	Access to neighbouring properties may be required to help facilitate installation of the fence. Transported to main construction compounds via road.	Dependent on Construction Methodology.
Portishead station	Road works and utilities need to happen ahead of construction at Portishead Station. Deliveries will be made direct to the site compound at Portishead.	Based on indicative methodology the duration is expected to be approximately 12 months or longer (generally during the day though possibly also including night-time work) however sequencing and other factors will contribute to this. It is currently assumed that NSC highways works will be completed before works to the station commence.
Trinity bridge	Footbridge could be pre-fabricated off site and delivered by road or rail in sections. This will be confirmed by the Contractor ahead of construction.	Careful integration of this work with track works to the disused line will be required. Works to the culvert and drainage system will need to be complete before the bridge. This also depends on a number of assumptions such as ground conditions and environmental constraints.  Based on indicative methodology the duration is approximately 6-12

**Table 2.1: Components of construction works**

<b>Component</b>	<b>Transport and Access</b>	<b>Indicative scheduling and duration</b>
		months, works will primarily be during the day time, although possibly also including night-time works as there is the potential for 24 hour working.
Strengthening of cattle creep underbridge	Access from Lodway compound using the disused line haul road, or using the Marsh Lane access route. Deliveries transported to main construction compounds via road.	Although the methodology is still unconfirmed at this point, it is expected that works are to be carried out near the beginning of the programme so that the structure is suitable for temporary loads during construction. This will need to be confirmed as methodology develops. The duration is approximately 4-5 months.
Avon Road underbridge	Road deliveries will need access through Pill. Access is tight and restricted. Temporary road closures/ parking restrictions may be necessary; this will be confirmed by the Contractor ahead of construction.	Although methodology is still unconfirmed at this point, it is expected that the works are to be one of the first activities in the programme ahead of track works. The duration is expected to be approximately 3-6 months to complete in total based on both day and night time working.
S10 Pill Viaduct 126m 00ch	Main compound and welfare facilities could be used at Monmouth Road or Lodway, or basic welfare facilities provided under the arches. Access through Pill. Temporary parking restrictions under the arches may be necessary. Deliveries transported to main construction compounds via road.	This could take approximately 3-6 months; however all timings are indicative at this point.
Earthworks - Avon Road embankment POD 126mi 27ch to 34ch (Up & Dn)	Access likely to be from the cycle path that runs between Lodway Close and Avon Road, as well as from Lodway compound. Temporary closures of the cycle path may be necessary. Deliveries transported to main construction compounds via road.	Works could potentially be carried out at the same time as Avon Road Underbridge. They could take approximately 2-3 months in duration (weather dependent). Predominantly during the day with possibly some night time working.
Earthworks – Hardwick	Access across track from Monmouth Road. Deliveries	Daytime under possession, although some work could be done outside of



**Table 2.1: Components of construction works**

<b>Component</b>	<b>Transport and Access</b>	<b>Indicative scheduling and duration</b>
Cutting POD 126mi 15ch to 27ch (Dn)	transported to main construction compounds via road.	possession with use of magnetic fencing (to be confirmed). Works will have to be integrated with works at Pill Station. Works could take approximately 6-12 months and will be day time where possible, although also including night-time works if needed.
Earthworks – Mount Pleasant embankment	The nearest main compound is Monmouth Road and the likely route is from the railway with possible use of protective magnetic fencing. Deliveries transported to main construction compounds via road.	Works could take approximately 6-8 months and will be day time where possible, although also including night-time works if needed.
Pill station	<p>A small site compound at Monmouth Road could contain offices and welfare and be used as a lay down area.</p> <p>Pill Station compound at the top of the cutting is restricted but could be used for materials storage and construction of the ramp. Deliveries need to be made outside of peak hours where possible.</p> <p>Access will be required via road from Pill Station compound and directly from the railway.</p> <p>There is a 40 tonne load and width restriction on Station Road Overbridge, traffic management may be required through Pill, including parking restrictions and this will be confirmed ahead of construction.</p>	<p>At this stage, it is proposed for this work to be carried out in conjunction with Hardwick Cutting works.</p> <p>It is anticipated that this work will take approximately 6 to 12 months, however this is based on the indicative design and a number of assumptions.</p>
Track – Pill	Road Rail Vehicle (RRV) <sup>1</sup> access into Pill is limited.	The works are likely to take between approximately 3-6 months and should

<sup>1</sup> Road Rail Vehicles (RRV) can operate on the railway and highway, generally being based on road lorries and having both road tyres and flanged rail wheels. They have the ability to travel along the railway, so can reach places that are otherwise difficult, or impossible, to directly access by road. As such, RRVs are extensively used to support construction and maintenance work on the railway.



**Table 2.1: Components of construction works**

<b>Component</b>	<b>Transport and Access</b>	<b>Indicative scheduling and duration</b>
	<p>RRVs could potentially be delivered to the M5 compound and off tracked at the Monmouth Road compound ready for use during possessions.</p> <p>Monmouth Road compound or Ham Green could also be used for storage and welfare facilities. This will be confirmed ahead of construction and is dependent on the other construction activities happening.</p>	take place after the completion of Avon Road Underbridge, Pill Viaduct and earthworks.
Pill – Lineside equipment and access points	Access points that are local to the works concerned will be used.	The duration of these activities will depend on sequencing of other activities and methodologies.
Avon Gorge – S12 Miles underbridge	Access is from Ham Green compound, also possible access over Chapel Pill Underbridge and along the rail to the location.	Approximately 2-4 months
Avon Gorge – S14 UB	Small scale deliveries only. Strength of Chapel Pill Lane underbridge to be assessed for construction traffic.	Approximately 2-4 months
Avon Gorge – S15 Miles Dock UB	Small scale deliveries only. Limited headroom under bridge. Access through the farm at Chapel Pill Lane. Micro compound C-7 could be used, the main welfare facilities could be provided at Monmouth Road or Lodway.	Duration of works approximately 2-3 months
Avon Gorge – S18 Quarry 6, S19 Quarry 5, S20 Quarry 4, S21 Quarry 3, S25 UB, S26 Valley	<p>Access is not possible for large vehicles.</p> <p>Access along cycle path or via the railway.</p>	Approximately 2-3 months
Avon Gorge – S22 Quarry 2	RRV access along railway from Clanage Road, though some vehicles may travel	Approximately 3-6 months to complete, within daytime hours where

**Table 2.1: Components of construction works**

<b>Component</b>	<b>Transport and Access</b>	<b>Indicative scheduling and duration</b>
	along the tow-path. Pedestrian access along cycle path. Cycle path may need to be closed, but disruption should be kept to a minimum.	possible, although also including night-time works if needed.
Earthwork – Avon Gorge	Access along railway or roped access from land above.	Daytime working under possession.
Track – Avon Gorge	Relevant site compounds to be used for access.	Could involve day time or night working. This work could be carried out in consecutive 8 hour shifts, either day time or night time, subject to agreement with the Port Authorities regarding freight movements and agreed possessions.
Track – Parson Street Junction to Bedminster	Access to the site would be via South Liberty Lane.	For the duration of the works at Parson Street and Bedminster.
Civils – S33 Chilcott Road Bridge	Clanage Road to be used as a main compound. Temporary road closures may be required.	May need to be carried out at night due to road closure requirements. Likely to be approximately 2-3 months in total.
Civils – Platform adjustments at Parsons Street	Use of station access	To be confirmed by contractor ahead of construction
Civils – Platform adjustments at Bedminster	Use of station access	To be confirmed by contractor ahead of construction
Track – Bathampton	To be confirmed	To be confirmed by contractor ahead of construction
Compound preparation and removal	Specific to individual compounds	Construction at the outset of the works, and removal/reinstatement following completion (though some construction sites are being retained as permanent access sites)

## Ballast transport

- 2.2.4 This methodology depends on a number of assumptions. The exact methodology will be confirmed by the contractor ahead of construction. A series of options are being considered.
- 2.2.5 It is currently anticipated that track formation and new ballast materials will be brought into the rail sidings at Avonmouth or Portbury Docks (subject to agreement with the Port Authority). The material could then be transported to site or compound using HGVs. It is assumed that the new materials would be stockpiled at compounds (Portbury Hundred and Lodway) until ready to be transported to site. If the sidings are not available the materials could be brought in from other local sub-regions or a temporary rail head created adjacent to the Lodway compound.
- 2.2.6 It is anticipated that the old ballast will be transferred via haul roads to the construction compounds (Portbury Hundred and Lodway) to be stockpiled. It will then be transferred via HGV to the rail sidings at Avonmouth or Portbury Docks (subject to agreement with the Port Authority) for removal via rail. Should this not be available materials could be removed off site onto engineering trains once the new line has been constructed.

### Assumptions for assessment

- 2.2.7 The DCO Scheme requires certainty in respect of there being an available location for the rail facility for the transfer of materials. The DCO Scheme must have a rail head facility available for it when construction commences and this certainty can only be provided by securing temporary possession of the Lodway compound, with sufficient land included for part of that land to be used for a rail transfer facility. It is not practicable for the DCO Scheme to seek to sterilise the Port's use of either of its sidings for an uncertain period of time prior to construction commencing, and without the DCO Scheme significantly impacting on the Port's ability to use its estate.
- 2.2.8 The options are relatively close together geographically, which contains the highway traffic impacts to a relatively small area. Each proposal would use J19 or J18A (for Avonmouth Docks) of the M5. Given the proximity of the disused railway to each location, impacts on the local highway network are limited to a small geographic area. Each proposal would potentially impact the Portbury Hundred, Royal Portbury Dock Road, Marsh lane, A403 between J18A and St Andrews Road.
- 2.2.9 The assessment of environmental effects has assumed a worst case, based on noise impacts, which is anticipated to be the impacts on local receptors of a rail-head at Lodway.



## SECTION 3

# Access to the Scheme

## 3.1 Introduction

- 3.1.1 Three levels of access roads have been defined for accessing sites associated with the DCO Scheme. These are defined in Figure 3.1:

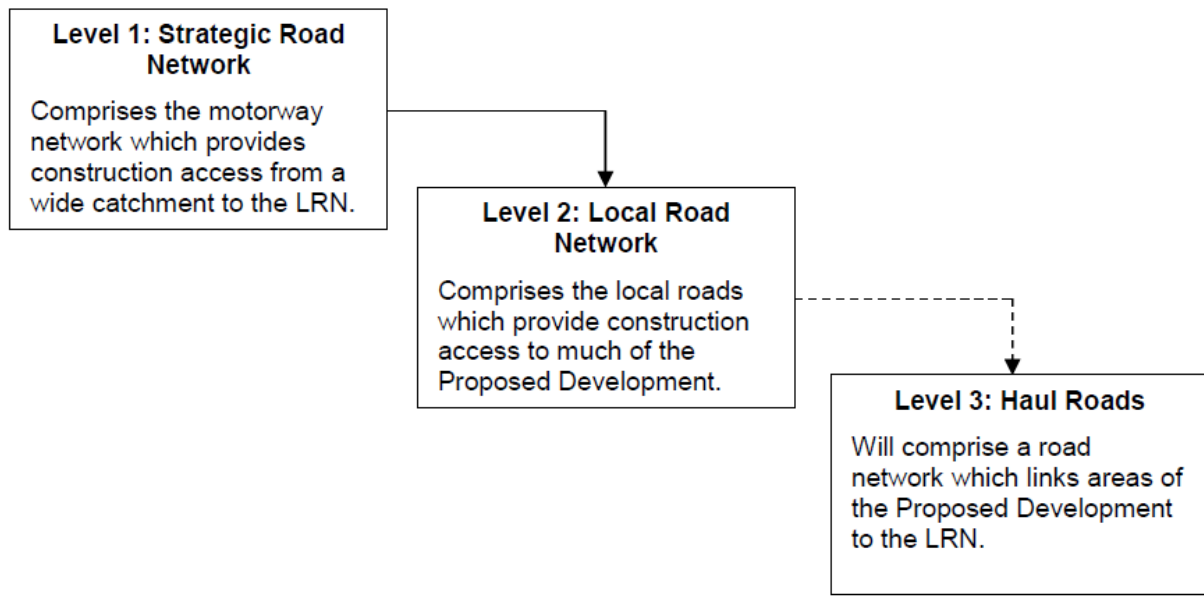


Figure 3-1: Construction access hierarchy

## 3.2 Strategic and Local Road Network

- 3.2.1 Access points to the SRN from the DCO Scheme would be at M5 junction 18 and 19.
- 3.2.2 To provide construction access to the SRN, the LRN has been prescribed for construction traffic. Each road on the designated LRN has been provided in Table 3.1 in relation to its section and nearest access to the SRN.

Table 3.1: Breakdown of the LRN

LRN		Nearest SRN intersection
Number	Name	
A3029	Winterstoke Road	M5 junction 19
A370	Brunel Way	
A369	Rownham Hill	
A369	Abbots Leigh Road	
A369	Mortcombe Road	
A369	Portbury Hundred	

- 3.2.3 To meet the objectives set out in section 1.2 of this CTMP, the roads which make up the LRN included in Table 3.1 will be subject to appropriate mitigation measures. These measures are detailed in Section 6 of this document.
- 3.2.4 All construction traffic must adhere to the prescribed routeing strategy which is set by this CTMP. As part of the CTMP control and monitoring measures, deviation from the approved routes will result in enforcement procedures and penalties. The mitigation, monitoring and enforcement are discussed in detail in section 6 of this CTMP.
- 3.2.5 It is recognised that there will be a number of events planned for the duration of the works. The contractor will need to engage with the LPA about these events to ensure impacts are minimised.

### 3.3 Compound access

- 3.3.1 Details of access to each individual construction compound has been discussed in Section 4.

### 3.4 Haul roads

- 3.4.1 In cases where the Proposed Scheme cannot be accessed solely by the existing LRN road network and construction vehicles have to achieve access, temporary haul roads will be constructed.

### 3.5 Local highway issues and constraints

- 3.5.1 The issues and constraints have been identified through on-site inspection of these routes and include:
- height restrictions;
  - weight restrictions;
  - road classification;
  - road layout;
  - existing crossing facilities;
  - existing traffic calming features;
  - sensitive receptors adjacent to the public highway;
  - visibility constraints;
  - restricted access;
  - speed limits and traffic speeds;
  - congestion;
  - large gradient changes;
  - Public Rights of Way ("PRoW"); and
  - other road users (pedestrians, cyclists and equestrians).

## SECTION 4

# Compounds

## 4.1 Overview

4.1.1 This section of the CTMP provides information on the proposed compounds for the construction works.

4.1.2 The key features of the proposed compounds include:

- Each main compound will have a designated haul road and pedestrian walking route to separate pedestrians and traffic. Signage will be installed at the entrance onto the main highways to warn traffic of construction site.
- Temporary site infrastructure will be installed to provide storage, welfare and office facilities, and will primarily be delivered using road haulage.
- Parking will be provided for staff on site and staff will be briefed not to park on local roads.

## 4.2 Compounds and access details

4.2.1 A number of temporary construction compounds have been identified as critical to the delivery of the construction phase of the scheme. Table 4.1 details both the main and satellite compounds and their locations are shown in Figures 4.1-4.3.

## 4.3 Compound operations and facilities

4.3.1 The temporary construction compounds detailed in Table 4.1 will contain varying levels of carparking and areas for storage as well as welfare facilities for site staff. This has been detailed in Table 4.2, noting that the use of compounds described is indicative at this stage, and will be confirmed by the Contractor. Indicative site working hours and duration of time the temporary compounds will be in operation has also been outlined.

**Table 4.1: Construction Compounds**

Ref	Name	Location	Main Purpose	Access
C16	Portishead Station	Portishead on the sites of new station car parks (both A on eastern side of the realigned Quays Avenue and B to the west of Quays Avenue)	For construction of Portishead Station and Trinity bridge. There is potential to use as a laydown area for Trinity bridge, subject to space availability	Access off Portbury Hundred, Wyndham Way and Quays Avenue. The majority of the deliveries will be on standard HGVs
TB	Trinity bridge lay down		As required combined with use of Portishead station compound	As Portishead station compound

**Table 4.1: Construction Compounds**

<b>Ref</b>	<b>Name</b>	<b>Location</b>	<b>Main Purpose</b>	<b>Access</b>
C15	Sheepway	North of disused railway and Sheepway (opposite Shipway Gate Farm)	To facilitate works on the disused line	Access via Sheepway Road and haul roads. Access could also be from Portishead via the disused railway line
C14	Portbury Hundred	Land between the disused railway and The Portbury Hundred	Main compound for disused line track works	Access off the A369 Portbury Hundred to the west of the junction with Station Road, as well as from haul roads. Junction to be constructed with access restricted to left in/left out only
C13	Lodway Farm	Fields between the M5, the disused railway and The Breaches in Pill	To support works happening through Pill including track works, station, earthworks and other structural works. This compound will also be used to stockpile materials before onward disposal or use by the scheme	<p>Access through Pill is limited due to narrow roads. The access route will be confirmed ahead of construction. Access will be for personal vehicles, small vans, minibuses and HGVs</p> <p>HGV access will be avoided during peak hours where possible to reduce traffic impact on local roads. Traffic management may be necessary; this may include temporary road closures and parking restrictions subject to agreement from NSDC</p> <p>Access into the compound is likely to be via a temporary haul route. A temporary access ramp may be needed from the haul route, across the railway and into the compound. Pedestrian footpaths and cycle routes will need to be redirected to allow this (to be carried out as part of the DCO Scheme)</p>



**Table 4.1: Construction Compounds**

<b>Ref</b>	<b>Name</b>	<b>Location</b>	<b>Main Purpose</b>	<b>Access</b>
C12	Avon Road	Avon Road, Pill	Construction of Avon Road underbridge and associated earthworks	Access through Pill. Access is narrow and restricted. Cycle path will need to be closed. Garages need to be demolished
C11	Monmouth Road	A former goods yard, off Monmouth Road, Pill	To facilitate construction activities through Pill including Pill Station and Pill viaduct. Used to store materials, localised welfare and machinery	Road access to Monmouth Road will be minimised as much as possible due to the narrow roads, which will prevent access by low loaders (to deliver RRVs directly to the compound). Bulk material deliveries should be delivered by rail where possible on the existing freight line. If direct HGV deliveries are required to the compound then additional traffic management may be necessary through Pill (this may include road closures and parking restrictions in agreement with the local authority). The exact access route through Pill will be confirmed ahead of construction  Station Road Overbridge at POD 126m 9ch has a 40-tonne limit
C10	Pill Station Top	Station Road, Pill	For construction of top of ramp at Pill Station and demolition of Old Pill Station	Access through Pill
PM	Pill Memorial Club	Pill Memorial Club car park	Bus stops and car park construction	Access through Pill
C9A	Pill Viaduct	Mount Pleasant, Pill	Repairs to Pill viaduct and Mount Pleasant embankment works	Access through Pill

**Table 4.1: Construction Compounds**

<b>Ref</b>	<b>Name</b>	<b>Location</b>	<b>Main Purpose</b>	<b>Access</b>
C9	Ham Green Compound	Field off Macrae Road, Ham Green	Works through Pill and works through the gorge. Switch and crossing (S&C) unit and track works through Pill. Works in Pill tunnel. Signalling and telecoms works	Access is very steep and narrow from Chapel Pill Lane, low loaders may be able to access the top of the lane and this will only be suitable for small scale deliveries
C8	Chapel Pill Farm	East of Chapel Pill Farm (south of railway line)	S-14 underbridge strengthening works, installation of new pedestrian maintenance access point to be installed, facilitate fencing works	Access off Chapel Pill Lane through Chapel Pill Farm
C7	Miles Dock	Avon Gorge	To support strengthening works to Miles Dock Underbridge and Quarry Underbridge (QUB) number 6, retaining wall/structure works, the installation of pedestrian access and fencing	Pedestrian access is from the cycle path and other access available is from the railway; some vehicles may travel along the tow-path
C6	Quarry UB4	Avon Gorge	To support QUB no.4 and QUB no. 5 strengthening works, works to access points (near QUB no. 5), minor earthworks to retaining structures and fencing installation	Pedestrian access is from the cycle path and other access available is from the railway; some vehicles may travel along the tow-path
C5A	Quarry UB2	Avon Gorge	The compound is required to support strengthening works to QUB no.2, minor earthworks of retaining structures and the installation of telecoms equipment and fencing	Pedestrian access is from the cycle path and other access available is from the railway; some vehicles may travel along the tow-path

**Table 4.1: Construction Compounds**

<b>Ref</b>	<b>Name</b>	<b>Location</b>	<b>Main Purpose</b>	<b>Access</b>
C5	Quarry UB	Avon Gorge	The compound is required to support strengthening works to Valley UB, works to access points, minor earthworks to retaining structures and fencing installation	Pedestrian access is from the cycle path and other access available is from the railway; some vehicles may travel along the tow-path
C4	Clanage Road access point	Clanage Road, Bower Ashton	Could be used to park a vehicle to support work at Valley UB and QUB2, to facilitate fencing works	Access from A369 Rownham Hill (existing NRIL access point)
C4	Clanage Road	Clanage Road, Bower Ashton	To provide a main compound for construction activities through the Avon Gorge, including track works, earthworks, underbridge strengthening, signalling and telecoms. This site could also be used as a main compound for works through to Parson Street Junction and staff parking	Road access will be from the A369. Deliveries should be managed carefully to mitigate against causing traffic congestion on this route
M5	M5 Compound		To be used for RRV access, and some deliveries	Access will be via Royal Portbury Dock Road and Marsh Lane
Q UB6	Quarry UB 6		Quarry UB 06 strengthening works	Pedestrian access is from the cycle path and other access available is from the railway; some vehicles may travel along the tow-path
LL	Liberty Lane	Within the existing Freightliner Site at Liberty Lane sidings	Will be used as a lay down area and as a main compound for track works in the	Access is off South Liberty Lane Bristol

**Table 4.1: Construction Compounds**

Ref	Name	Location	Main Purpose	Access
			Parsons Street area. A reduced size may be retained to provide welfare for works on the POD and into the Avon Gorge	
WR	Winter-stoke Rd	Adjacent to highway	Used for highway works at Winterstoke Road, Ashton Vale Road junction	Access off Winterstoke Road and Ashton Vale Road

**Table 4.2: Construction Compound facilities, working hours and timescales**

No.	Name	Car Parking	Storage	Welfare facilities	Working hours and Timescales
C16	Portishead Station Site Compound	Main compound to provide parking	Material storage	Welfare facilities and site offices	There is likely to be a construction presence here for the duration of the project, from the outset of the construction due to works at Quays Avenue through to completion of Portishead Station and Trinity bridge  Mainly daytime working 6am to 6pm, although due to programme constraints some night time working may be necessary
TB	Trinity bridge lay down	None	Lay down area		Similar to Portishead main station compound
C15	Sheepway	Small amount of parking	Materials storage	Localised welfare facilities	For the duration of the works on the disused line. A smaller permanent maintenance compound will be retained after the project
C14	Portbury Hundred	Parking for staff vehicles. Site could also be used as an overflow for short	Materials storage	Welfare facilities and site offices	Primarily daytime working from 6am to 6pm (not including time to set up and set down), although certain deliveries may need to be outside of these hours. Periods of 24-hour working may be necessary

**Table 4.2: Construction Compound facilities, working hours and timescales**

<b>No.</b>	<b>Name</b>	<b>Car Parking</b>	<b>Storage</b>	<b>Welfare facilities</b>	<b>Working hours and Timescales</b>
		periods of high activity elsewhere with a minibus taking staff to other sites			The compound will be used for the duration of the project
C13	Lodway Farm	High level of parking for staff	Materials storage	Welfare facilities and site offices	For the duration of the project. Daytime working will be undertaken where possible from 6.30am to 6pm (not including periods of set up and set down) but periods of 24-hour working may be necessary
C12	Avon Road	None	Small scale deliveries, storage, lay down area and crane pad	Small welfare unit	For the duration of the works to Avon Underbridge and the earthworks
C11	Monmouth Road	Small amount of parking	Storage of materials, plant and machines will also be required (and permanent RRAP access point)	Localised welfare facilities	The compound will be used for the duration of the works and will predominantly facilitate daytime working, although some night time works may be required
C10	Pill Station Top	None	Small scale deliveries, storage and lay down area	Small welfare unit	Old Pill Station demolition is to be completed before construction works. The compound is required for the duration of the works to Pill Station
PM	Pill Memorial Club	Small amount of parking	Small scale deliveries, storage	Small welfare unit	Duration of works to Memorial Club car park and bus stops on Lodway / Heywood Road

**Table 4.2: Construction Compound facilities, working hours and timescales**

<b>No.</b>	<b>Name</b>	<b>Car Parking</b>	<b>Storage</b>	<b>Welfare facilities</b>	<b>Working hours and Timescales</b>
			and work area		
C9A	Pill Viaduct	Pill library car park to be used for parking	Small scale deliveries and storage facilities	Small welfare unit	The compound is required for the duration of the works to Pill Viaduct
C9	Ham Green	Small amount of parking	Materials storage	Small site cabin, welfare facilities	For the duration of the construction works
C8	Chapel Pill Farm	None	Small scale deliveries and storage facilities	Small welfare unit	For the duration of the S-14 Underbridge works
C7	Miles Dock	None	Materials & equipment storage	Small welfare unit	The compound is required for the duration of works to Miles Dock and associated works through the Avon Gorge
C6	Quarry UB4	None	Materials & equipment storage	Small welfare unit	The compound is required for the duration of works to QUB no.4 and QUB no. 5 and associated works through the Avon Gorge
C5A	Quarry UB2	None	Materials & equipment storage	Small welfare unit	For the duration of works to QUB no. 2 and associated works through the Avon Gorge
C5	Quarry UB	None	Materials & equipment storage	Small welfare unit	For the duration of works to Valley UB and associated works through the Avon Gorge
C4	Clanage Road Access Point	Parking for welfare van or works vehicle			For the duration of the construction works
C4	Clanage Road	Medium sized parking	Material storage. There will	Welfare facilities	The compound will be used for the duration of the construction works

**Table 4.2: Construction Compound facilities, working hours and timescales**

<b>No.</b>	<b>Name</b>	<b>Car Parking</b>	<b>Storage</b>	<b>Welfare facilities</b>	<b>Working hours and Timescales</b>
		area. Site could be used for staff parking	be a RRAP installed to allow RRVs access into the Avon Gorge	and site offices	
M5	M5 Compound	Parking may be required under M5	RRAP & small storage area	Space for welfare van or small welfare unit under the M5	For the duration of the construction works. Materials may be brought in at night
Q UB6	Quarry UB 6	None	Materials & equipment storage	Small welfare unit	For the duration of the works to QUB no. 6 and associated works through the Avon Gorge
LL	Liberty Lane	Main Compound for track works in Parsons St area, to provide some car parking	Materials storage	Welfare facilities and site offices (likely to be stacked)	Mainly daytime working 6.30am to 6pm, although due to rail access significant night time working may be necessary
WR	Winterstoke Road	Parking for welfare van or works vehicle	Materials storage	Small welfare unit	Duration of highway works



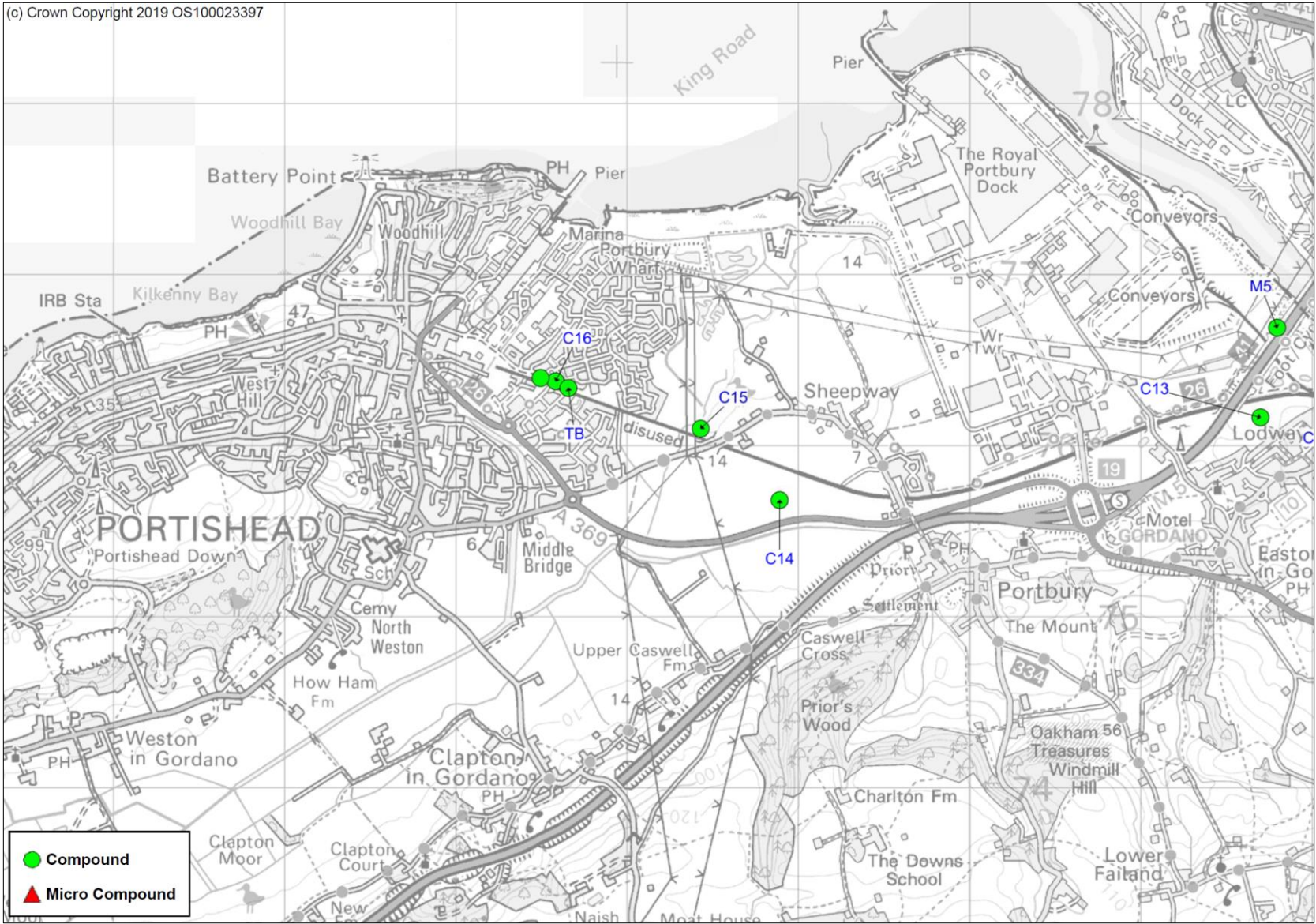


Figure 4-1: MetroWest Phase 1 Compounds – Portishead to Gordano



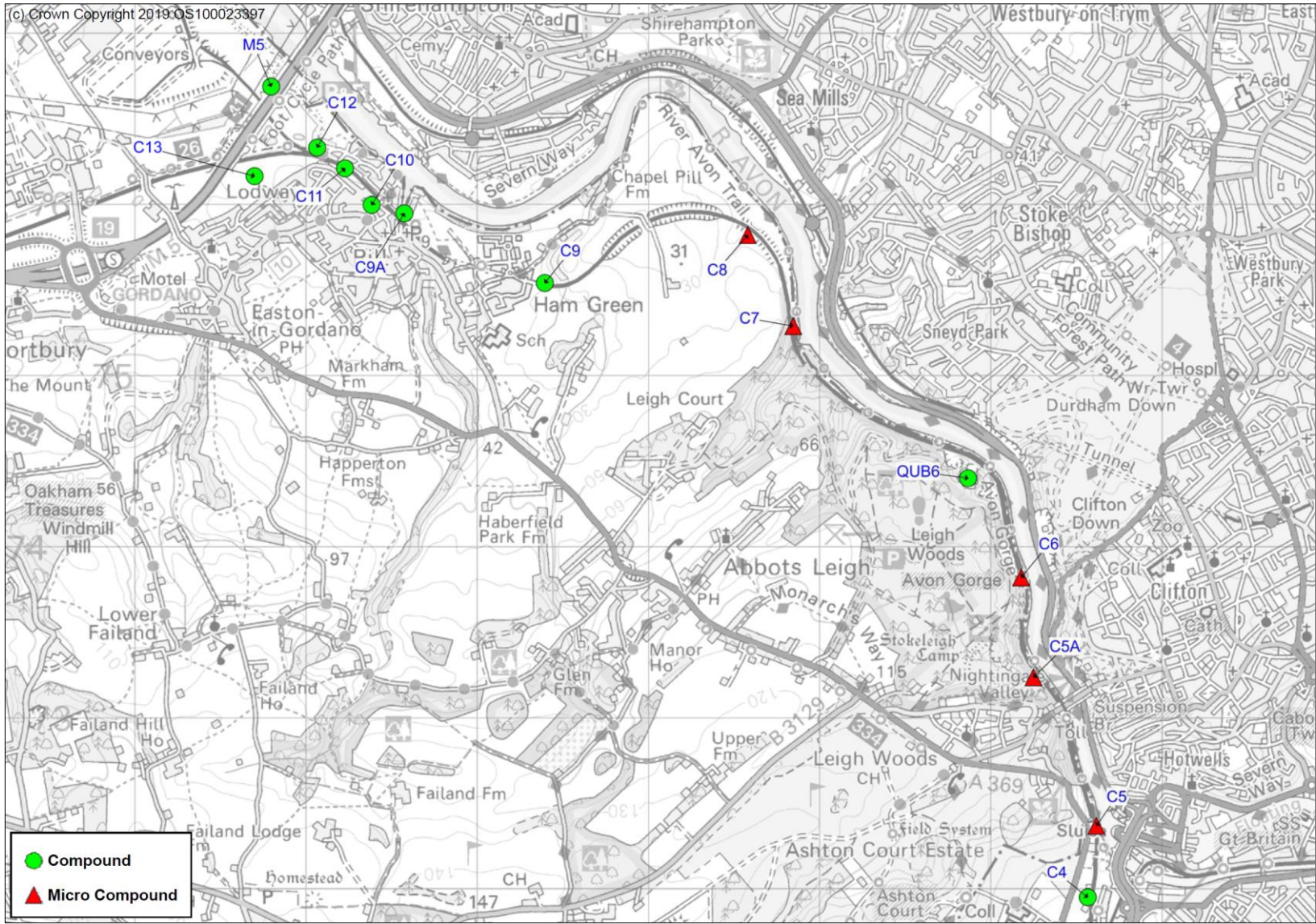


Figure 4-2: MetroWest Phase 1 Compounds – Gordano to Bower Ashton





Figure 4-3: MetroWest Phase 1 Compounds – Avon Gorge through to Parson Street Junction

## SECTION 5

# Construction Traffic Generation & Impacts Assessment

## 5.1 Introduction

- 5.1.1 This section assesses how much traffic will be generated throughout the construction period, drawing on the Construction Strategy and other GRIP3 deliverables. Key activities have been assessed, in particular deliveries of the material to each of the main compounds and the personnel attending both the satellite and main compounds during the construction period.

## 5.2 Approach to assessment

- 5.2.1 The initial process was to look at the materials required and assess what could be brought in by rail and what would be transported by road. The road deliveries were then looked at to assess the volumes, vehicle size required and trip numbers required to bring the volume to site.
- 5.2.2 The construction programme was then assessed to establish the period over which the deliveries would be made on order to give the trips per day with the trips then distributed across each of the main compounds.
- 5.2.3 Secondly facilities and personnel requirements were assessed to establish the trips generated. The key focus is operatives attending every day during the period of construction, with reference to mobilisation, maintenance and management of sites. This was looked at on a compound by compound basis with the total number of trips required at each location distributed evenly across the length of the programme.
- 5.2.4 Finally, the routes to each of the compounds were assessed to establish the key links that would be used by construction traffic and those attending site.
- 5.2.5 To complete the assessment the material delivery trips and facilities and personnel trips were attributed to each of the links to attain total trips on each of the links per day. The trips were then distributed across construction periods and working days to establish trips generated per hour, assuming a number of different site operating scenarios, in order to consider impacts on traffic at different times of the day in context.

## 5.3 Overview of the transport of ballast materials

- 5.3.1 Movement of ballast materials is the most significant single transport element of the scheme. The likely traffic generation arising from the excavation and track works (for the disused section) has been detailed within the Construction Strategy (DCO Document Reference 5.4) and presented in Table 5.1.

**Table 5.1: Vehicle movements during construction**

<b>Component</b>	<b>No. of vehicle movements</b>
<b>Disused Line</b>	
Excavation	<p>It is estimated that approximately 1,200-1,800 vehicle loads will be required to remove the spoil from the disused line (based on 15,000 m<sup>3</sup> of material, converted into 22,500 tonnes of waste which divide into 20 ton loads per muckaway tipper).</p> <p>Spread over an estimated 2-3 months to complete the excavation works this will equate to approximately 40-60 vehicle movements per day - this is for excavation works only and will be subject to Contractors methodology. A full traffic management plan will be completed by the Contractor prior to construction.</p> <p>It is estimated that approximately 20-30 engineering trains are required to remove the spoil (depending on length of train permitted).</p>
Track Formation and bottom ballast	<p>At this early indicative stage it is estimated that approximately 11,500 cubic metres of Type 1 formation material and 7,000 cubic metres of bottom ballast (below sleepers) is required. Using a density of 1.9 tonnes per cubic metre for Type 1 and 1.75 tonnes per cubic metre for ballast this equates to approximately 34,500 tonnes of material. Using 20 tonne muckaway trucks, this equates to 1,500 to 2,000 vehicle movements. This results in approximately 30-40 local (sub region) vehicle movements per day for material delivery only over a 3-4 month programme.</p> <p>It is estimated that between 20-30 engineering trains would be required to deliver the new material to site (depending on length of train permitted).</p>

5.3.2 Ballast material movements will be concentrated at the Lodway Farm and Portbury Hundred compounds, splitting 80% of all movements evenly between them. The remaining 20% of movements are assumed to involve limited activity split fairly evenly between Clanage Road, Portishead station site, Monmouth Road and Ham Green compounds.

5.3.3 It should be noted that it is the intention that movements of ballast materials be accomplished by rail as much as possible, but that use of road transport may be required. As such, the illustrations in this plan reflect a worst case situation where limited rail transport is used.

## 5.4 Overview of the transport of non-ballast materials and personnel

5.4.1 This section takes information, provided by NRIL, from the Construction Strategy (DCO Document Reference 5.4) and an indicative assessment of principal quantities to assesses how traffic could be generated throughout the construction period. The activities that have been assessed are:

- Setting up and maintenance of the compounds;



- Deliveries of the material to each of the main compounds; and
- Personnel attending both the satellite and main compounds during the construction period.

5.4.2 To produce the traffic impact assessment several assumptions have been made to generate the number of vehicle trips being made, based on a 30 month programme including 4 mobilisation months, 24 construction months and 6 months opening the scheme and decommissioning sites.

#### **Materials and Plant**

5.4.3 Materials and plant include rail signalling systems, electric power and plant, permanent way and operational telecoms, as well as buildings other civil engineering items and plant, with key assumptions as follows:

- Rail signalling systems, electric power and plant, permanent way and operational telecoms will be brought in by road or rail;
- Materials will arrive at the main compounds from the M5; as a worst case, it is assumed this will all be from the north;
- Deliveries are assumed to be distributed across the working days over the operational duration of the compounds; this has not been assumed to be uniform, with fluctuations being based on the proportion of maximum daily movements anticipated across the period;
- It has been assumed that the piles that are proposed to be used are precast and there will be one precast pile per load; there will be one load of spoil generated by the boring of each pile; and
- For plant, it has been assumed that two dumpers will be required at the main compounds and one at the satellite compounds, and that two excavators will be required at the main compounds and one at the satellite compounds.

5.4.4 The result of this indicative assessment suggests a maximum of 10 road trips per day for materials and plant, for periods of greatest activity on the scheme. Daily average movements will be lower (of the order 4-5 movements more typically, even during periods of high activity).

5.4.5 The main compounds will receive the majority of movements, with around 30% of all movements assumed to be at Lodway Farm, 25% at Portbury Hundred, 15% each at Clanage Road and the Portishead station site, and the balance split between Monmouth Road and Ham Green compounds.

#### **Facilities and Personnel**

5.4.6 Indicative figures for personnel assume that most staff will use the main compounds to for access, with only very limited staff numbers being at the smaller satellite compounds as required. As such, the split of personnel is similar to that of materials, with around 60% of all staff assumed to be accessing the scheme at Lodway Farm and Portbury Hundred (evenly split), 15% each at Clanage Road and the Portishead station site, and the balance split between Monmouth Road and Ham Green compounds.

- 5.4.7 Facilities required at each compound (such as Portacabins) will vary according to the size and use of the compound, but will be as stated in the NRIL Construction Strategy. Minimal ancillary movements are required, such as weekly or twice-weekly visits for maintenance to refill water tanks, fuel tanks etc, and cleaning compound buildings.
- 5.4.8 The total number of personnel working on the project will vary through the mobilisation, construction and decommissioning periods, with the maximum number likely to be 300 operatives (split broadly between compounds as noted above). At peak staff requirement (of 300 personnel) up to 84 staff could be accessing each of the Lodway Farm and Portbury Hundred compounds.
- 5.4.9 It is anticipated that the construction will operate a two-shift system when the activity is at its most intense, resulting in movements of staff into the sites in the early morning, a changeover mid-afternoon and final exit later in the evening. However, at times a single shift will operate, especially in winter to largely coincide with daylight hours. The impact that specific operating hours will have on staff movements is discussed further below.

## 5.5 Impact on the highway

### Routes

- 5.5.1 Indicative routes to each of the compounds were assessed to establish the key links that would be used by construction traffic and those attending site. Table 5.2 shows links used to access main compounds; for clarity, only key roads are included in the table.

**Table 5.2: Highway routes and compounds**

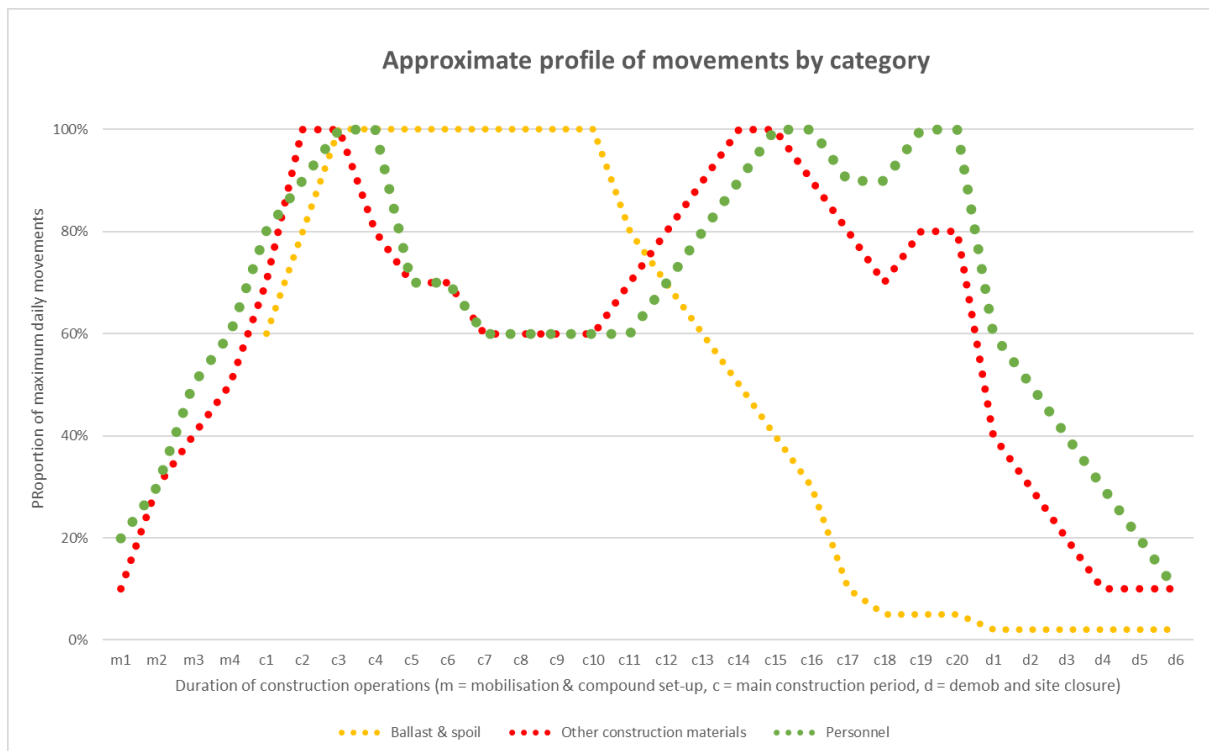
compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrind Bsin	A369 near Long Ashton
<b>Materials: HGV movements to compounds - key links used</b>													
<b>Main compounds</b>		-	-	-	-	-	-	-	-	Y	Y	Y	Y
C-4	Clanage Road	Y	Y	Y	-	-	Y	-	Y	-	-	-	-
C-9	Ham Green Compound	Y	Y	Y	-	-	Y	Y	-	-	-	-	-
C-11	Monmouth Road	Y	Y	Y	-	Y	-	-	-	-	-	-	-
C-13	Lodway Farm	Y	Y	Y	-	Y	-	-	-	-	-	-	-
C-14	Portbury Hundred	Y	Y	Y	Y	-	-	-	-	-	-	-	-
C-15	Sheepway	Y	Y	Y	Y	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	Y	Y	Y	Y	-	-	-	-	-	-	-	-
<b>Personnel: journeys to compounds - key links used</b>													
<b>Main compounds</b>		-	-	-	-	-	-	-	-	Y	Y	Y	Y
C-4	Clanage Road	Y	Y	Y	-	-	Y	-	Y	-	-	-	-
C-9	Ham Green Compound	Y	Y	Y	-	-	Y	Y	-	-	-	-	-
C-11	Monmouth Road	Y	Y	Y	-	Y	-	-	-	-	-	-	-
C-13	Lodway Farm	Y	Y	Y	-	Y	-	-	-	-	-	-	-
C-14	Portbury Hundred	Y	Y	Y	Y	-	-	-	-	-	-	-	-
C-15	Sheepway	Y	Y	Y	Y	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	Y	Y	Y	Y	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>		-	-	-	-	-	Y	-	-	-	-	-	Y
C-4x	Clanage Road micro-compound	Y	Y	Y	-	-	Y	-	-	-	-	-	Y
C-5	Valley UB 122m 34ch	Y	Y	Y	-	-	Y	-	-	-	-	-	Y
C-5A	Quarry UB2 122m 40ch	Y	Y	Y	-	-	Y	-	-	-	-	-	Y
C-6	Quarry UB 4 123m 23ch	Y	Y	Y	-	-	Y	-	-	-	-	-	Y
C-7	Miles Dock 124m 04ch	Y	Y	Y	-	-	Y	-	Y	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	Y	Y	Y	-	-	Y	-	Y	-	-	-	-
C-9A	Pill Viaduct	Y	Y	Y	-	-	Y	Y	-	-	-	-	-
C-10	Pill Station Top	Y	Y	Y	-	-	Y	Y	-	-	-	-	-
C-12	Avon Road	Y	Y	Y	-	-	Y	Y	-	-	-	-	-
QUB6	Quarry underbridge	Y	Y	Y	-	-	Y	-	-	-	-	-	Y
M5	M5 compound	Y	Y	Y	-	Y	-	-	-	-	-	-	-

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

## Scheme operations

5.5.2 To complete the assessment, movements for material delivery and personnel trips were attributed to each of the links to attain the total trips on each of the key links. Scenarios have been presented that reflect different potential operating practices during the construction period, albeit representing worst cases in the quantum of movements included.

5.5.3 In the first instance, Figure 5.1 shows indicative proportions of the maximum anticipated movements of ballast and spoil, other construction materials, and personnel across the construction period. This should not be considered definitive, as the contractor will ultimately determine how work will be carried out, but is a realistic potential profile. The key element taken from this profile in determining traffic impact is that the three categories of movements have potentially coinciding 100% movement expectations early in the main construction period, and this has been used in subsequent illustrations of traffic impact on key routes.



**Figure 5-1: Movements by category**

## Movements

**5.5.4** Taking the coincidence of maximum activity as the basis, movements generated by construction activity can be allocated to compounds and routes, and cross-referenced with times of the day. As such, a series of scenarios have been derived, to illustrate the impacts, based in the first instance on the maximum period of activity with 300 operatives; with the sub-options of either a single shift per day (one start time for all) or two shifts per day (split into early and late start/finish time). Different time periods have been used, showing the changes across a notional working day. For all scenarios, ballast, spoil and other materials are assumed to move evenly across the shift, with a notional 7 movement hours during a single shift and 10 movement hours spread across two shifts.

**5.5.5** Scenarios include:

- Daily totals – 18hr (05:00-23:00), incorporating all movements;
- Single shift per day – maximum hour total (assumed as 07:00-08:00), with 95% of operatives arriving in the maximum hour;
- Two shifts per day – maximum hour total (assumed as 05:00-06:00), with 65% of operatives arriving in the maximum hour;
- Single shift per day – AM peak hour (assumed as 08:00-09:00, after the majority of staff have arrived);
- Two shifts per day – AM peak hour (assumed as 08:00-09:00, after the majority of staff have arrived);
- Single shift per day – interpeak average hour (from 11:00 to 15:00), essentially just materials movements;



- Two shifts per day – average interpeak hour (from 11:00 to 15:00), similarly just materials movements;
- Two shifts per day – interpeak shift changeover (assumed as 13:00-14:00); assuming that 50% of staff arrive and depart in the same hour;
- Single shift per day – PM peak hour (assumed as 17:00-18:00), as such most activity has ceased; and
- Two shifts per day – PM peak hour (assumed as 17:00-18:00), with little staff movement, but materials carry on moving.

5.5.6 Appendix A shows tables of movements for each of the scenarios above, identifying total numbers of movements in each scenario, and allocating them to key routes.

### **M5 junction 19**

5.5.7 The most significant highway element identified as being used for access to the scheme is M5 junction 19. This junction provides the main access to the strategic highway network for traffic to/from Portishead and the Royal Portbury Dock, as well as Gordano Services. The junction is congested at peak times, sometime significantly.

5.5.8 As such, the illustrations of traffic movements associated with the scheme have been extracted for this junction and identified for each arm of the junction's gyratory. In doing this, 80% of staff movements are assumed to be to/from the M5 north of the junction, as well as all materials movements. In addition to identifying scheme related movements, comparison has been made between scheme generated movements and traffic counts at the junction, illustrating the proportion of traffic that movements associated with the scheme would represent.

5.5.9 Appendix B includes plots of movements at the junction for each of the operating scenarios identified above, showing all traffic (from counts) and construction movements (totals, plus HGVs for materials and staff movements separately) and the proportion this reflects of counts.

5.5.10 Appendix C illustrates the profile of movements across the day (5-day and 7-day averages for all traffic), with construction traffic superimposed, cross referencing the points in the day when scheme related traffic movements are at their most significant.

### **Key conclusions**

5.5.11 The scenarios of construction operations, traffic and timings illustrate that related movements will be at their greatest if construction is taking place with a single shift operating, where the concentration of staff members entering the site prior to the start of the shift has the most significant impact on traffic. At other times of the day, and with two-shift site operation, construction related traffic movements are relatively small.

5.5.12 Specific consideration of potential movements through M5 junction 19 suggests that construction traffic does not generally represent a significant proportional increase in movements. Also, DCO Requirement 30 states that no construction related traffic is to travel via M5 J19 between 7.30am and 9am.



## SECTION 6

# Mitigation, Monitoring & Enforcement

## 6.1 Overview

- 6.1.1 The construction works will lead to a range of transport impacts each requiring a different scale of intervention, mitigation, monitoring and/or enforcement where appropriate. In this section, the proposed mitigation measures are outlined and then applied to the appropriate identified locations

## 6.2 Detailed Construction Traffic Management Plan

- 6.2.1 Whilst this document provides a framework for the management of the construction traffic and the impacts, a detailed CTMP will be prepared once contractors have been appointed.
- 6.2.2 A detailed CTMP will be provided by the contractor throughout the duration of the works. Temporary traffic management works will be required to comply with the provisions of the Traffic Signs Manual: Chapter 8 Traffic Safety Measures and Signs for Road Works and Temporary Situations (2009). Traffic signs will comply with the Traffic Signs Regulations and General Directions ("TSRGD") 2002 and its subsequent amendments.
- 6.2.3 A Traffic Management Working Group ("TMWG") will be formed for the Project at the construction phase. The Contractor will consult with the TMWG regarding traffic management, Non-Motorised User ("NMU") and public transport issues. The members of the TMWG (including the NRIL representative) will agree a resolution procedure for disputes relating to traffic management and other traffic related measures to be implemented during the construction of the Project.
- 6.2.4 The Contractor will prepare the Final CTMP which will describe the traffic management, safety and control measures proposed during construction of the Project. The Final CTMP will include details of the following, as appropriate:
- Measures to provide for the safety of traffic, the public and construction staff during traffic management works and temporary traffic control measures;
  - Measures to ensure that the maintenance and condition of public roads, cycleways and PRow do not deteriorate due to the construction traffic, including monitoring arrangements with local highway authorities;
  - Procedures to be followed for the temporary or permanent closure or diversion of roads or accesses; including details of required notice periods;
  - Procedures to be followed to obtain consent to work on or over railways;
  - Existing pedestrian, equestrian and cyclist routes, including whether the routes are used by one or more of these groups of road users;
  - Measures to be implemented to reduce construction traffic impacts or impacts associated with over-parking on residential streets;

- Details of parking arrangements for site staff and site visitors;
- Temporary and permanent access to the works;
- Permitted access routes for construction traffic;
- Monitoring requirements in relation to the plan;
- Requirements relating to the movement of farm animals where farm accesses are affected;
- A programme of traffic management measures to be implemented and details of traffic management proposals for the works on or adjacent to public roads;
- Details of phasing of works;
- Drawings showing traffic management layouts, signing and apparatus to be implemented, including proposed routes for pedestrians, equestrians and cyclists;
- Timing of operations;
- A list of roads which may be used by construction traffic in the vicinity of the site including any restrictions to construction traffic on these routes;
- The name and contact details of the Contractor's traffic safety and control officer and information and advice for the public regarding ways to raise complaints or request information; and
- A register of applications for consents associated with temporary traffic management measures.
- Block and layout plans of the compounds which will compromise:
  - Access/egress arrangements including visibility splays onto the public highway.
  - Turning movements within the site especially for articulated HGVs where appropriate so that vehicles enter and leave the site in forward gear.
  - Internal parking arrangements for staff and visitors.
  - Storage of materials and waste on site.
  - Pedestrian/circulation routes within the compound.

6.2.5 The detailed CTMP will also provide:

- Maximum number of daily two-way vehicle trips generated by the development;
- Network peak hour two-way daily vehicle trips (usually considered to be 08:00-09:00 and 17:00-18:00);
- Volume and distribution of abnormal load movements;
- Volume of material to be moved to and from the site;
- Volume of HGV movements (two-way);
- Distribution of HGV movements during the construction phase;

- Volume (two-way), type and distribution of all other traffic associated with the construction phase including workforce profile, shift patterns and staff catchment;
- Route for construction traffic between the M5 motorway and the development site;
- Impact of construction traffic on the surrounding local highway network for network peak hours; and,
- Mitigation measures to rectify any potential capacity impact, damage to structure or highway.

## 6.3 Delivery routes

- 6.3.1 The Contractor will consult with relevant highway authorities regarding access routes that may be used by the Contractor to access the construction sites. Construction traffic will use the principal highway network wherever possible and designated routes to and from the compounds and access points will be identified in the Final CTMP. The Final CTMP will include finalised agreed routes and all sub-contractors will be provided with copies of the haul route throughout the duration of the works. The Final CTMP will be consulted upon with the relevant authorities to ensure that agreement is reached regarding any timing restrictions on the use of roads. The Contractor will provide required signage.
- 6.3.2 The likely main access routes are shown in Figures 6.1-6.3 and described in Table 6.1. These routes are indicative at this stage, but as they take account of weight restrictions, capacity of the highway network to accommodate HGV movements where required and the need to minimise the impacts on residential neighbourhoods, local businesses, local schools and other services, the use of other routes will generally be discouraged or prohibited. Where applicable, residents, local businesses and services will be kept informed of the timing of the works in advance.
- 6.3.3 The Contractor will keep site access points clear at all times and will design and construct site access points to a suitable standard to enable the smooth access and egress of vehicles in a forward direction to limit disruption to road user's due to use of the access points.

**Table 6.1: Main vehicle routes during construction**

<b>Delivery route</b>	<b>Description</b>
1	Exit Junction 19 of the M5 then follow the Portbury Hundred (A369), crossing over the B3124/Sheepway roundabout and then turning right at the A369/Quays Avenue roundabout. The route ends at a site just to the south of the Harbour Road/Phoenix Way roundabout.
2	Exit Junction 19 of the M5 then follow the Portbury Hundred (A369), turning right onto Sheepway at the roundabout with the B3124/Sheepway. Follow Sheepway until the bridge heading over the railway line.

**Table 6.1: Main vehicle routes during construction**

<b>Delivery route</b>	<b>Description</b>
	Access to compound C3 will be off the Portbury Hundred. A right turn into the site compound could be difficult due to the volume of traffic and increased congestion. Traffic would be directed to Sheepway roundabout back up the Portbury Hundred to turn left into the compound to ease congestion. Traffic leaving the site would be permitted to turn left onto the Portbury Hundred only.
3	<p>Exit Junction 19 of the M5 then travel northbound on the Royal Portbury Dock road. Then turn right onto Gordano Way at the roundabout, and then turn right onto Marsh Lane. The entrance of the site is then accessed at the second lane on the left.</p> <p>An alternative route which would only be used if the main route via Marsh Lane were to be unavailable due to utility diversion works would be through Pill village into Lodway Compound via Lodway, The Poplars, Stoneyfields and Trinder Road.</p>
4	Exit Junction 19 of the M5 then travel southbound on Martcombe Road (A369) and take the first left onto Priory Road. Travel on Priory Road which leads onto Lodway, and then follow until it turns onto Heywood Road. Continue along Heywood Road and turn right onto Mount Pleasant. Continue along Mt. Pleasant, followed by Underbanks (going under the railway underpass) and then onto Myrtle Hill and Marine Parade. Continue on Marine Parade until reaching the junction with Avon Road. At this junction turn right onto Avon Road and then left onto Severn Road. It should be noted that the roads in the latter half of this journey are narrow and thus may cause an issue for large vehicles. This is the only option due to the weight limit on Station Road bridge and the size of the vehicle.
5	Exit Junction 19 of the M5 then travel southbound on Martcombe Road (A369), turning left at the junction with Pill Road. Travel northbound along Pill Road until it leads onto Ham Green. Turn right at roundabout onto Macrae Road. Travel along Macrae Road until turning right onto Hart Close followed by a left onto Chapel Pill Lane. The site can then be accessed by taking the first right off Chapel Pill Lane onto a track.
6	Leave Junction 18 of the M5 and then proceed along the Portway (A4) until taking the A3029. Leave the A3029 and turn right to go underneath Ashton Road (A370) and turn right. Continue onto Clanage Road.
7	Leave Junction 18 of the M5 and then travel along the Portway (A4) until taking the A3029 (Brunel Way over the Cumberland Basin). Follow the A3029 southbound until turning right at the Barons Close roundabout onto the A369.
Avon Bridge Crane Route	Leave Junction 19 of the M5 and travel south east along Martcombe Road. Turn left onto Pill Road which leads onto Ham Green. Continue until turning left at Mt. Pleasant which leads onto Underbanks. Follow this around until it joins Marine Parade followed by Avon Road.





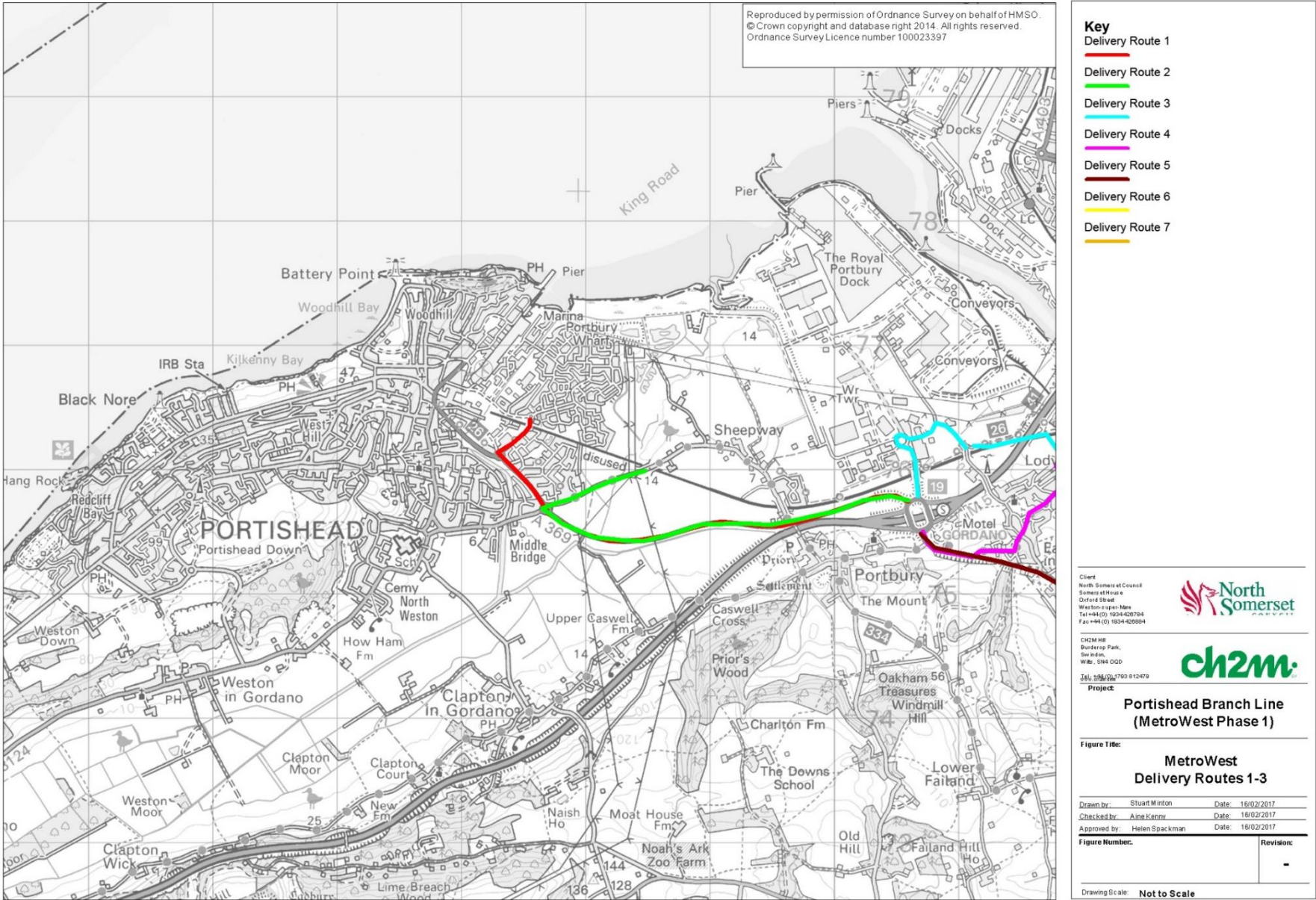


Figure 6-1: MetroWest Phase 1 Construction Delivery Routes – Portishead and Gordano



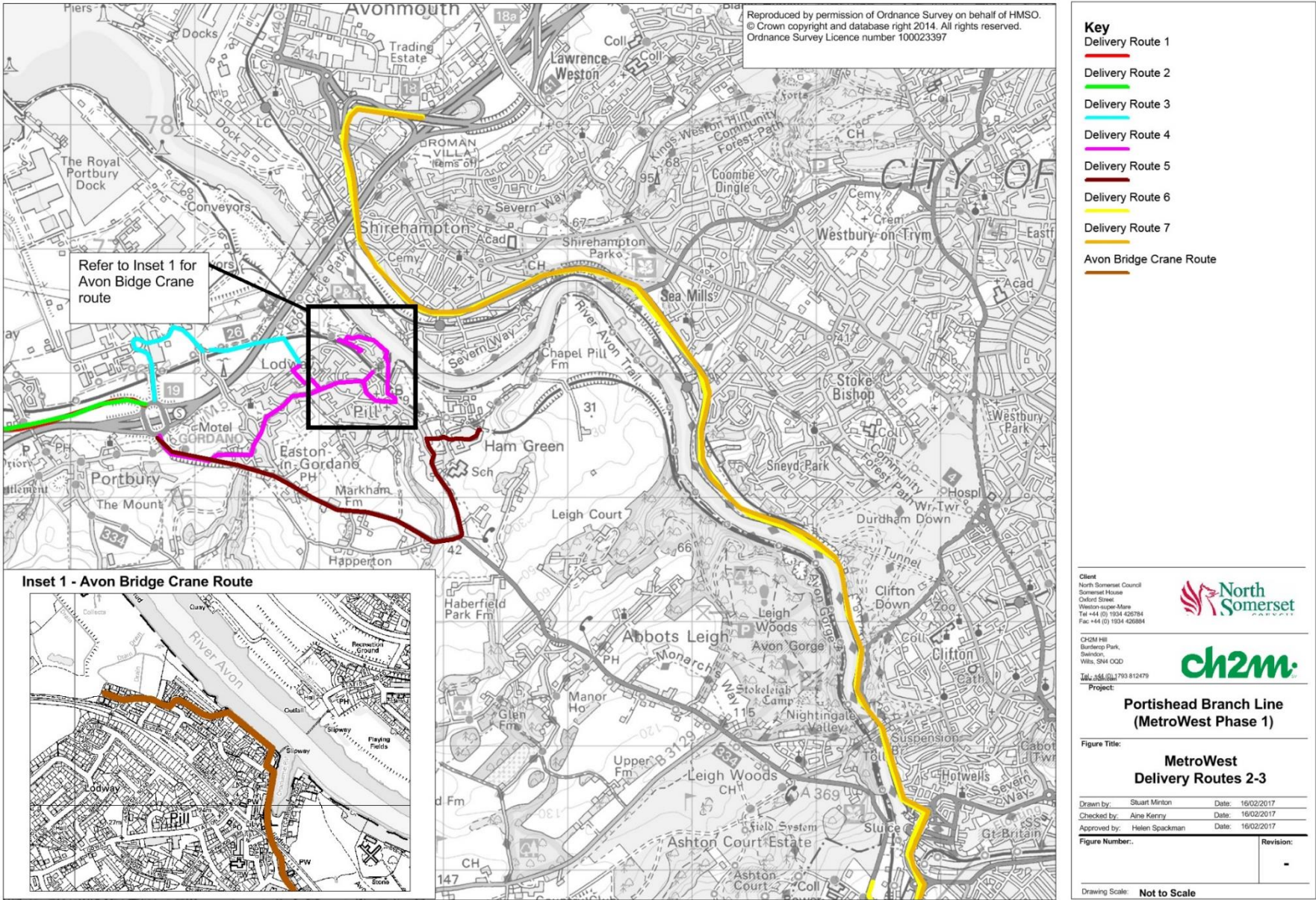


Figure 6-2: MetroWest Phase 1 Construction Delivery Routes – Gordano, Pill and Avon Gorge



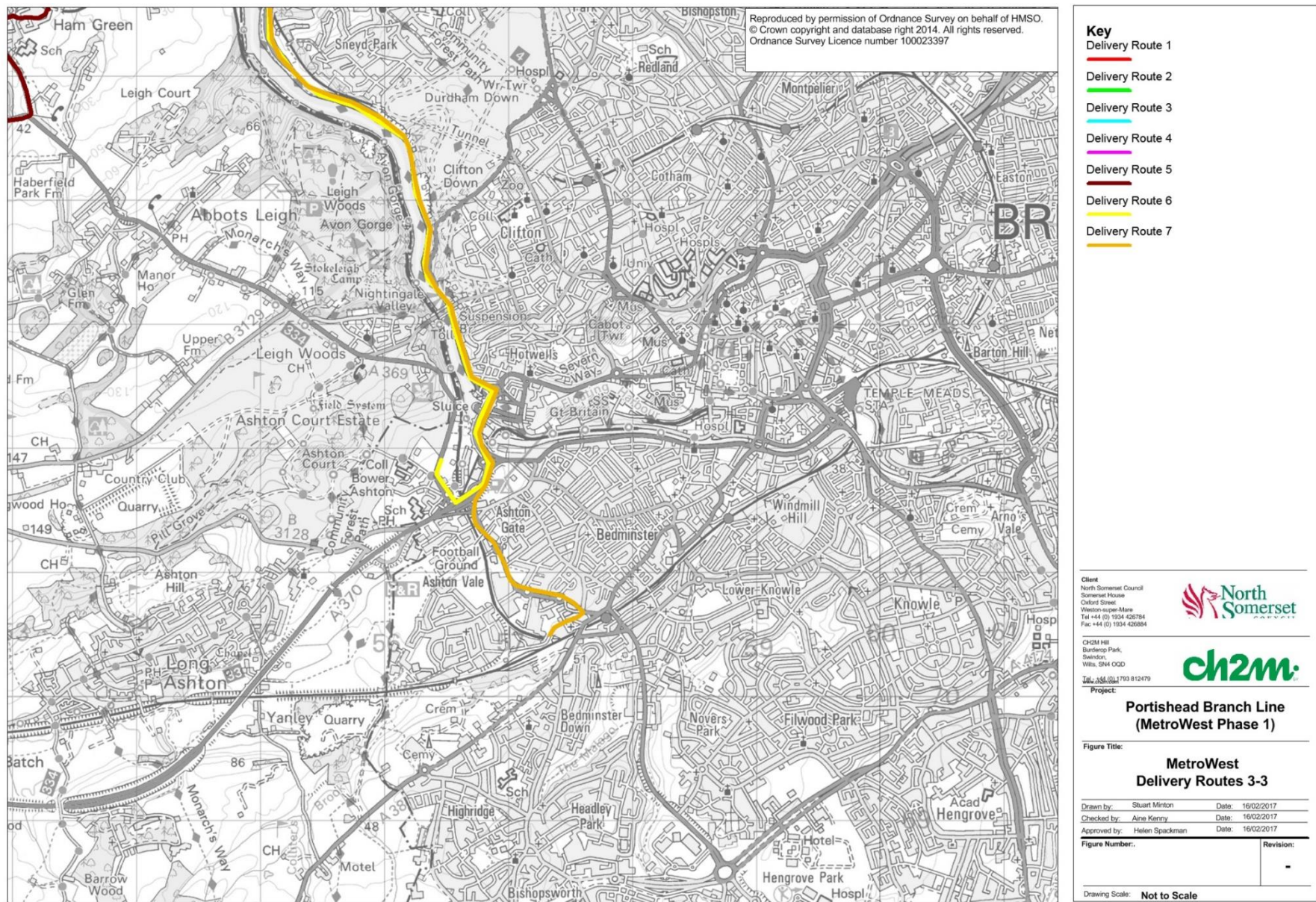


Figure 6-3: MetroWest Phase 1 Construction Delivery Routes – Avon Gorge and Ashton Vale

## 6.4 Abnormal loads

- 6.4.1 The construction works will involve the delivery of a number of abnormal loads and the movement of high volume materials. The extent and volume of these loads is currently not known but as the construction strategy is finalised, this information will become clearer. Nevertheless, the following principles will apply to abnormal loads:
- To minimise disruption to traffic, abnormal loads will be grouped together and travel in convoy wherever possible;
  - Careful consideration will be given whether the highway network can accommodate abnormal loads. This may require, in some instances, loads being broken into smaller blocks to minimise impacts;
  - Prior to transportation of the first abnormal load, an access route survey feasibility report will be undertaken;
  - The transport of abnormal loads will be timed to be moved outside peak traffic hours to minimise disruption. These deliveries will be pre-arranged and will meet the requirements of the Police, the Local Highway Authority and Highways England; and
  - Information will be provided to local residents, businesses and services about the delivery of abnormal loads. The most effective way of communicating this information will be agreed at the appropriate time.

## 6.5 Traffic management measures; Compounds

- 6.5.1 The detailed CTMP will provide specific information for each compound. For each compound, the following principles will apply:
- Preparation and submission of a construction compound transport plan. This will include a block plan, indication of access points and connections to the highway network, surrounding land uses detail of security fencing and health and safety signage, internal layout and parking;
  - The construction site will be managed so that vehicles and pedestrians using site routes can move around safely. This will include separate entry and exit gateways and clearly marked crossings. Where access onto highway is required, an assessment of a safe visibility splay will be undertaken; and
  - Additional control measures such as banksmen who will be responsible to control manoeuvres and gatekeepers will be in place. Internal speed limits will be restricted to 5 mph.

## 6.6 Traffic management measures; Highway Network

- 6.6.1 The final part of the mitigation will be a requirement to produce traffic management plans for the impacts on the highway network. Traffic management plans will provide an assessment of:



- Existing conditions. This includes all users of the highway including NMUs, key trip generators such as local schools and local services such as public transport;
- An assessment of the impacts. This may include a full temporary closure or a partial closure such as the use of temporary signals. Diverting pedestrian routes taking into account the importance of desire lines and the needs of those with physical or visual impairment;
- A review of the measures required. This should include any additional control measures that may be required such as manning of signals, notification and enforcement by local police; and
- The need for Travel Demand Management ("TDM") measures. This includes the communication and dissemination of information to the public, businesses and local services. There may be a requirement to promote alternative routes or modes or recommendation not to travel at specific times.

## 6.7 Closures and diversions

- 6.7.1 Where the Contractor proposes to provide a temporary or alternative route or access, the construction and layout will be suitable for the traffic anticipated to use the route.
- 6.7.2 Temporary or substitute road access will be maintained by the contractor throughout the works to adequately provide for the traffic using the affected routes. The Contractor will apply for any consents and prepare any orders or regulations required for temporary traffic management schemes or road closures and comply with the requirements of the relevant roads authority in this regard to ensure that temporary or substitute roads have the appropriate legal status.
- 6.7.3 Where temporary road closures are required to facilitate construction works, the Contractor will consult with NRIL, Highways England (as relevant), relevant local authorities and the police. The Contractor will be required to demonstrate to the relevant authorities that the construction work cannot be carried out safely without the road closure. Agreement on diversion routes will also be required prior to works commencing.
- 6.7.4 Where temporary closures are required, the Contractor will keep the closures of public rights of way to as short a time as reasonably practicable. Local residents, local schools, work locations and other users of the area affected should be informed in advance of the dates and durations of the closure and provided with details of diversion route(s). Diversion route(s) must be signposted.

## 6.8 Monitoring

- 6.8.1 The Contractor will monitor traffic management schemes, traffic levels on roads and site accesses and public roads adjacent to access points to maintain their effectiveness and condition throughout the works and to provide for the safety of traffic, the public and construction staff during traffic management works. The Contractor will provide information regarding any delays to traffic due to construction works.

## 6.9 Construction workers Travel Plan

6.9.1 A Construction workers travel plan will be prepared by the Contractor to encourage the use of sustainable modes of transport where possible and to reduce the impact of workforce travel on the local residents and businesses. The plan will include:

- Identification of a travel plan co-ordinator and a description of their responsibilities;
- Key issues to consider for each site compound/construction site along the length of the Project;
- Forecast workforce trip generation and how it is likely change during the construction period;
- Mitigation measures to reduce the impact of the construction workforce on the local and strategic road networks;
- Targets to reduce individual car journeys by the construction workforce;
- The travel plan will detail parking arrangements, avoiding where possible contractors' vehicles being parked on the highway; and
- The process for monitoring and reviewing the construction workforce travel plan.



# Appendix A

## Detailed traffic movements

List of operating scenarios shown in tables:

- Daily totals – maximum period of activity, with 300 operatives
- Maximum hour totals – maximum period of activity, 300 operatives, single shift per day (one start time)
- Maximum hour totals – maximum period of activity, 300 operatives, two shifts per day
- AM peak hour – maximum period of activity, 300 operatives, single shift per day (one start time)
- AM peak hour – maximum period of activity, 300 operatives, two shifts per day
- IP average hour – maximum period of activity, 300 operatives, single shift per day (one start time)
- IP hour (average) – maximum period of activity, 300 operatives, two shifts per day
- IP hour (shift changeover) – maximum period of activity, 300 operatives, two shifts per day
- PM peak hour – maximum period of activity, 300 operatives, single shift per day (one start time)
- PM peak hour – maximum period of activity, 300 operatives, two shifts per day

## Daily totals – maximum period of activity, with 300 operatives

### DAILY TOTALS - maximum period of activity, with 300 operatives

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/CumbrInd Bsin	A369 near Long Ashton
<b>Materials: HGV movements to main compounds - MAXIMUM PERIOD</b>													
<b>Main compounds</b>		-	-	-	-	-	-	-	-	5	5	5	5
C-4	Clanage Road	-	-	3	-	-	3	-	3	-	-	-	-
C-9	Ham Green	-	3	4	-	-	4	4	-	-	-	-	-
C-11	Monmouth Road	-	4	25	-	25	-	-	-	-	-	-	-
C-13	Lodway Farm	-	25	24	24	-	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	24	-	-	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	5	5	5	-	-	-	-	-	-	-	-
<b>Materials HGV movements - ONE WAY</b>		-	61	61	29	25	7	4	3	5	5	5	5
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum)</b>													
<b>Main compounds</b>		-	-	-	-	-	-	-	-	27	27	27	27
C-4	Clanage Road	-	-	16	-	-	16	-	16	-	-	-	-
C-9	Ham Green Compound	3	13	19	-	-	19	19	-	-	-	-	-
C-11	Monmouth Road	4	15	84	-	84	-	-	-	-	-	-	-
C-13	Lodway Farm	17	67	84	84	-	-	-	-	-	-	-	-
C-14	Portbury Hundred	17	67	8	8	-	-	-	-	-	-	-	-
C-15	Sheepway	2	6	51	51	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	10	41	-	-	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>		-	-	-	-	-	2	-	-	-	-	-	2
C-4	Clanage Road micro-compound	-	-	2	-	-	2	-	-	-	-	-	2
C-5	Valley UB 122m 34ch	-	2	2	-	-	2	-	-	-	-	-	2
C-5A	Quarry UB2 122m 40ch	-	2	2	-	-	2	-	-	-	-	-	2
C-6	Quarry UB 4 123m 23ch	-	2	2	-	-	2	-	-	-	-	-	2
C-7	Miles Dock 124m 04ch	-	2	2	-	-	2	-	2	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	2	2	-	-	2	-	2	-	-	-	-
C-9A	Pill Viaduct	-	2	2	-	-	2	2	-	-	-	-	-
C-10	Pill Station Top	-	2	2	-	-	2	2	-	-	-	-	-
C-12	Avon Road	-	2	2	-	-	2	2	-	-	-	-	-
QUB6	Quarry underbridge	-	2	2	-	-	2	-	-	-	-	-	2
M5	M5 compound	-	2	2	-	2	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - ONE WAY</b>		53	229	282	143	86	55	25	20	27	27	27	37

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/CumbrInd Bsin	A369 near Long Ashton
<b>Materials: HGV movements to/from main compounds - MAXIMUM PERIOD</b>													
<b>Main compounds</b>		-	-	-	-	-	-	-	-	10	10	10	10
C-4	Clanage Road	-	-	6	-	-	6	-	6	-	-	-	-
C-9	Ham Green	-	6	8	-	-	8	8	-	-	-	-	-
C-11	Monmouth Road	-	8	50	-	50	-	-	-	-	-	-	-
C-13	Lodway Farm	-	50	48	48	-	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	48	-	-	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	10	10	10	-	-	-	-	-	-	-	-
<b>Materials HGV movements - TWO WAY</b>		-	122	122	58	50	14	8	6	10	10	10	10
<b>Personnel: cars/light vans to/from compounds - 300 operatives (maximum)</b>													
<b>Main compounds</b>		-	-	-	-	-	-	-	-	54	54	54	54
C-4	Clanage Road	-	-	32	-	-	32	-	32	-	-	-	-
C-9	Ham Green Compound	6	26	38	-	-	38	38	-	-	-	-	-
C-11	Monmouth Road	8	30	168	-	168	-	-	-	-	-	-	-
C-13	Lodway Farm	34	134	168	168	-	-	-	-	-	-	-	-
C-14	Portbury Hundred	34	134	16	16	-	-	-	-	-	-	-	-
C-15	Sheepway	4	12	102	102	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	20	82	-	-	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>		-	-	-	-	-	4	-	-	-	-	-	4
C-4	Clanage Road micro-compound	-	-	4	-	-	4	-	-	-	-	-	4
C-5	Valley UB 122m 34ch	-	4	4	-	-	4	-	-	-	-	-	4
C-5A	Quarry UB2 122m 40ch	-	4	4	-	-	4	-	-	-	-	-	4
C-6	Quarry UB 4 123m 23ch	-	4	4	-	-	4	-	-	-	-	-	4
C-7	Miles Dock 124m 04ch	-	4	4	-	-	4	-	4	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	4	4	-	-	4	-	4	-	-	-	-
C-9A	Pill Viaduct	-	4	4	-	-	4	-	-	-	-	-	-
C-10	Pill Station Top	-	4	4	-	-	4	4	-	-	-	-	-
C-12	Avon Road	-	4	4	-	-	4	4	-	-	-	-	-
QUB6	Quarry underbridge	-	4	4	-	-	4	-	-	-	-	-	4
M5	M5 compound	-	4	4	-	4	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - TWO WAY</b>		106	458	564	286	172	110	50	40	54	54	54	74



## Maximum hour totals – maximum period of activity, with 300 operatives, with a single shift per day (one start time)

### MAXIMUM HOUR TOTALS - maximum period of activity, with 300 operatives - SINGLE SHIFT (single start time)

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrind Bsn	A369 near Long Ashton
<b>Materials: HGV movements to main compounds - MAXIMUM PERIOD</b>													
<b>ONE WAY - OPERATING HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	1	1	1	1
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	4	4	-	4	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	4	4	4	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	1	1	1	-	-	-	-	-	-	-	-
<b>Materials HGV movements - ONE WAY</b>		-	9	9	5	4	-	-	-	1	1	1	1
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - single shift, same start time</b>													
<b>ONE WAY - MAXIMUM ARRIVAL HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	26	26	26	26
C-9	Ham Green Compound	3	13	16	-	-	16	-	16	-	-	-	-
C-11	Monmouth Road	4	15	19	-	-	19	19	-	-	-	-	-
C-13	Lodway Farm	16	64	80	-	80	-	-	-	-	-	-	-
C-14	Portbury Hundred	16	64	80	80	-	-	-	-	-	-	-	-
C-15	Sheepway	2	6	8	8	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	10	39	49	49	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>													
C-4	Clanage Road micro-compound	-	-	-	-	-	2	-	-	-	-	-	2
C-5	Valley UB 122m 34ch	-	2	2	-	-	2	-	-	-	-	-	2
C-5A	Quarry UB2 122m 40ch	-	2	2	-	-	2	-	-	-	-	-	2
C-6	Quarry UB 4 123m 23ch	-	2	2	-	-	2	-	-	-	-	-	2
C-7	Miles Dock 124m 04ch	-	2	2	-	-	2	-	2	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	2	2	-	-	2	-	2	-	-	-	-
C-9A	Pill Viaduct	-	2	2	-	-	2	2	-	-	-	-	-
C-10	Pill Station Top	-	2	2	-	-	2	2	-	-	-	-	-
C-12	Avon Road	-	2	2	-	-	2	2	-	-	-	-	-
QUB6	Quarry underbridge	-	2	2	-	-	2	-	-	-	-	-	2
M5	M5 compound	-	2	2	-	2	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - ONE WAY</b>		51	221	272	137	82	55	25	20	26	26	26	36

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrind Bsn	A369 near Long Ashton
<b>Materials: HGV movements to/from main compounds - MAXIMUM PERIOD</b>													
<b>TWO WAY - OPERATING HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	8	8	-	8	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	8	8	8	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	2	2	2	-	-	-	-	-	-	-	-
<b>Materials HGV movements - TWO WAY</b>		-	18	18	10	8	-	-	-	2	2	2	2
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - single shift, same start time</b>													
<b>TWO WAY - MAXIMUM ARRIVAL HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	26	26	26	26
C-9	Ham Green Compound	3	13	16	-	-	16	-	16	-	-	-	-
C-11	Monmouth Road	4	15	19	-	-	19	19	-	-	-	-	-
C-13	Lodway Farm	16	64	80	-	80	-	-	-	-	-	-	-
C-14	Portbury Hundred	16	64	80	80	-	-	-	-	-	-	-	-
C-15	Sheepway	2	6	8	8	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	10	39	49	49	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>													
C-4	Clanage Road micro-compound	-	-	-	-	-	2	-	-	-	-	-	2
C-5	Valley UB 122m 34ch	-	2	2	-	-	2	-	-	-	-	-	2
C-5A	Quarry UB2 122m 40ch	-	2	2	-	-	2	-	-	-	-	-	2
C-6	Quarry UB 4 123m 23ch	-	2	2	-	-	2	-	-	-	-	-	2
C-7	Miles Dock 124m 04ch	-	2	2	-	-	2	-	2	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	2	2	-	-	2	-	2	-	-	-	-
C-9A	Pill Viaduct	-	2	2	-	-	2	2	-	-	-	-	-
C-10	Pill Station Top	-	2	2	-	-	2	2	-	-	-	-	-
C-12	Avon Road	-	2	2	-	-	2	2	-	-	-	-	-
QUB6	Quarry underbridge	-	2	2	-	-	2	-	-	-	-	-	2
M5	M5 compound	-	2	2	-	2	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - TWO WAY</b>		51	221	272	137	82	55	25	20	26	26	26	36

## Maximum hour totals – maximum period of activity, with 300 operatives, with two shifts per day

### MAXIMUM HOUR TOTALS - maximum period of activity, with 300 operatives - TWO SHIFTS

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/CumbrInd Bsn	A369 near Long Ashton
<b>Materials: HGV movements to main compounds - MAXIMUM PERIOD</b>													
<b>ONE WAY - OPERATING HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	1	1	1	1
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	3	3	-	3	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	3	3	3	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	1	1	1	-	-	-	-	-	-	-	-
<b>Materials HGV movements - ONE WAY</b>		-	7	7	4	3	-	-	-	1	1	1	1
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - two shifts</b>													
<b>ONE WAY - MAXIMUM ARRIVAL HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	18	18	18	18
C-9	Ham Green Compound	2	9	11	-	-	11	-	11	-	-	-	-
C-11	Monmouth Road	3	10	13	-	-	13	13	-	-	-	-	-
C-13	Lodway Farm	11	44	55	-	55	-	-	-	-	-	-	-
C-14	Portbury Hundred	11	44	55	55	-	-	-	-	-	-	-	-
C-15	Sheepway	1	5	6	6	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	7	27	34	34	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>													
C-4	Clanage Road micro-compound	-	-	-	-	-	2	-	-	-	-	-	2
C-5	Valley UB 122m 34ch	-	2	2	-	-	2	-	-	-	-	-	2
C-5A	Quarry UB2 122m 40ch	-	2	2	-	-	2	-	-	-	-	-	2
C-6	Quarry UB 4 123m 23ch	-	2	2	-	-	2	-	-	-	-	-	2
C-7	Miles Dock 124m 04ch	-	2	2	-	-	2	-	2	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	2	2	-	-	2	-	2	-	-	-	-
C-9A	Pill Viaduct	-	2	2	-	-	2	2	-	-	-	-	-
C-10	Pill Station Top	-	2	2	-	-	2	2	-	-	-	-	-
C-12	Avon Road	-	2	2	-	-	2	2	-	-	-	-	-
QUB6	Quarry underbridge	-	2	2	-	-	2	-	-	-	-	-	2
M5	M5 compound	-	2	2	-	2	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - ONE WAY</b>		35	159	194	95	57	44	19	15	18	18	18	28

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/CumbrInd Bsn	A369 near Long Ashton
<b>Materials: HGV movements to/from main compounds - MAXIMUM PERIOD</b>													
<b>TWO WAY - OPERATING HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	6	6	-	6	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	6	6	6	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	2	2	2	-	-	-	-	-	-	-	-
<b>Materials HGV movements - TWO WAY</b>		-	14	14	8	6	-	-	-	2	2	2	2
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - two shifts</b>													
<b>TWO WAY - MAXIMUM ARRIVAL HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	18	18	18	18
C-9	Ham Green Compound	2	9	11	-	-	11	-	11	-	-	-	-
C-11	Monmouth Road	3	10	13	-	-	13	13	-	-	-	-	-
C-13	Lodway Farm	11	44	55	-	55	-	-	-	-	-	-	-
C-14	Portbury Hundred	11	44	55	55	-	-	-	-	-	-	-	-
C-15	Sheepway	1	5	6	6	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	7	27	34	34	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>													
C-4	Clanage Road micro-compound	-	-	-	-	-	2	-	-	-	-	-	2
C-5	Valley UB 122m 34ch	-	2	2	-	-	2	-	-	-	-	-	2
C-5A	Quarry UB2 122m 40ch	-	2	2	-	-	2	-	-	-	-	-	2
C-6	Quarry UB 4 123m 23ch	-	2	2	-	-	2	-	-	-	-	-	2
C-7	Miles Dock 124m 04ch	-	2	2	-	-	2	-	2	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	2	2	-	-	2	-	2	-	-	-	-
C-9A	Pill Viaduct	-	2	2	-	-	2	2	-	-	-	-	-
C-10	Pill Station Top	-	2	2	-	-	2	2	-	-	-	-	-
C-12	Avon Road	-	2	2	-	-	2	2	-	-	-	-	-
QUB6	Quarry underbridge	-	2	2	-	-	2	-	-	-	-	-	2
M5	M5 compound	-	2	2	-	2	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - TWO WAY</b>		35	159	194	95	57	44	19	15	18	18	18	28

**AM peak hour – maximum period of activity, with 300 operatives, with a single shift per day (one start time)****AM PEAK HOUR - maximum period of activity, with 300 operatives - SINGLE SHIFT (single start time)**

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrind Bsn	A369 near Long Ashton
<b>Materials: HGV movements to main compounds - MAXIMUM PERIOD</b>													
<b>ONE WAY - AM peak HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	1	1	1	1
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	3	3	-	3	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	3	3	3	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	1	1	1	-	-	-	-	-	-	-	-
<b>Materials HGV movements - ONE WAY</b>		-	7	7	4	3	-	-	-	1	1	1	1
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - single shift, same start time</b>													
<b>ONE WAY - AM peak HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	7	7	7	7
C-9	Ham Green Compound	1	3	4	-	-	4	-	4	-	-	-	-
C-11	Monmouth Road	1	4	5	-	-	5	5	-	-	-	-	-
C-13	Lodway Farm	4	17	21	-	21	-	-	-	-	-	-	-
C-14	Portbury Hundred	4	17	21	21	-	-	-	-	-	-	-	-
C-15	Sheepway	-	2	2	2	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	3	10	13	13	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>													
C-4	Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5	Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A	Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6	Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7	Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A	Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10	Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12	Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6	Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5	M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - ONE WAY</b>		13	63	76	36	22	19	8	6	7	7	7	12

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrind Bsn	A369 near Long Ashton
<b>Materials: HGV movements to/from main compounds - MAXIMUM PERIOD</b>													
<b>TWO WAY - AM peak HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	6	6	-	6	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	6	6	6	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	2	2	2	-	-	-	-	-	-	-	-
<b>Materials HGV movements - TWO WAY</b>		-	14	14	8	6	-	-	-	2	2	2	2
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - single shift, same start time</b>													
<b>TWO WAY - AM peak HOUR</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	7	7	7	7
C-9	Ham Green Compound	1	3	4	-	-	4	-	4	-	-	-	-
C-11	Monmouth Road	1	4	5	-	-	5	5	-	-	-	-	-
C-13	Lodway Farm	4	17	21	-	21	-	-	-	-	-	-	-
C-14	Portbury Hundred	4	17	21	21	-	-	-	-	-	-	-	-
C-15	Sheepway	-	2	2	2	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	3	10	13	13	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>													
C-4	Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5	Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A	Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6	Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7	Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A	Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10	Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12	Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6	Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5	M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - TWO WAY</b>		13	63	76	36	22	19	8	6	7	7	7	12

**AM peak hour – maximum period of activity, with 300 operatives, with two shifts per day****AM PEAK HOUR - maximum period of activity, with 300 operatives - TWO SHIFTS**

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/CumbrInd Bsn	A369 near Long Ashton
<b>Materials: HGV movements to main compounds - MAXIMUM PERIOD</b>		<b>ONE WAY - AM peak HOUR</b>											
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	1	1	1	1
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	3	3	-	3	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	3	3	3	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	1	1	1	-	-	-	-	-	-	-	-
<b>Materials HGV movements - ONE WAY</b>		-	7	7	4	3	-	-	-	1	1	1	1

**Personnel: cars/light vans to compounds - 300 operatives (maximum) - two shifts**

<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	2	2	2	2	2
C-9	Ham Green Compound	-	1	1	-	-	1	-	1	-	-	-	-
C-11	Monmouth Road	-	1	1	-	-	1	1	-	-	-	-	-
C-13	Lodway Farm	1	4	5	-	5	-	-	-	-	-	-	-
C-14	Portbury Hundred	1	4	5	5	-	-	-	-	-	-	-	-
C-15	Sheepway	-	1	1	1	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	1	2	3	3	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>													
C-4	Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5	Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A	Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6	Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7	Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A	Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10	Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12	Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6	Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5	M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - ONE WAY</b>		3	23	26	9	6	12	4	3	2	2	2	7

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/CumbrInd Bsn	A369 near Long Ashton
<b>Materials: HGV movements to/from main compounds - MAXIMUM PERIOD</b>		<b>TWO WAY - AM peak HOUR</b>											
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	6	6	-	6	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	6	6	6	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	2	2	2	-	-	-	-	-	-	-	-
<b>Materials HGV movements - TWO WAY</b>		-	14	14	8	6	-	-	-	2	2	2	2

**Personnel: cars/light vans to compounds - 300 operatives (maximum) - two shifts**

<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9	Ham Green Compound	-	1	1	-	-	1	-	1	-	-	-	-
C-11	Monmouth Road	-	1	1	-	-	1	1	-	-	-	-	-
C-13	Lodway Farm	1	4	5	-	5	-	-	-	-	-	-	-
C-14	Portbury Hundred	1	4	5	5	-	-	-	-	-	-	-	-
C-15	Sheepway	-	1	1	1	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	1	2	3	3	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>													
C-4	Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5	Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A	Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6	Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7	Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A	Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10	Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12	Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6	Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5	M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - TWO WAY</b>		3	23	26	9	6	12	4	3	2	2	2	7

## IP average hour – maximum period of activity, with 300 operatives, with a single shift per day (one start time)

IP AVERAGE HOUR - maximum period of activity, with 300 operatives - SINGLE SHIFT (single start time)

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Protbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrind Bsin	A369 near Long Ashton
Materials: HGV movements to main compounds - MAXIMUM PERIOD													ONE WAY - IP aver HOUR
Main compounds													
C-4	Clanage Road	-	-	-	-	-	-	-	-	1	1	1	1
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	3	3	-	3	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	3	3	3	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	1	1	1	-	-	-	-	-	-	-	-
Materials HGV movements - ONE WAY		-	7	7	4	3	-	-	-	1	1	1	1
Personnel: cars/light vans to compounds - 300 operatives (maximum) - single shift, same start time													ONE WAY - IP aver HOUR
Main compounds													
C-4	Clanage Road	-	-	-	-	-	-	-	-	-	-	-	-
C-9	Ham Green Compound	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	-	-	-	-	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	-	-	-	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	-	-	-	-	-	-	-	-	-	-	-
Satellite and other compounds													
C-4	Clanage Road micro-compound	-	-	-	-	-	-	-	-	-	-	-	-
C-5	Valley UB 122m 34ch	-	-	-	-	-	-	-	-	-	-	-	-
C-5A	Quarry UB2 122m 40ch	-	-	-	-	-	-	-	-	-	-	-	-
C-6	Quarry UB 4 123m 23ch	-	-	-	-	-	-	-	-	-	-	-	-
C-7	Miles Dock 124m 04ch	-	-	-	-	-	-	-	-	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	-	-	-	-	-	-	-	-	-	-	-
C-9A	Pill Viaduct	-	-	-	-	-	-	-	-	-	-	-	-
C-10	Pill Station Top	-	-	-	-	-	-	-	-	-	-	-	-
C-12	Avon Road	-	-	-	-	-	-	-	-	-	-	-	-
QUB6	Quarry underbridge	-	-	-	-	-	-	-	-	-	-	-	-
M5	M5 compound	-	-	-	-	-	-	-	-	-	-	-	-
Personnel: cars/light vans - ONE WAY		-	-	-	-	-	-	-	-	-	-	-	-

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Protrbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrlnd Bsin	A369 near Long Ashton		
Materials: HGV movements to/from main compounds - MAXIMUM PERIOD														TWO WAY - IP aver HOUR	
Main compounds															
C-4	Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2		
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-		
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-		
C-13	Lodway Farm	-	6	6	-	6	-	-	-	-	-	-	-		
C-14	Portbury Hundred	-	6	6	6	-	-	-	-	-	-	-	-		
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-		
C-16	Portishead Station Site	-	2	2	2	-	-	-	-	-	-	-	-		
Materials HGV movements - TWO WAY		-	14	14	8	6	-	-	-	2	2	2	2		
Personnel: cars/light vans to compounds - 300 operatives (maximum) - single shift, same start time														TWO WAY - IP aver HOUR	
Main compounds															
C-4	Clanage Road	-	-	-	-	-	-	-	-	-	-	-	-		
C-9	Ham Green Compound	-	-	-	-	-	-	-	-	-	-	-	-		
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-		
C-13	Lodway Farm	-	-	-	-	-	-	-	-	-	-	-	-		
C-14	Portbury Hundred	-	-	-	-	-	-	-	-	-	-	-	-		
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-		
C-16	Portishead Station Site	-	-	-	-	-	-	-	-	-	-	-	-		
Satellite and other compounds															
C-4	Clanage Road micro-compound	-	-	-	-	-	-	-	-	-	-	-	-		
C-5	Valley UB 122m 34ch	-	-	-	-	-	-	-	-	-	-	-	-		
C-5A	Quarry UB2 122m 40ch	-	-	-	-	-	-	-	-	-	-	-	-		
C-6	Quarry UB 4 123m 23ch	-	-	-	-	-	-	-	-	-	-	-	-		
C-7	Miles Dock 124m 04ch	-	-	-	-	-	-	-	-	-	-	-	-		
C-8	Chapel Pill Farm 124m 44ch	-	-	-	-	-	-	-	-	-	-	-	-		
C-9A	Pill Viaduct	-	-	-	-	-	-	-	-	-	-	-	-		
C-10	Pill Station Top	-	-	-	-	-	-	-	-	-	-	-	-		
C-12	Avon Road	-	-	-	-	-	-	-	-	-	-	-	-		
QUB6	Quarry underbridge	-	-	-	-	-	-	-	-	-	-	-	-		
M5	M5 compound	-	-	-	-	-	-	-	-	-	-	-	-		
Personnel: cars/light vans - TWO WAY		-	-	-	-	-	-	-	-	-	-	-	-		

**IP hour (average) – maximum period of activity, with 300 operatives, with two shifts per day****IP HOUR (average) - maximum period of activity, with 300 operatives - TWO SHIFTS**

compounds & routes	M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/CumbrInd Bsn	A369 near Long Ashton
<b>Materials: HGV movements to main compounds - MAXIMUM PERIOD</b>												
<b>ONE WAY - IP aver HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	-	1	1	1	1
C-9 Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11 Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13 Lodway Farm	-	3	3	-	3	-	-	-	-	-	-	-
C-14 Portbury Hundred	-	3	3	3	-	-	-	-	-	-	-	-
C-15 Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	-	1	1	1	-	-	-	-	-	-	-	-
<b>Materials HGV movements - ONE WAY</b>	-	7	7	4	3	-	-	-	1	1	1	1

**Personnel: cars/light vans to compounds - 300 operatives (maximum) - two shifts**

<b>ONE WAY - IP aver HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	2	2	2	2	2
C-9 Ham Green Compound	-	1	1	-	-	1	-	1	-	-	-	-
C-11 Monmouth Road	-	1	1	-	-	1	1	-	-	-	-	-
C-13 Lodway Farm	1	4	5	-	5	-	-	-	-	-	-	-
C-14 Portbury Hundred	1	4	5	5	-	-	-	-	-	-	-	-
C-15 Sheepway	-	1	1	1	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	1	2	3	3	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>												
C-4 Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5 Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6 Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7 Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8 Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10 Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12 Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6 Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5 M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - ONE WAY</b>	3	23	26	9	6	12	4	3	2	2	2	7

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

compounds & routes	M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/CumbrInd Bsn	A369 near Long Ashton
<b>Materials: HGV movements to/from main compounds - MAXIMUM PERIOD</b>												
<b>TWO WAY - IP aver HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9 Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11 Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13 Lodway Farm	-	6	6	-	6	-	-	-	-	-	-	-
C-14 Portbury Hundred	-	6	6	6	-	-	-	-	-	-	-	-
C-15 Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	-	2	2	2	-	-	-	-	-	-	-	-
<b>Materials HGV movements - TWO WAY</b>	-	14	14	8	6	-	-	-	2	2	2	2

**Personnel: cars/light vans to compounds - 300 operatives (maximum) - two shifts**

<b>TWO WAY - IP aver HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9 Ham Green Compound	-	1	1	-	-	1	-	1	-	-	-	-
C-11 Monmouth Road	-	1	1	-	-	1	1	-	-	-	-	-
C-13 Lodway Farm	1	4	5	-	5	-	-	-	-	-	-	-
C-14 Portbury Hundred	1	4	5	5	-	-	-	-	-	-	-	-
C-15 Sheepway	-	1	1	1	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	1	2	3	3	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>												
C-4 Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5 Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6 Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7 Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8 Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10 Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12 Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6 Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5 M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - TWO WAY</b>	3	23	26	9	6	12	4	3	2	2	2	7

## IP hour (shift changeover) – maximum period of activity, with 300 operatives, with two shifts per day

### IP HOUR (shift changeover) - maximum period of activity, with 300 operatives - TWO SHIFTS

compounds & routes	M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrind Bsn	A369 near Long Ashton
<b>Materials: HGV movements to main compounds - MAXIMUM PERIOD</b>												
<b>ONE WAY - IP aver HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	-	1	1	1	1
C-9 Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11 Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13 Lodway Farm	-	3	3	-	3	-	-	-	-	-	-	-
C-14 Portbury Hundred	-	3	3	3	-	-	-	-	-	-	-	-
C-15 Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	-	1	1	1	-	-	-	-	-	-	-	-
<b>Materials HGV movements - ONE WAY</b>	-	7	7	4	3	-	-	-	1	1	1	1
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - two shifts</b>												
<b>ONE WAY - IP changeover HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	-	14	14	14	14
C-9 Ham Green Compound	2	6	8	-	-	8	-	8	-	-	-	-
C-11 Monmouth Road	2	8	10	-	-	10	10	-	-	-	-	-
C-13 Lodway Farm	8	34	42	-	42	-	-	-	-	-	-	-
C-14 Portbury Hundred	8	34	42	42	-	-	-	-	-	-	-	-
C-15 Sheepway	1	3	4	4	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	5	21	26	26	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>												
C-4 Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5 Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6 Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7 Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8 Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10 Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12 Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6 Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5 M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - ONE WAY</b>	26	116	142	72	43	28	13	10	14	14	14	19

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

compounds & routes	M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrind Bsn	A369 near Long Ashton
<b>Materials: HGV movements to/from main compounds - MAXIMUM PERIOD</b>												
<b>TWO WAY - IP aver HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9 Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11 Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13 Lodway Farm	-	6	6	-	6	-	-	-	-	-	-	-
C-14 Portbury Hundred	-	6	6	6	-	-	-	-	-	-	-	-
C-15 Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	-	2	2	2	-	-	-	-	-	-	-	-
<b>Materials HGV movements - TWO WAY</b>	-	14	14	8	6	-	-	-	2	2	2	2
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - two shifts</b>												
<b>TWO WAY - IP changeover HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	-	28	28	28	28
C-9 Ham Green Compound	4	12	16	-	-	16	-	16	-	-	-	-
C-11 Monmouth Road	4	16	20	-	-	20	20	-	-	-	-	-
C-13 Lodway Farm	16	68	84	-	84	-	-	-	-	-	-	-
C-14 Portbury Hundred	16	68	84	84	-	-	-	-	-	-	-	-
C-15 Sheepway	2	6	8	8	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	10	42	52	52	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>												
C-4 Clanage Road micro-compound	-	-	-	-	-	2	-	-	-	-	-	2
C-5 Valley UB 122m 34ch	-	2	2	-	-	2	-	-	-	-	-	2
C-5A Quarry UB2 122m 40ch	-	2	2	-	-	2	-	-	-	-	-	2
C-6 Quarry UB 4 123m 23ch	-	2	2	-	-	2	-	-	-	-	-	2
C-7 Miles Dock 124m 04ch	-	2	2	-	-	2	-	2	-	-	-	-
C-8 Chapel Pill Farm 124m 44ch	-	2	2	-	-	2	-	2	-	-	-	-
C-9A Pill Viaduct	-	2	2	-	-	2	2	-	-	-	-	-
C-10 Pill Station Top	-	2	2	-	-	2	2	-	-	-	-	-
C-12 Avon Road	-	2	2	-	-	2	2	-	-	-	-	-
QUB6 Quarry underbridge	-	2	2	-	-	2	-	-	-	-	-	2
M5 M5 compound	-	2	2	-	2	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - TWO WAY</b>	52	232	284	144	86	56	26	20	28	28	28	38

**PM peak hour – maximum period of activity, with 300 operatives, with a single shift per day (one start time)****PM PEAK HOUR - maximum period of activity, with 300 operatives - SINGLE SHIFT (single start time)**

compounds & routes	M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/CumbrInd Bsin	A369 near Long Ashton
<b>Materials: HGV movements to main compounds - MAXIMUM PERIOD</b>												
<b>ONE WAY - PM peak HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	-	-	-	-	-
C-9 Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11 Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13 Lodway Farm	-	-	-	-	-	-	-	-	-	-	-	-
C-14 Portbury Hundred	-	-	-	-	-	-	-	-	-	-	-	-
C-15 Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	-	-	-	-	-	-	-	-	-	-	-	-
<b>Materials HGV movements - ONE WAY</b>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - single shift, same start time</b>												
<b>ONE WAY - PM peak HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	2	2	2	2	2
C-9 Ham Green Compound	-	1	1	-	-	1	-	1	-	-	-	-
C-11 Monmouth Road	-	1	1	-	-	1	1	-	-	-	-	-
C-13 Lodway Farm	1	4	5	-	5	-	-	-	-	-	-	-
C-14 Portbury Hundred	1	4	5	5	-	-	-	-	-	-	-	-
C-15 Sheepway	-	1	1	1	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	1	2	3	3	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>												
C-4 Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5 Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6 Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7 Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8 Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10 Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12 Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6 Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5 M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - ONE WAY</b>	3	23	26	9	6	12	4	3	2	2	2	7

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

compounds & routes	M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/CumbrInd Bsin	A369 near Long Ashton
<b>Materials: HGV movements to/from main compounds - MAXIMUM PERIOD</b>												
<b>TWO WAY - PM peak HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	-	-	-	-	-
C-9 Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11 Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13 Lodway Farm	-	-	-	-	-	-	-	-	-	-	-	-
C-14 Portbury Hundred	-	-	-	-	-	-	-	-	-	-	-	-
C-15 Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	-	-	-	-	-	-	-	-	-	-	-	-
<b>Materials HGV movements - TWO WAY</b>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - single shift, same start time</b>												
<b>TWO WAY - PM peak HOUR</b>												
<b>Main compounds</b>												
C-4 Clanage Road	-	-	-	-	-	-	-	2	2	2	2	2
C-9 Ham Green Compound	-	1	1	-	-	1	-	1	-	-	-	-
C-11 Monmouth Road	-	1	1	-	-	1	1	-	-	-	-	-
C-13 Lodway Farm	1	4	5	-	5	-	-	-	-	-	-	-
C-14 Portbury Hundred	1	4	5	5	-	-	-	-	-	-	-	-
C-15 Sheepway	-	1	1	1	-	-	-	-	-	-	-	-
C-16 Portishead Station Site	1	2	3	3	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>												
C-4 Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5 Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6 Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7 Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8 Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10 Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12 Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6 Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5 M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - TWO WAY</b>	3	23	26	9	6	12	4	3	2	2	2	7



**PM peak hour – maximum period of activity, with 300 operatives, with two shifts per day****PM PEAK HOUR - maximum period of activity, with 300 operatives - TWO SHIFTS**

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrind Bsn	A369 near Long Ashton
<b>Materials: HGV movements to main compounds - MAXIMUM PERIOD</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	1	1	1	1
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	3	3	-	3	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	3	3	3	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	1	1	1	-	-	-	-	-	-	-	-
<b>Materials HGV movements - ONE WAY</b>		-	7	7	4	3	-	-	-	1	1	1	1
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - two shifts</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9	Ham Green Compound	-	1	1	-	-	1	-	1	-	-	-	-
C-11	Monmouth Road	-	1	1	-	-	1	1	-	-	-	-	-
C-13	Lodway Farm	1	4	5	-	5	-	-	-	-	-	-	-
C-14	Portbury Hundred	1	4	5	5	-	-	-	-	-	-	-	-
C-15	Sheepway	-	1	1	1	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	1	2	3	3	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>													
C-4	Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5	Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A	Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6	Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7	Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A	Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10	Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12	Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6	Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5	M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - ONE WAY</b>		3	23	26	9	6	12	4	3	2	2	2	7

\* M5 South (20% personnel, 0% material) : \*\* M5 North (80% personnel, 100% material)

compounds & routes		M5 South *	M5 North **	M5 Junction 19	A369 Portbury Hundred	Royal Portbury Dock Rd	A369 Martcombe Rd	Priory Rd (Pill)	Pill Rd	M5 Junction 18	A4 Portway	A370/Brunel Wy/Cumbrind Bsn	A369 near Long Ashton
<b>Materials: HGV movements to/from main compounds - MAXIMUM PERIOD</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9	Ham Green	-	-	-	-	-	-	-	-	-	-	-	-
C-11	Monmouth Road	-	-	-	-	-	-	-	-	-	-	-	-
C-13	Lodway Farm	-	6	6	-	6	-	-	-	-	-	-	-
C-14	Portbury Hundred	-	6	6	6	-	-	-	-	-	-	-	-
C-15	Sheepway	-	-	-	-	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	-	2	2	2	-	-	-	-	-	-	-	-
<b>Materials HGV movements - TWO WAY</b>		-	14	14	8	6	-	-	-	2	2	2	2
<b>Personnel: cars/light vans to compounds - 300 operatives (maximum) - two shifts</b>													
<b>Main compounds</b>													
C-4	Clanage Road	-	-	-	-	-	-	-	-	2	2	2	2
C-9	Ham Green Compound	-	1	1	-	-	1	-	1	-	-	-	-
C-11	Monmouth Road	-	1	1	-	-	1	1	-	-	-	-	-
C-13	Lodway Farm	1	4	5	-	5	-	-	-	-	-	-	-
C-14	Portbury Hundred	1	4	5	5	-	-	-	-	-	-	-	-
C-15	Sheepway	-	1	1	1	-	-	-	-	-	-	-	-
C-16	Portishead Station Site	1	2	3	3	-	-	-	-	-	-	-	-
<b>Satellite and other compounds</b>													
C-4	Clanage Road micro-compound	-	-	-	-	-	1	-	-	-	-	-	1
C-5	Valley UB 122m 34ch	-	1	1	-	-	1	-	-	-	-	-	1
C-5A	Quarry UB2 122m 40ch	-	1	1	-	-	1	-	-	-	-	-	1
C-6	Quarry UB 4 123m 23ch	-	1	1	-	-	1	-	-	-	-	-	1
C-7	Miles Dock 124m 04ch	-	1	1	-	-	1	-	1	-	-	-	-
C-8	Chapel Pill Farm 124m 44ch	-	1	1	-	-	1	-	1	-	-	-	-
C-9A	Pill Viaduct	-	1	1	-	-	1	1	-	-	-	-	-
C-10	Pill Station Top	-	1	1	-	-	1	1	-	-	-	-	-
C-12	Avon Road	-	1	1	-	-	1	1	-	-	-	-	-
QUB6	Quarry underbridge	-	1	1	-	-	1	-	-	-	-	-	1
M5	M5 compound	-	1	1	-	1	-	-	-	-	-	-	-
<b>Personnel: cars/light vans - TWO WAY</b>		3	23	26	9	6	12	4	3	2	2	2	7



# Appendix B

## M5 junction 19 traffic movements – plots

List of operating scenarios showing construction traffic and counts at the junction:

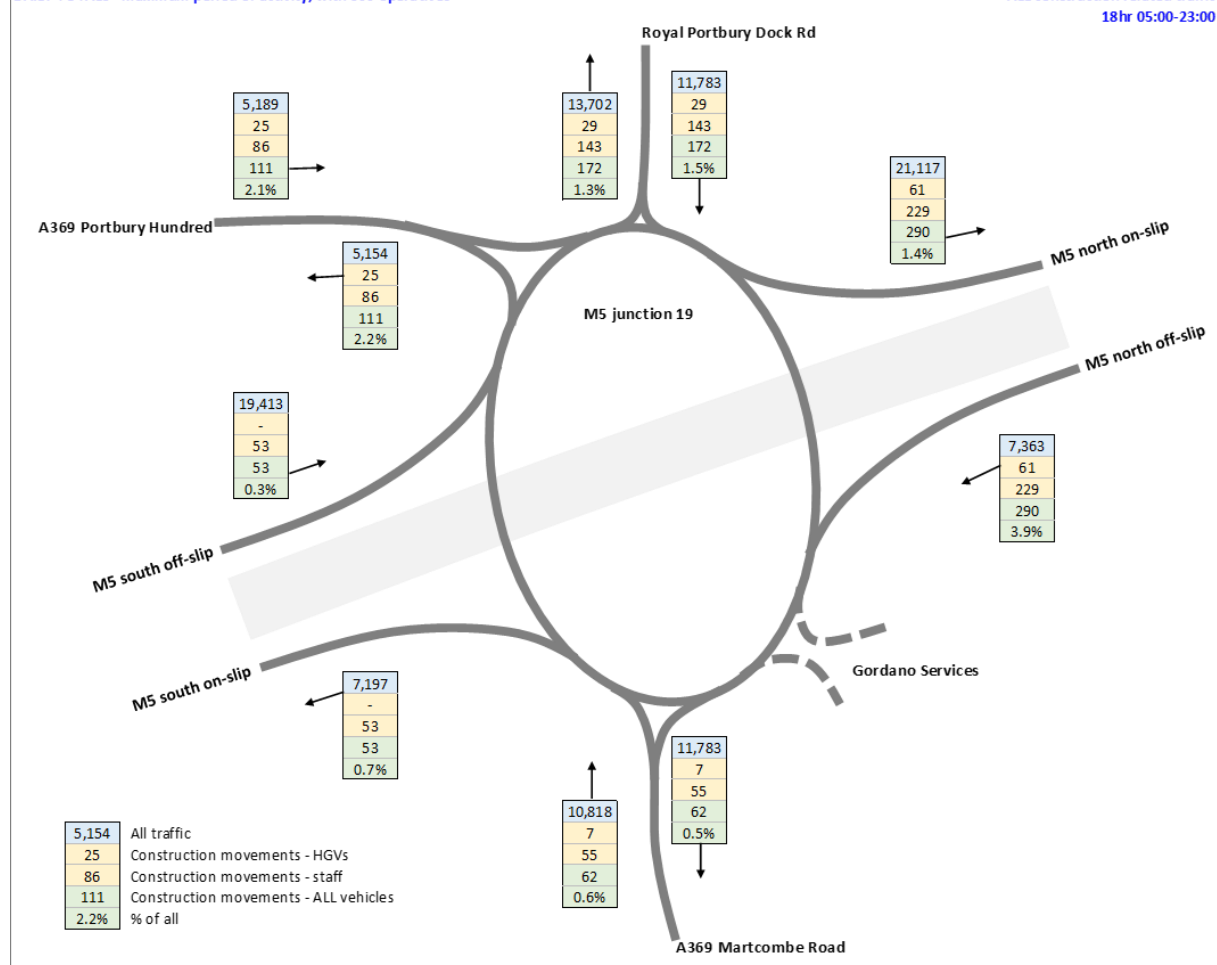
- Daily totals, 18hr 05:00-23:00 – maximum period of activity, with 300 operatives
- Maximum hour totals, 07:00-08:00 – maximum period of activity, 300 operatives, single shift per day (one start time)
- Maximum hour totals, 05:00-06:00 – maximum period of activity, 300 operatives, two shifts per day
- AM peak hour, 08:00-09:00 – maximum period of activity, 300 operatives, single shift per day (one start time)
- AM peak hour, 08:00-09:00 – maximum period of activity, 300 operatives, two shifts per day
- IP hour (average), 11:00-15:00 – maximum period of activity, 300 operatives, single shift per day (one start time)
- IP hour (average), 11:00-15:00 – maximum period of activity, 300 operatives, two shifts per day
- IP hour (shift changeover), 13:00-14:00 – maximum period of activity, 300 operatives, two shifts per day
- PM peak hour, 17:00-18:00 – maximum period of activity, 300 operatives, single shift per day (one start time)
- PM peak hour, 17:00-18:00 – maximum period of activity, 300 operatives, two shifts per day

**Daily totals, 18hr 05:00-23:00 – maximum period of activity, with 300 operatives**

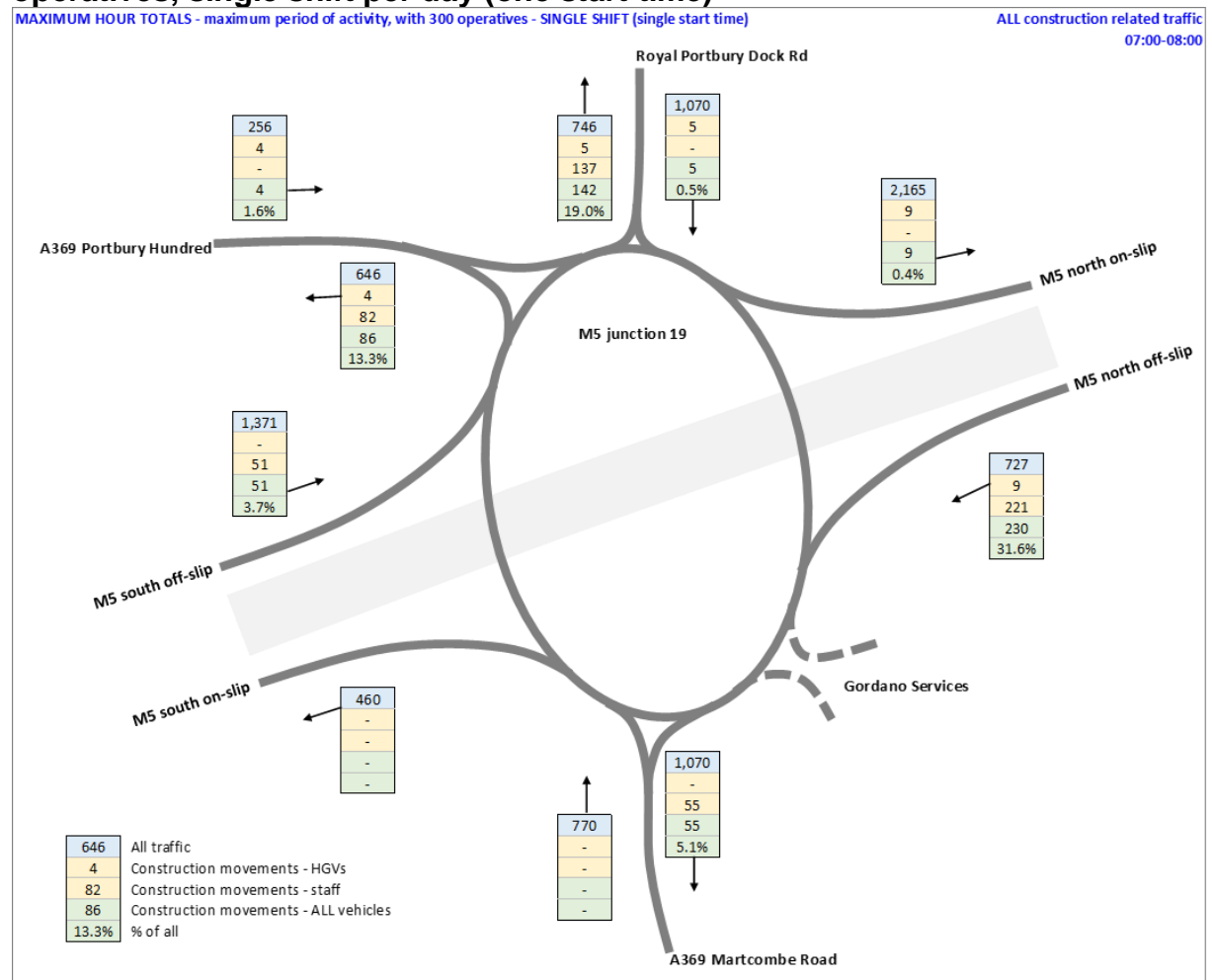
DAILY TOTALS - maximum period of activity, with 300 operatives

ALL construction related traffic

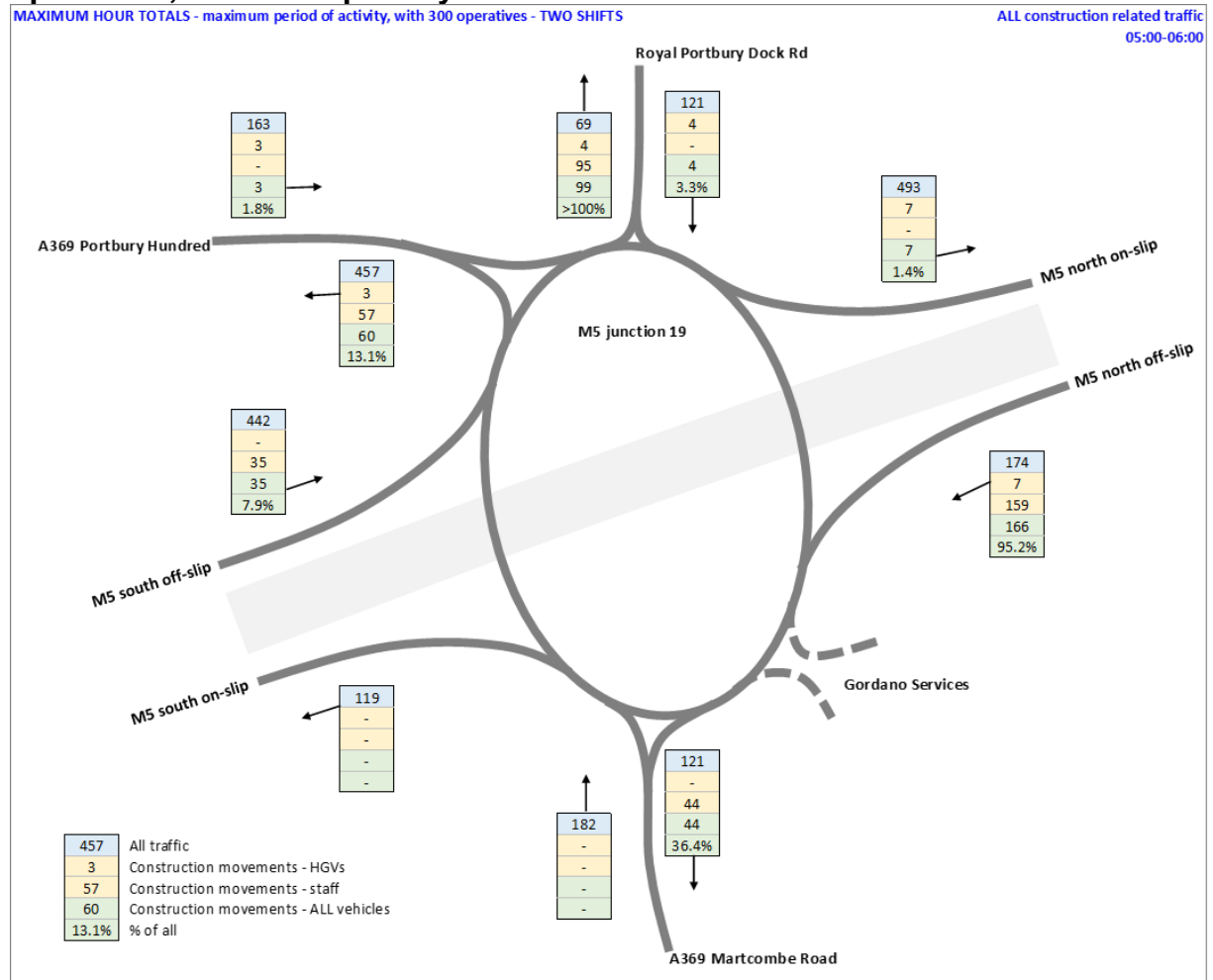
18hr 05:00-23:00



## Maximum hour totals, 07:00-08:00 – maximum period of activity, 300 operatives, single shift per day (one start time)

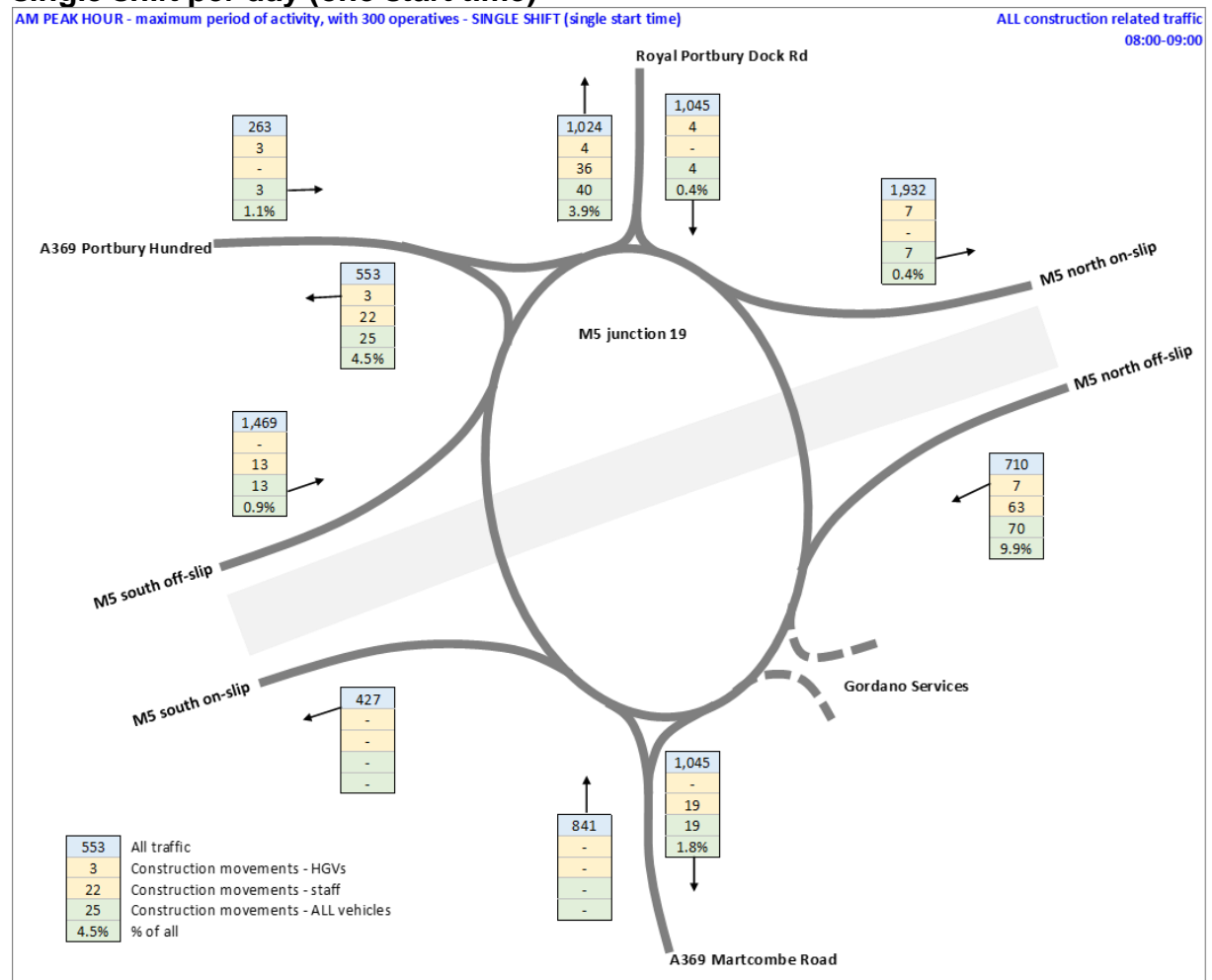


## Maximum hour totals, 05:00-06:00 – maximum period of activity, 300 operatives, two shifts per day



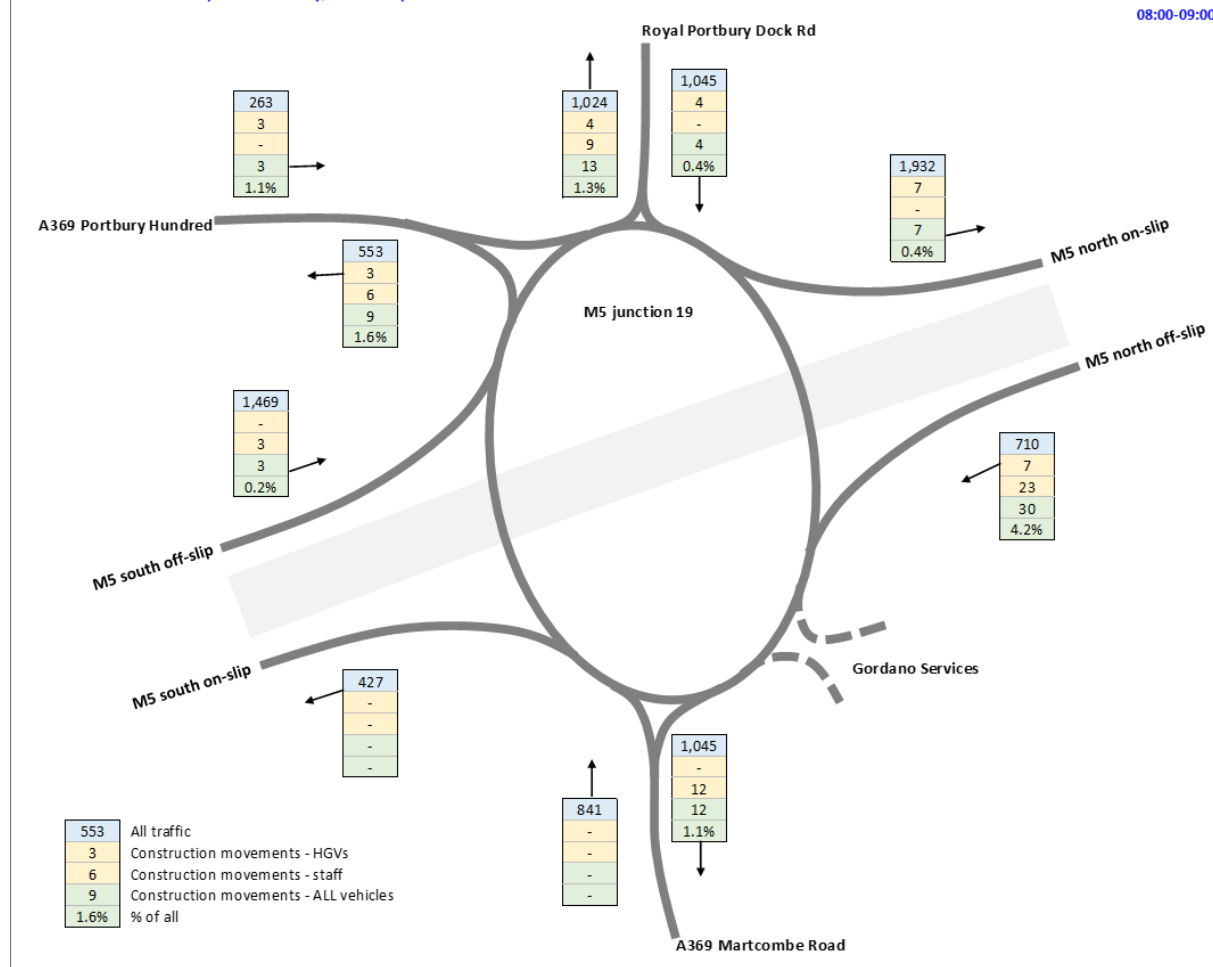


## AM peak hour, 08:00-09:00 – maximum period of activity, 300 operatives, single shift per day (one start time)

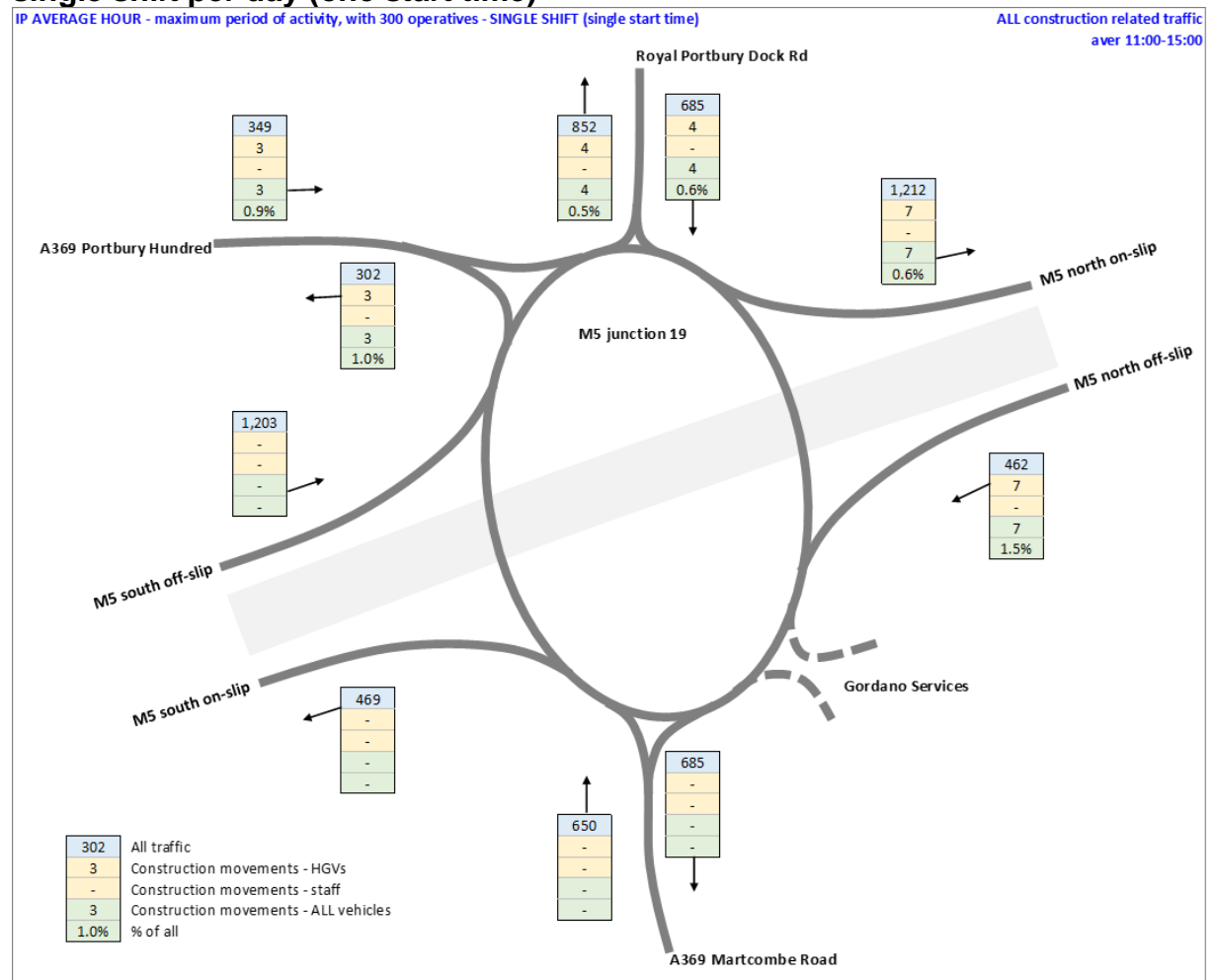


## AM peak hour, 08:00-09:00 – maximum period of activity, 300 operatives, two shifts per day

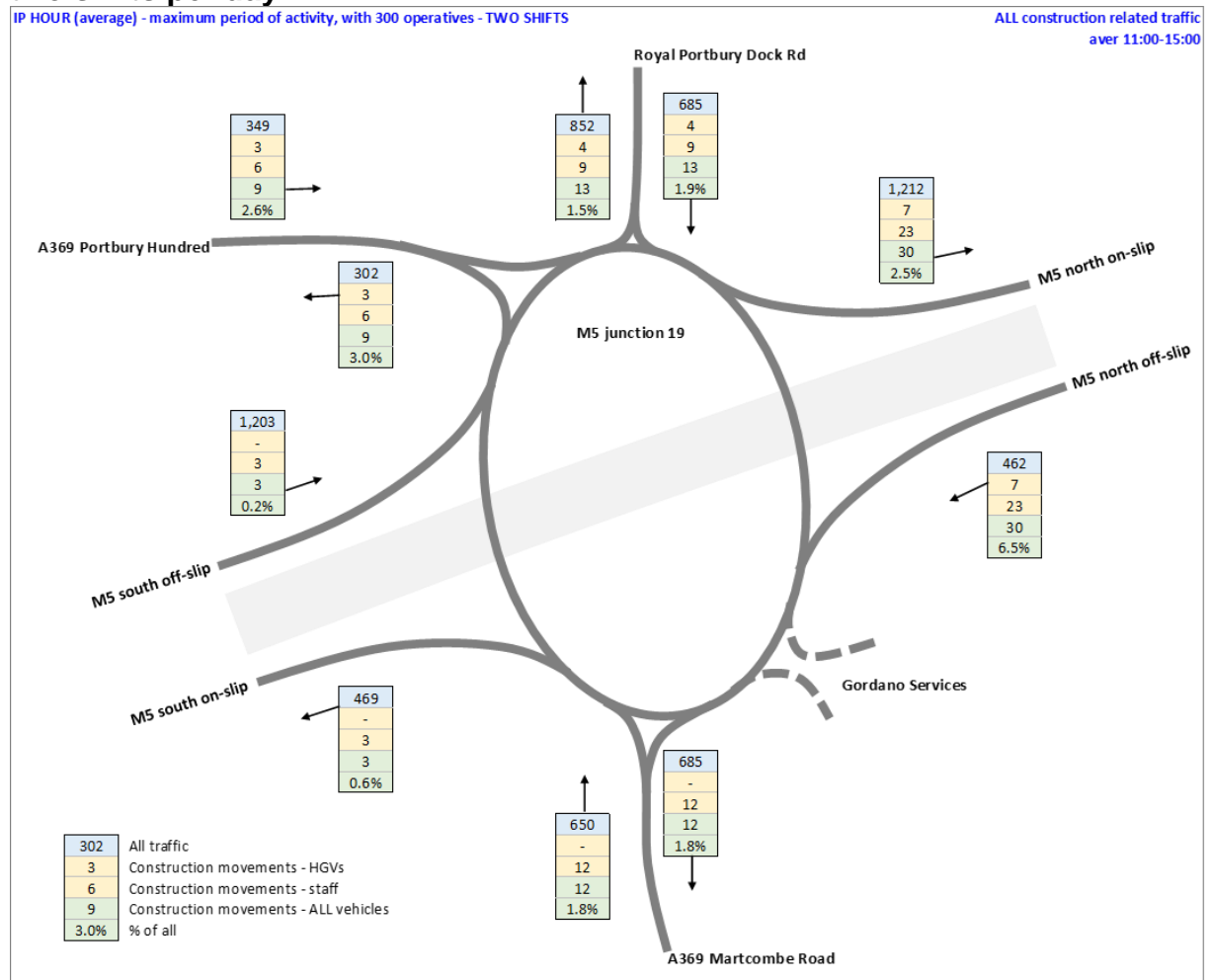
AM PEAK HOUR - maximum period of activity, with 300 operatives - TWO SHIFTS

ALL construction related traffic  
08:00-09:00

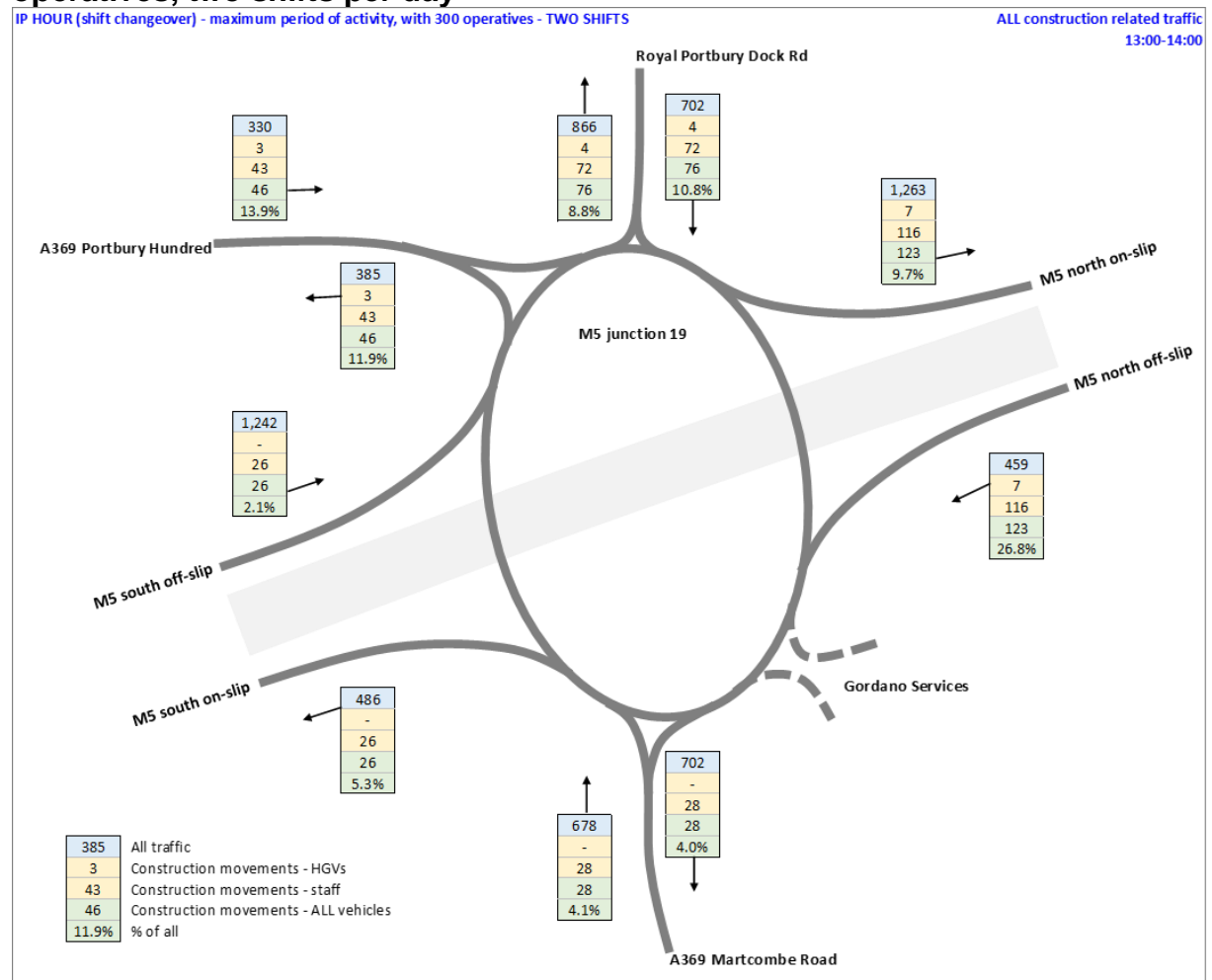
# **IP hour (average), 11:00-15:00 – maximum period of activity, 300 operatives, single shift per day (one start time)**



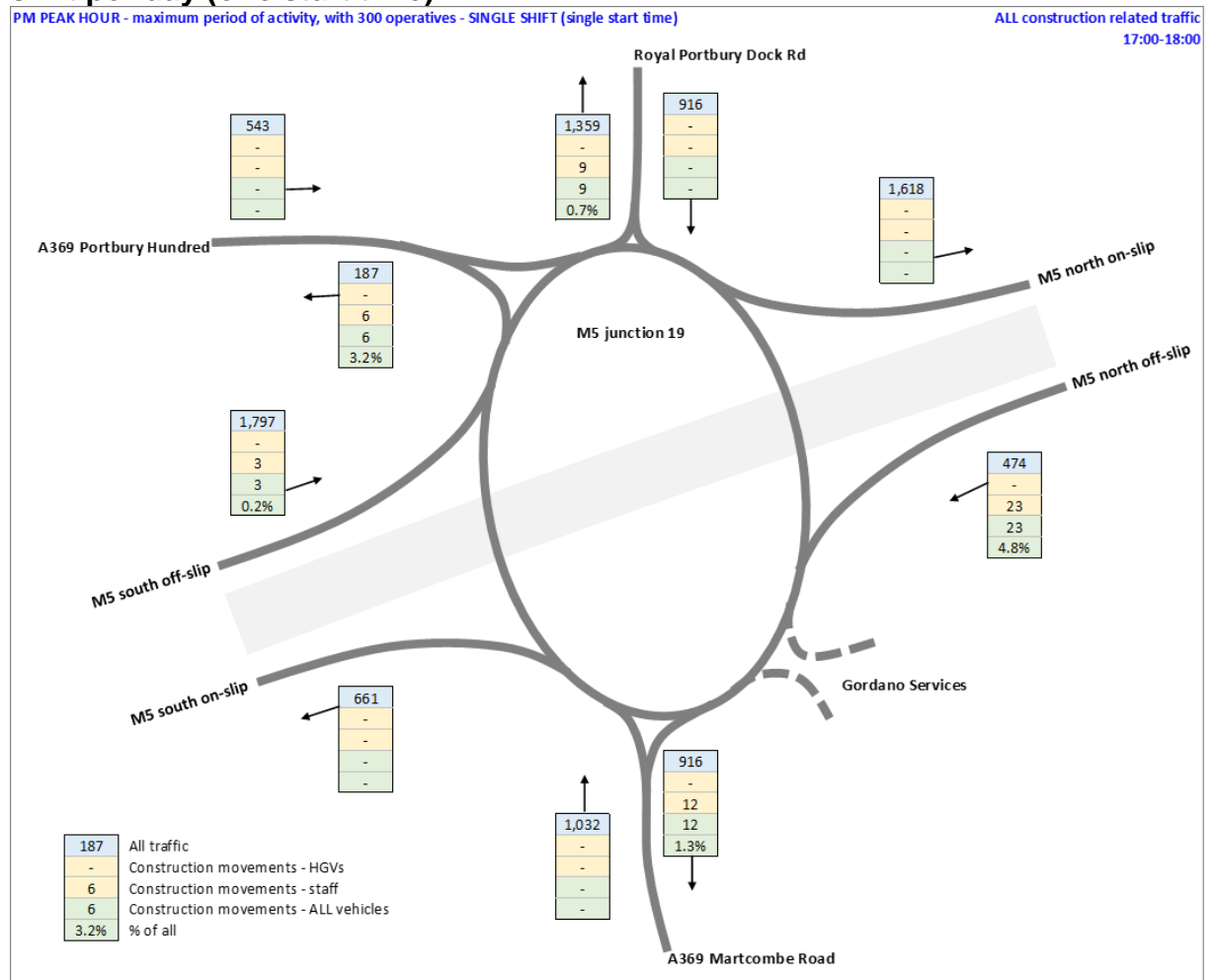
## IP hour (average), 11:00-15:00 – maximum period of activity, 300 operatives, two shifts per day



## IP hour (shift changeover), 13:00-14:00 – maximum period of activity, 300 operatives, two shifts per day

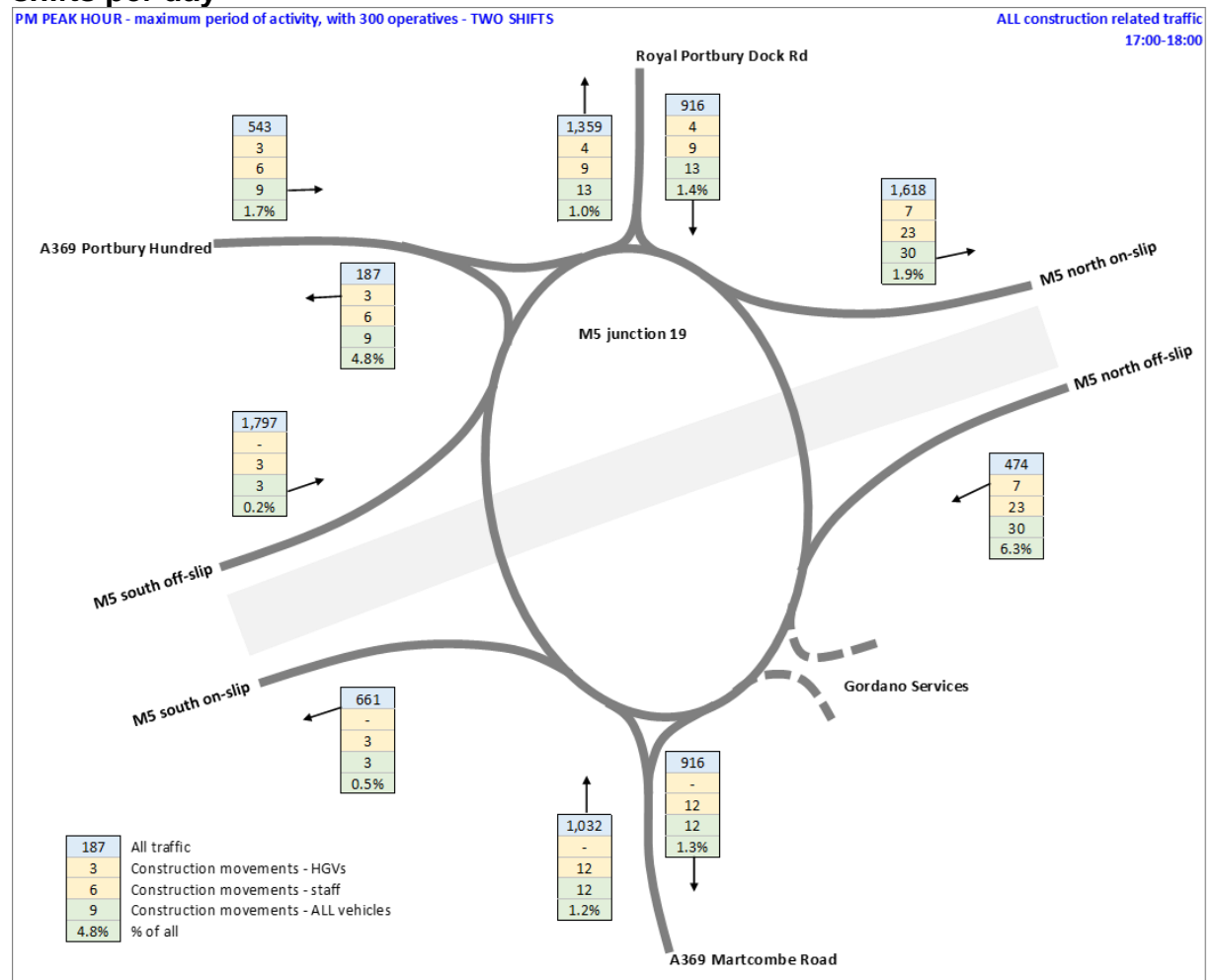


## PM peak hour, 17:00-18:00 – maximum period of activity, 300 operatives, single shift per day (one start time)





## PM peak hour, 17:00-18:00 – maximum period of activity, 300 operatives, two shifts per day





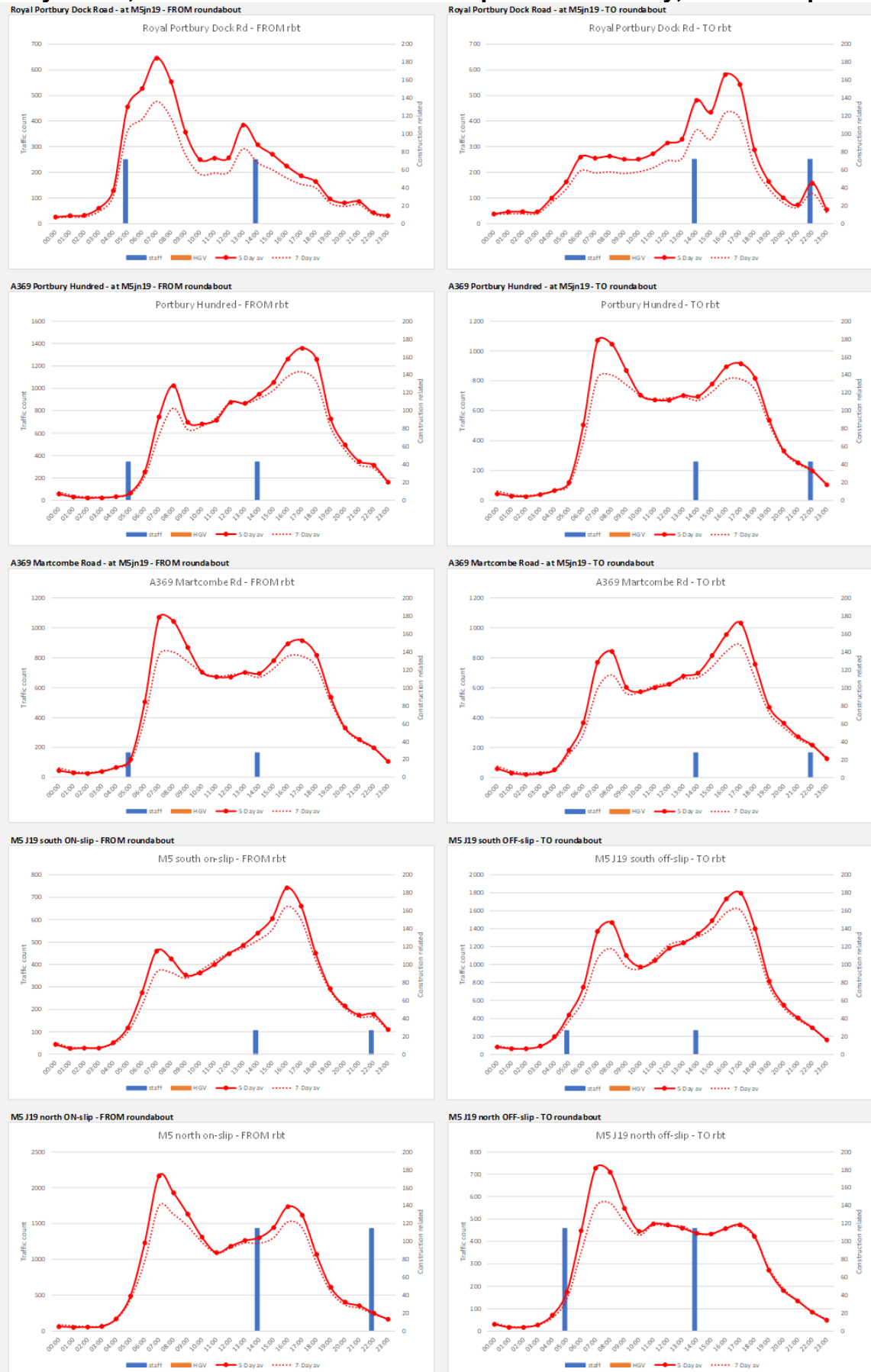
# Appendix C

## M5 junction 19 traffic movements – profiles

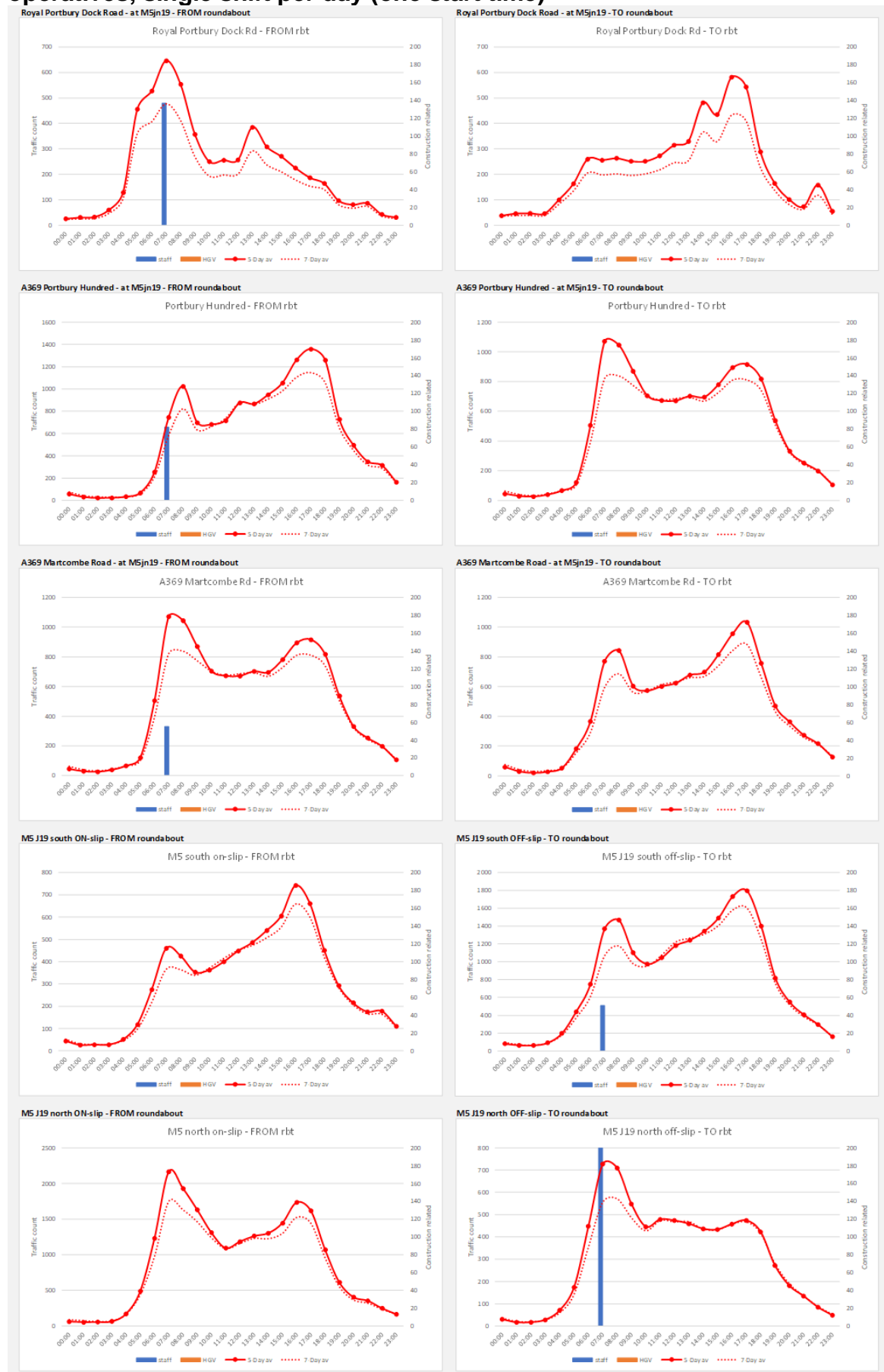
List of operating scenarios illustrating the profile of movements through the day, including proportions of construction traffic at the junction:

- Daily totals, 18hr 05:00-23:00 – maximum period of activity, with 300 operatives
- Maximum hour totals, 07:00-08:00 – maximum period of activity, 300 operatives, single shift per day (one start time)
- Maximum hour totals, 05:00-06:00 – maximum period of activity, 300 operatives, two shifts per day
- AM peak hour, 08:00-09:00 – maximum period of activity, 300 operatives, single shift per day (one start time)
- AM peak hour, 08:00-09:00 – maximum period of activity, 300 operatives, two shifts per day
- IP hour (average), 11:00-15:00 – maximum period of activity, 300 operatives, single shift per day (one start time)
- IP hour (average), 11:00-15:00 – maximum period of activity, 300 operatives, two shifts per day
- IP hour (shift changeover), 13:00-14:00 – maximum period of activity, 300 operatives, two shifts per day
- PM peak hour, 17:00-18:00 – maximum period of activity, 300 operatives, single shift per day (one start time)
- PM peak hour, 17:00-18:00 – maximum period of activity, 300 operatives, two shifts per day

## Daily totals, 18hr 05:00-23:00 – maximum period of activity, with 300 operatives

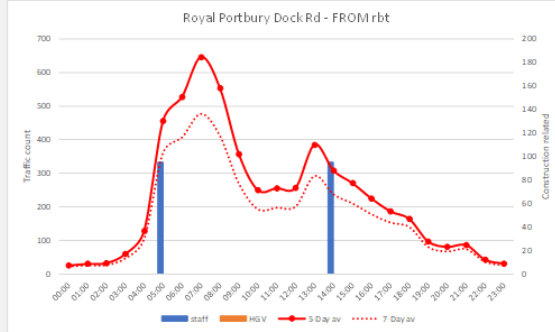


## Maximum hour totals, 07:00-08:00 – maximum period of activity, 300 operatives, single shift per day (one start time)

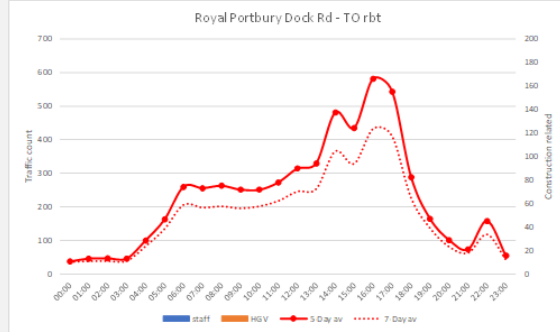


## Maximum hour totals, 05:00-06:00 – maximum period of activity, 300 operatives, two shifts per day

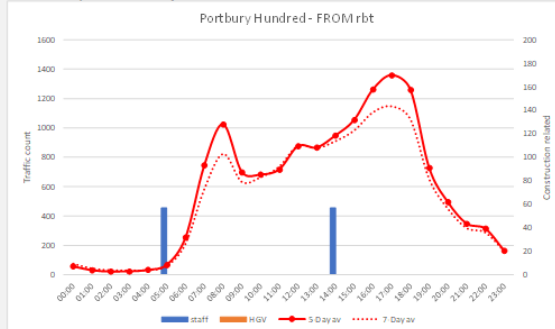
Royal Portbury Dock Road - at M5j19 - FROM roundabout



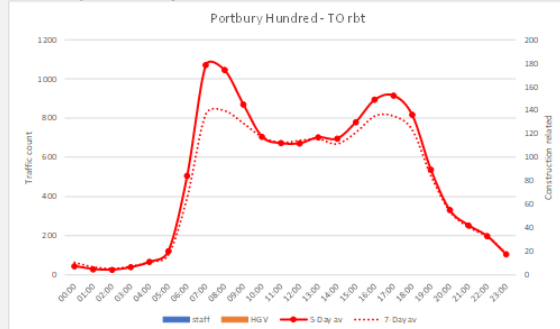
Royal Portbury Dock Road - at M5j19 - TO roundabout



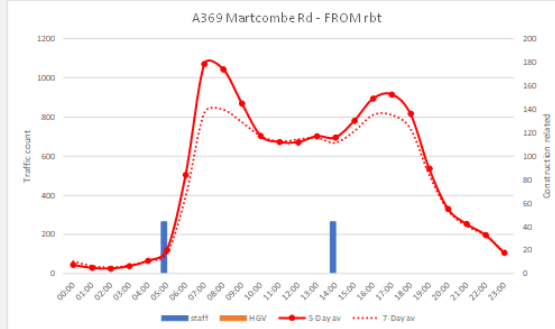
A369 Portbury Hundred - at M5j19 - FROM roundabout



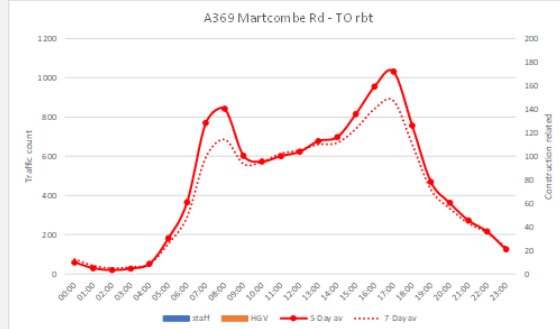
A369 Portbury Hundred - at M5j19 - TO roundabout



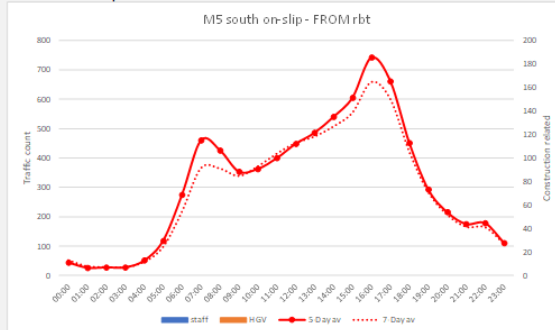
A369 Martcombe Road - at M5j19 - FROM roundabout



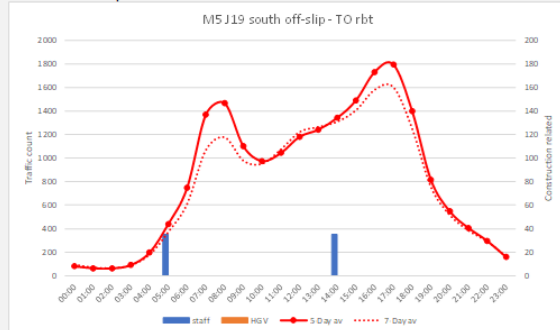
A369 Martcombe Road - at M5j19 - TO roundabout



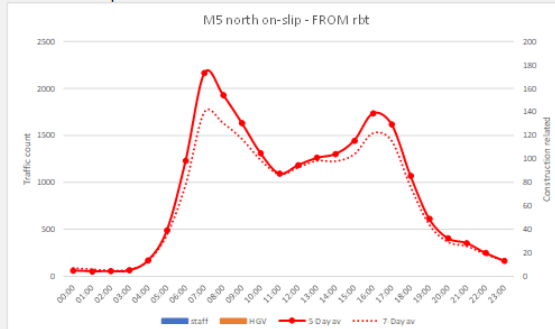
M5 J19 south ON-slip - FROM roundabout



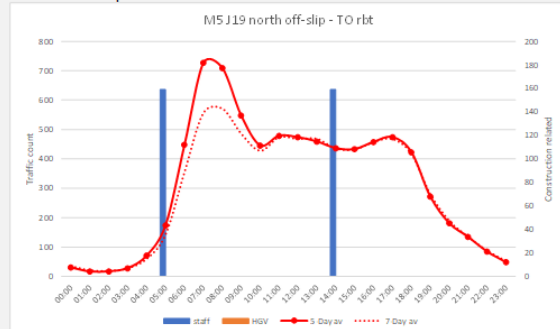
M5 J19 south OFF-slip - TO roundabout



M5 J19 north ON-slip - FROM roundabout



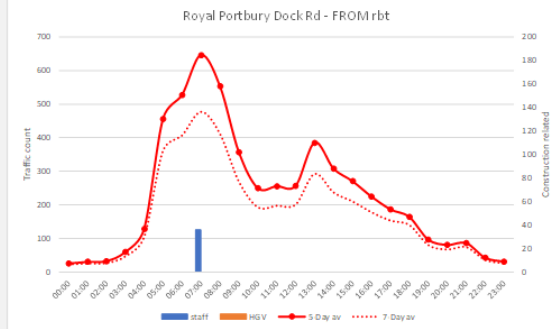
M5 J19 north OFF-slip - TO roundabout



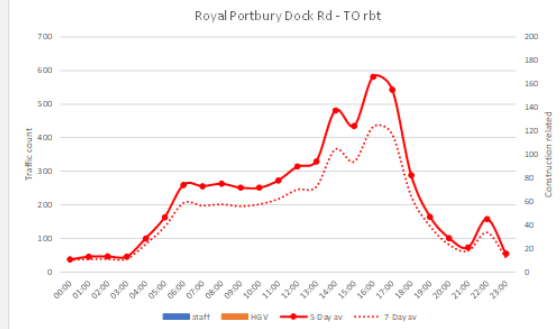


## AM peak hour, 08:00-09:00 – maximum period of activity, 300 operatives, single shift per day (one start time)

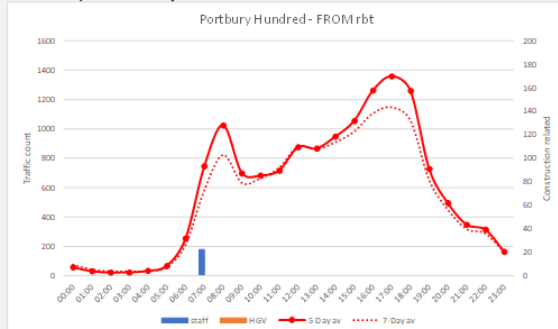
Royal Portbury Dock Road - at M5J19 - FROM roundabout



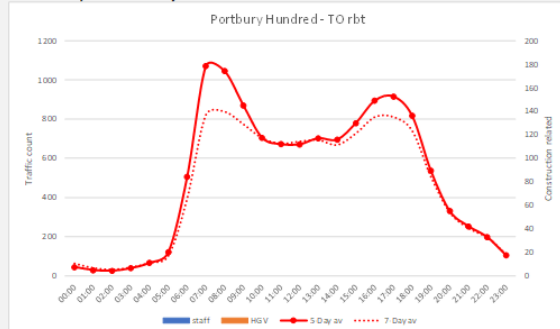
Royal Portbury Dock Road - at M5J19 - TO roundabout



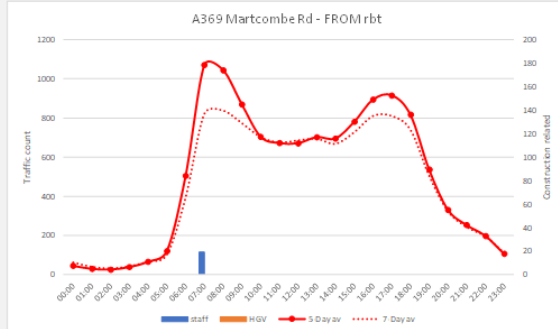
A369 Portbury Hundred - at M5J19 - FROM roundabout



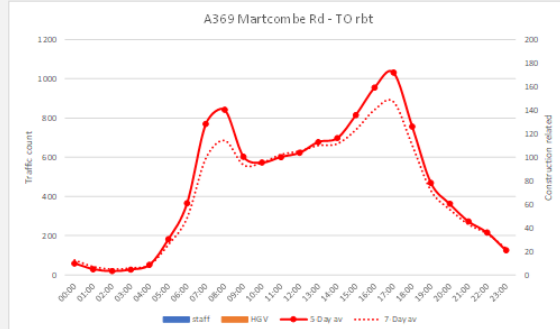
A369 Portbury Hundred - at M5J19 - TO roundabout



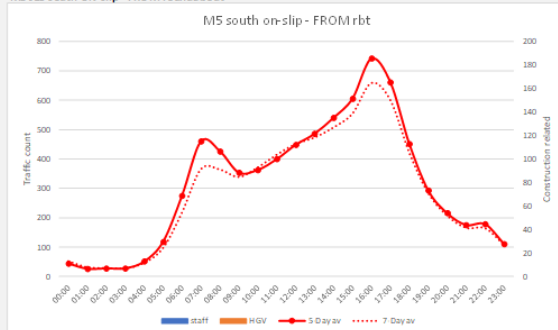
A369 Martcombe Road - at M5J19 - FROM roundabout



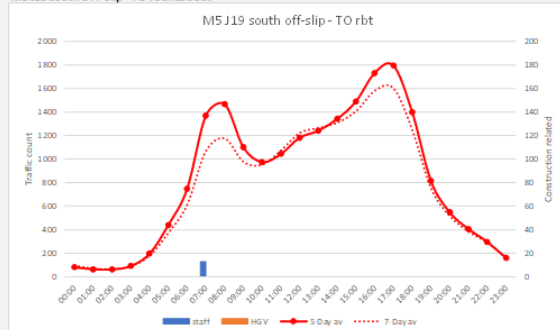
A369 Martcombe Road - at M5J19 - TO roundabout



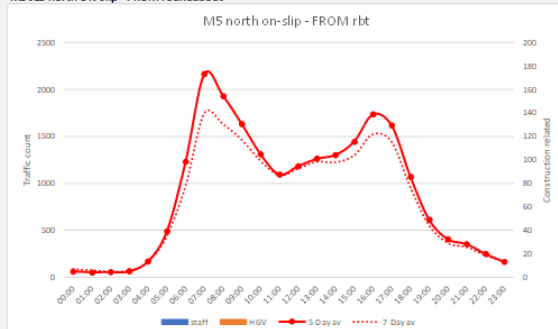
M5 J19 south ON-slip - FROM roundabout



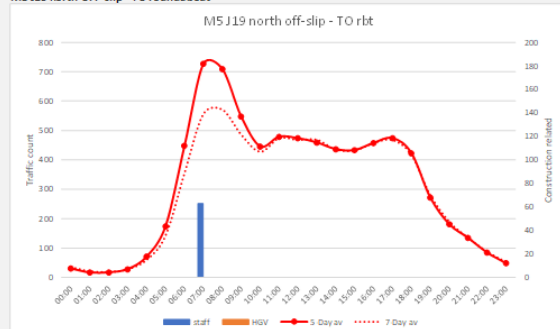
M5 J19 south OFF-slip - TO roundabout



M5 J19 north ON-slip - FROM roundabout

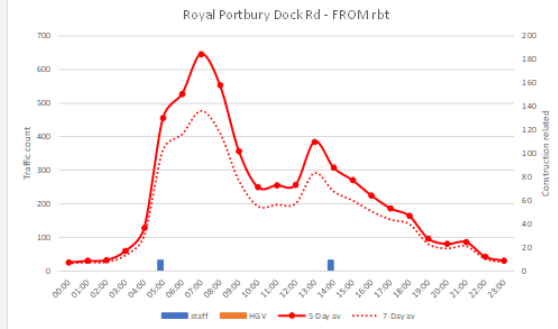


M5 J19 north OFF-slip - TO roundabout

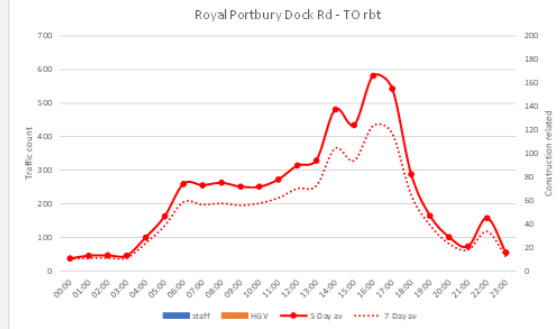


## AM peak hour, 08:00-09:00 – maximum period of activity, 300 operatives, two shifts per day

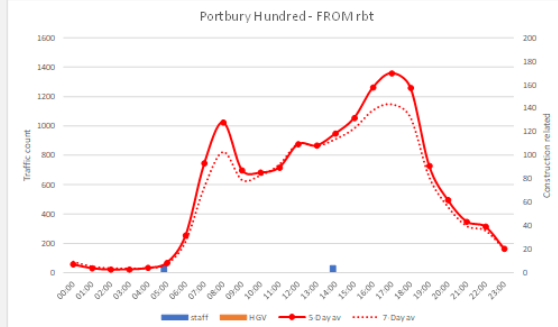
Royal Portbury Dock Road - at M5j19 - FROM roundabout



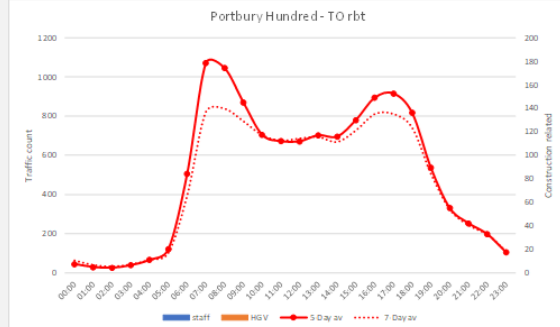
Royal Portbury Dock Road - at M5j19 - TO roundabout



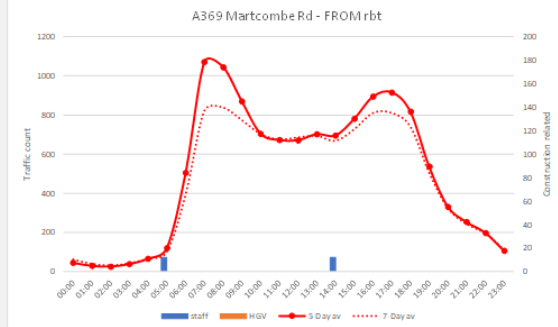
A369 Portbury Hundred - at M5j19 - FROM roundabout



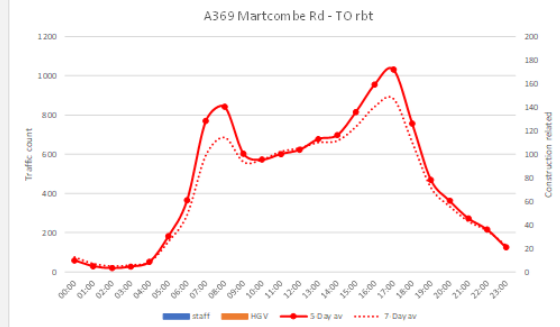
A369 Portbury Hundred - at M5j19 - TO roundabout



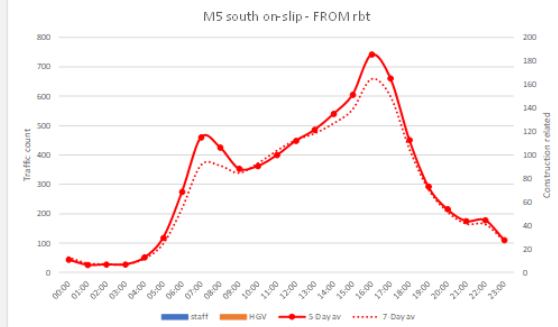
A369 Martcombe Road - at M5j19 - FROM roundabout



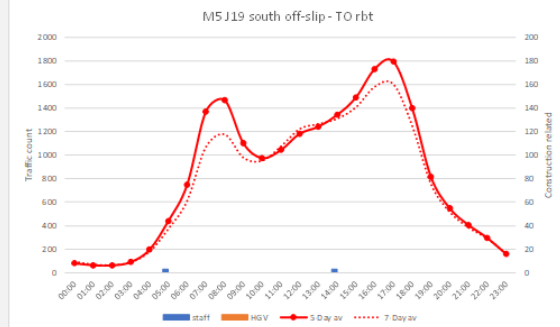
A369 Martcombe Road - at M5j19 - TO roundabout



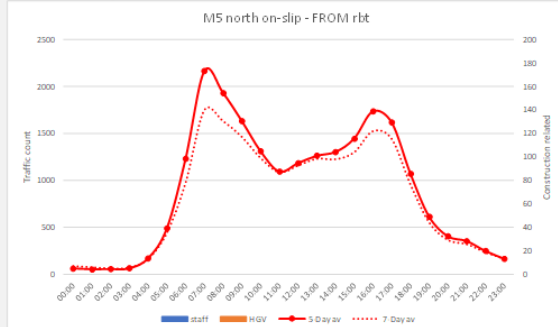
M5 J19 south ON-slip - FROM roundabout



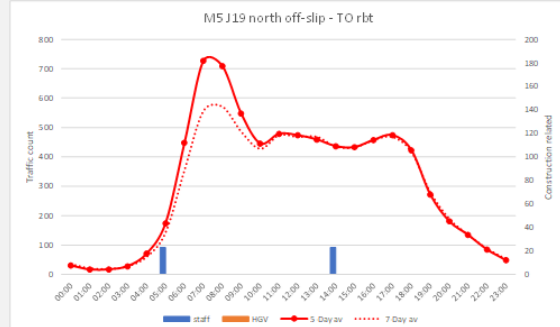
M5 J19 south OFF-slip - TO roundabout



M5 J19 north ON-slip - FROM roundabout

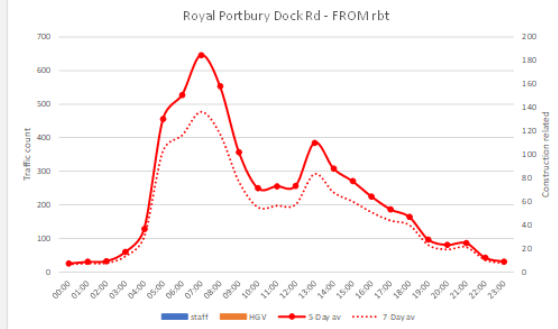


M5 J19 north OFF-slip - TO roundabout

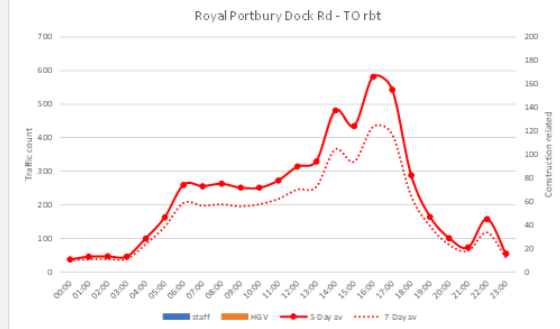


## IP hour (average), 11:00-15:00 – maximum period of activity, 300 operatives, single shift per day (one start time)

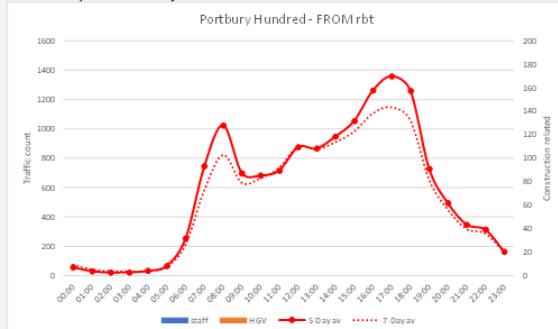
Royal Portbury Dock Road - at M5J19 - FROM roundabout



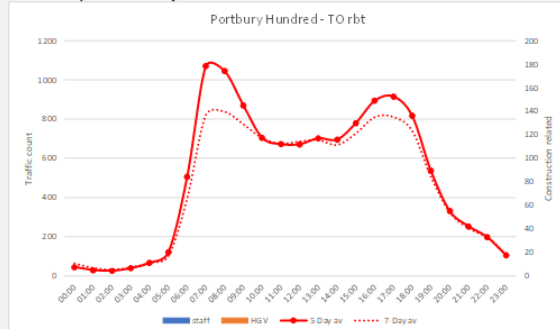
Royal Portbury Dock Road - at M5J19 - TO roundabout



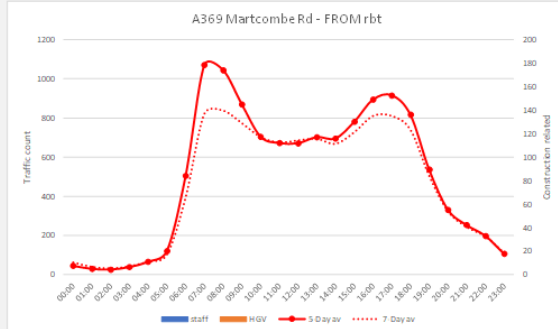
A369 Portbury Hundred - at M5J19 - FROM roundabout



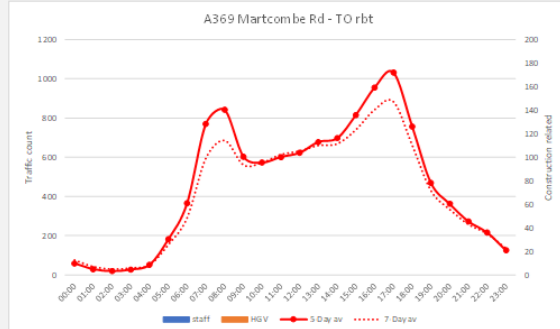
A369 Portbury Hundred - at M5J19 - TO roundabout



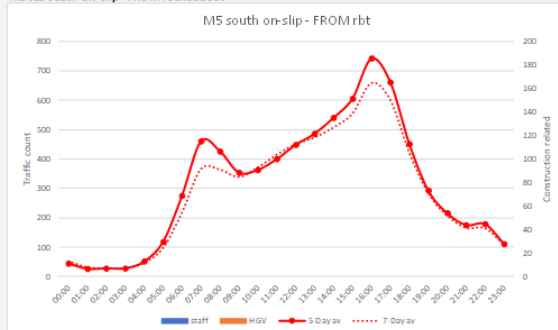
A369 Martcombe Road - at M5J19 - FROM roundabout



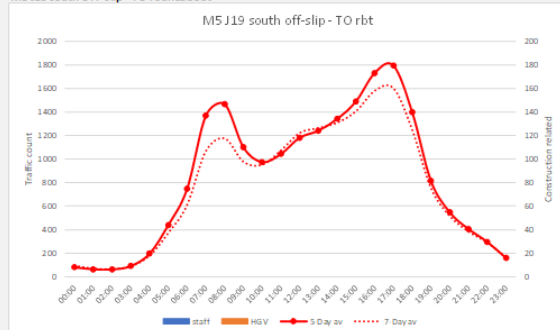
A369 Martcombe Road - at M5J19 - TO roundabout



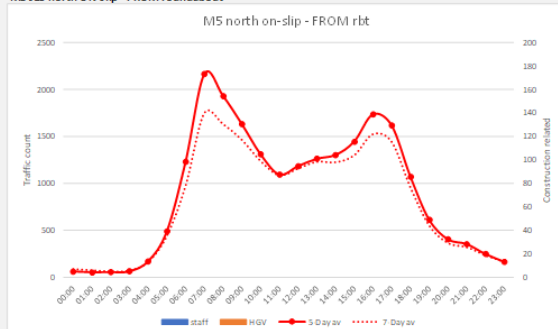
M5 J19 south ON-slip - FROM roundabout



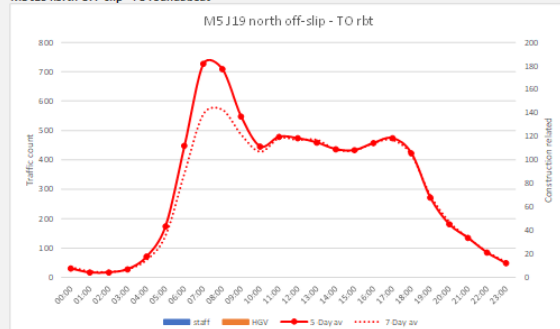
M5 J19 south OFF-slip - TO roundabout



M5 J19 north ON-slip - FROM roundabout

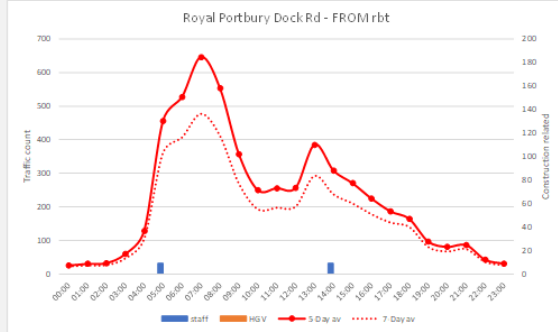


M5 J19 north OFF-slip - TO roundabout

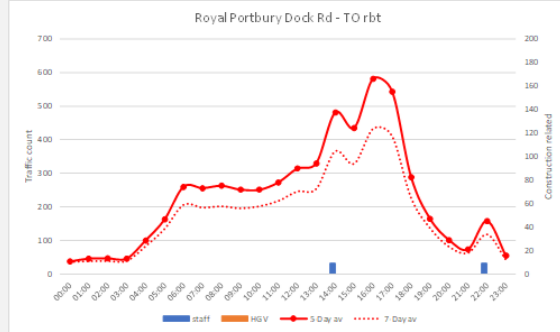


## IP hour (average), 11:00-15:00 – maximum period of activity, 300 operatives, two shifts per day

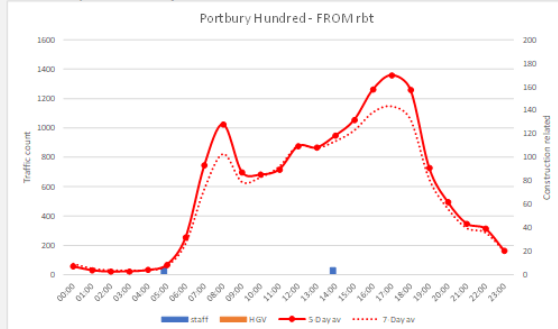
Royal Portbury Dock Road - at M5j19 - FROM roundabout



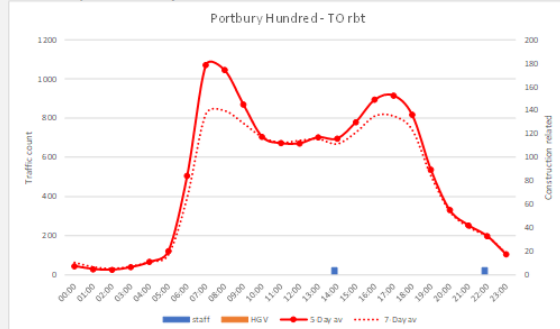
Royal Portbury Dock Road - at M5j19 - TO roundabout



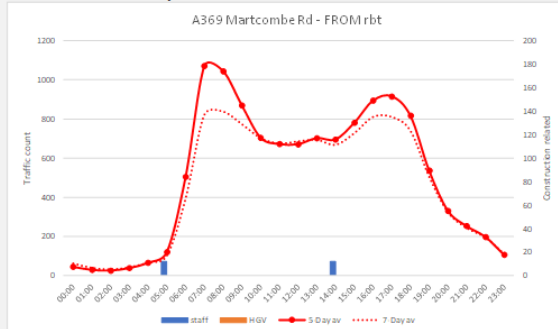
A369 Portbury Hundred - at M5j19 - FROM roundabout



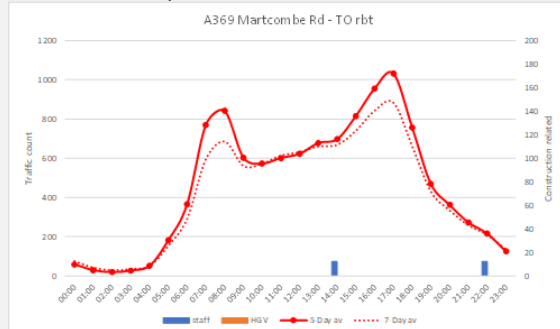
A369 Portbury Hundred - at M5j19 - TO roundabout



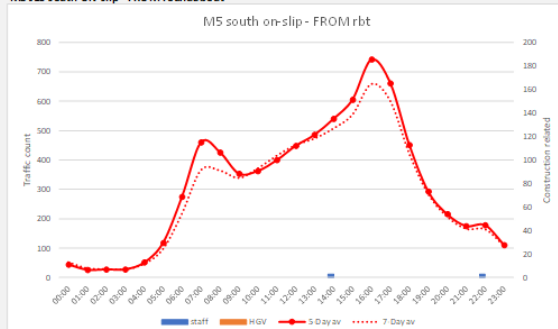
A369 Martcombe Road - at M5j19 - FROM roundabout



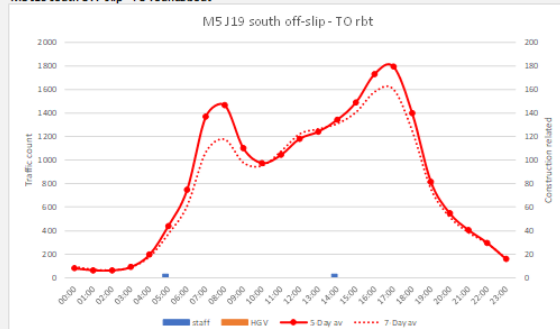
A369 Martcombe Road - at M5j19 - TO roundabout



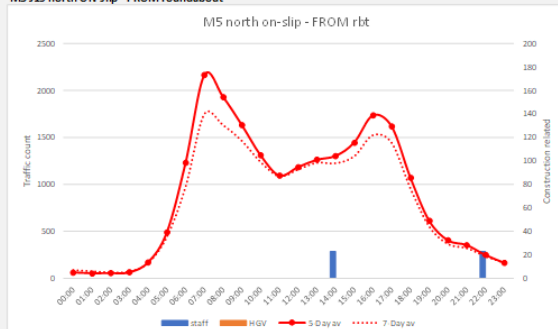
M5 J19 south ON-slip - FROM roundabout



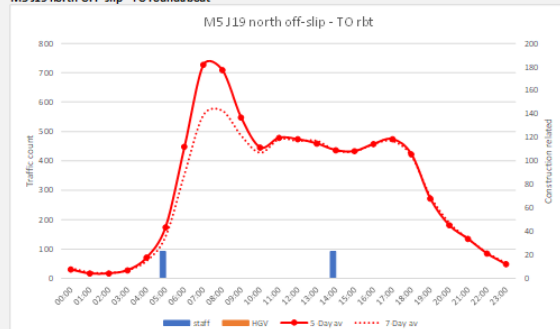
M5 J19 south OFF-slip - TO roundabout



M5 J19 north ON-slip - FROM roundabout

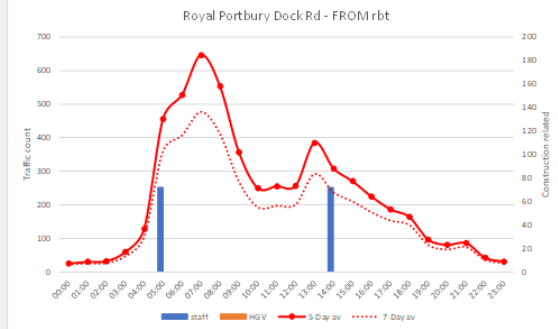


M5 J19 north OFF-slip - TO roundabout

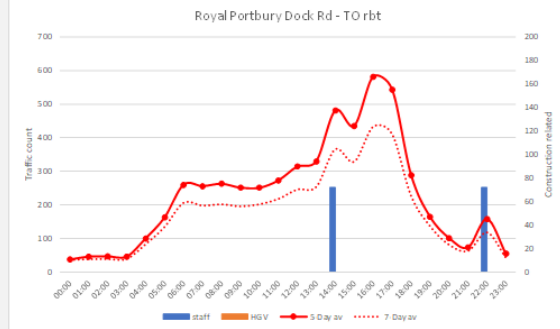


## IP hour (shift changeover), 13:00-14:00 – maximum period of activity, 300 operatives, two shifts per day

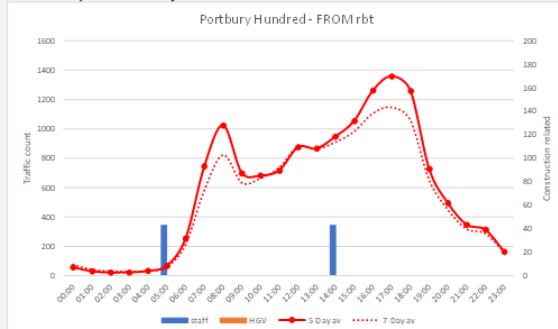
Royal Portbury Dock Road - at M5J19 - FROM roundabout



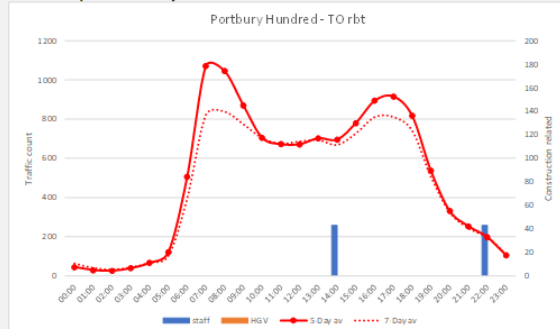
Royal Portbury Dock Road - at M5J19 - TO roundabout



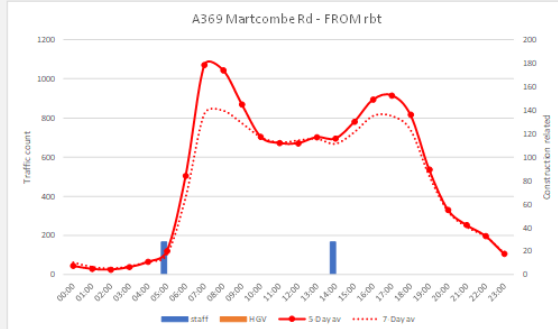
A369 Portbury Hundred - at M5J19 - FROM roundabout



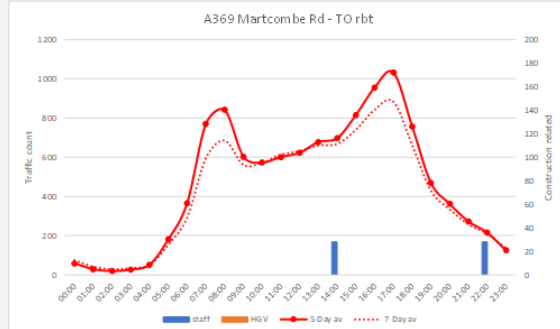
A369 Portbury Hundred - at M5J19 - TO roundabout



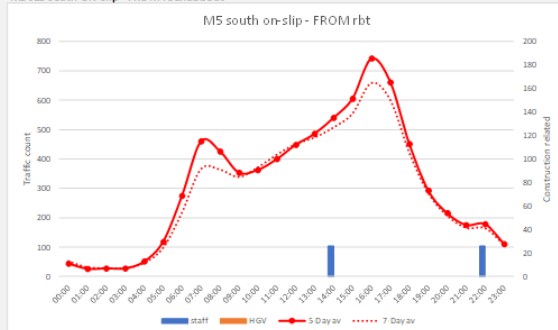
A369 Martcombe Road - at M5J19 - FROM roundabout



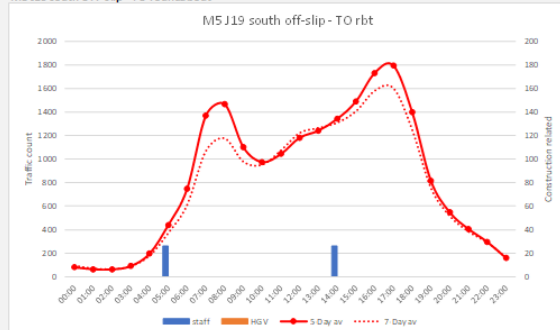
A369 Martcombe Road - at M5J19 - TO roundabout



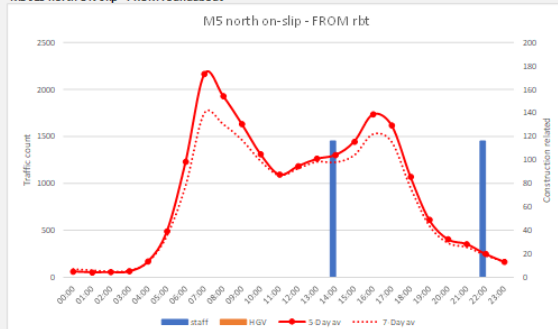
M5 J19 south ON-slip - FROM roundabout



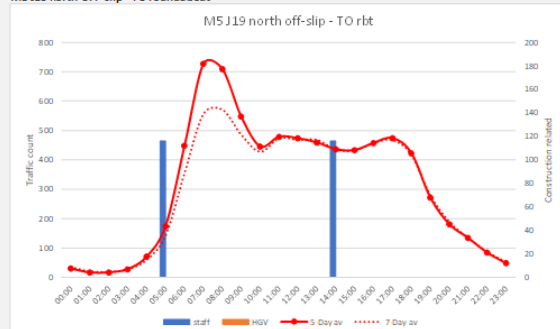
M5 J19 south OFF-slip - TO roundabout



M5 J19 north ON-slip - FROM roundabout

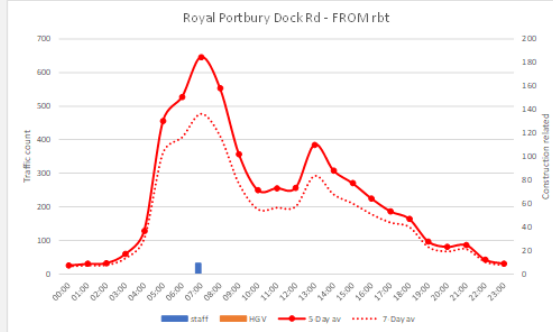


M5 J19 north OFF-slip - TO roundabout

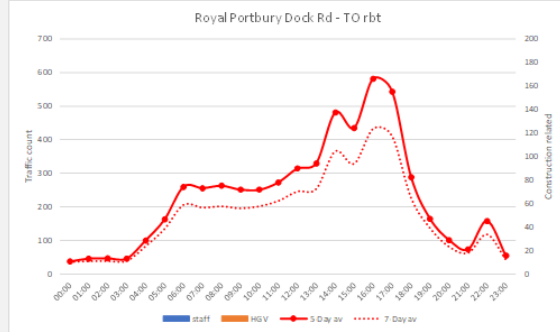


## PM peak hour, 17:00-18:00 – maximum period of activity, 300 operatives, single shift per day (one start time)

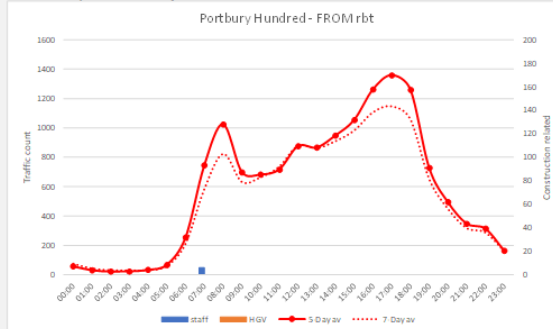
Royal Portbury Dock Road - at M5jn19 - FROM roundabout



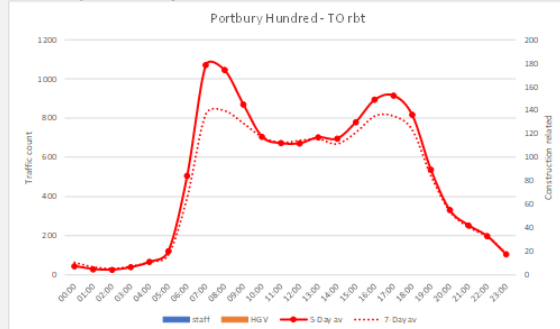
Royal Portbury Dock Road - at M5jn19 - TO roundabout



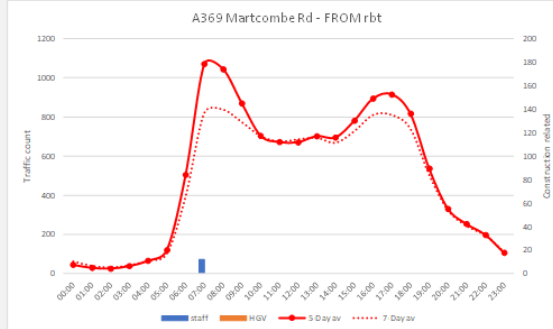
A369 Portbury Hundred - at M5jn19 - FROM roundabout



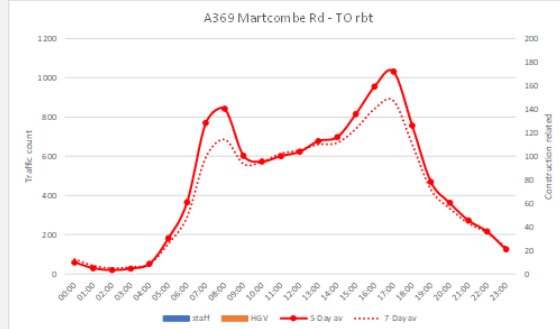
A369 Portbury Hundred - at M5jn19 - TO roundabout



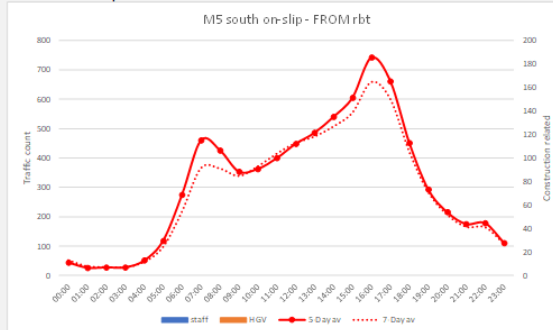
A369 Martcombe Road - at M5jn19 - FROM roundabout



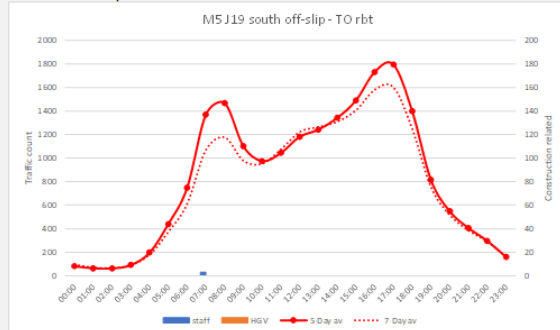
A369 Martcombe Road - at M5jn19 - TO roundabout



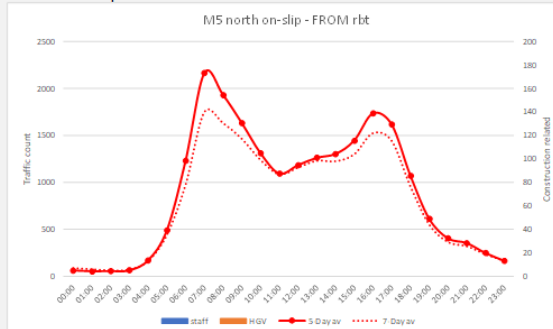
M5 J19 south ON-slip - FROM roundabout



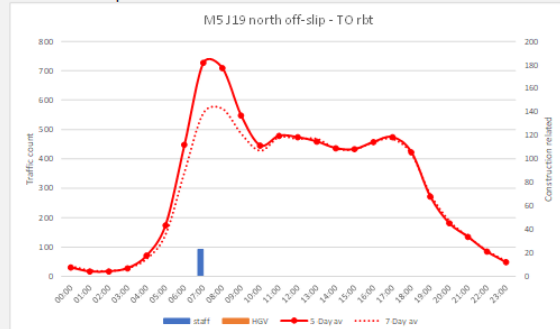
M5 J19 south OFF-slip - TO roundabout



M5 J19 north ON-slip - FROM roundabout



M5 J19 north OFF-slip - TO roundabout





## PM peak hour, 17:00-18:00 – maximum period of activity, 300 operatives, two shifts per day

