A47 Wansford to Sutton Dualling

Scheme Number: TR010039

Volume 7
7.6 Outline Traffic Management Plan

APFP Regulation 5(2)(q)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Infrastructure Planning

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7.6 Outline Traffic Management Plan

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Appendix A TM Options Selection

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Appendix C Customer Impact Assessment Tool

Appendix D Dynamic Roadworks Benchmarking Scores

Appendix E Implementing the highest safe speed within roadworks checklist

Appendix F Diversion Routes

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1 INTRODUCTION

Purpose and Objectives

1.1.1 The aims and objectives of the A47 Wansford To Sutton scheme are to:

- Improve Road Safety for all road users, ensuring the road design meets the modern standards for a Major A-road
- Shorten journey times, make journey times more reliable, and provide capacity for a rise in future traffic.
- Contribute to sustainable economic growth
- Help the road to better cope with incidents such as collisions, breakdowns, road maintenance and extreme weather.
- Ensure the proposals consider the local communities
- Provide safer route between communities for walking, cycling and horse riding.

1.2 Safety

1.2.1 As one of Highways England's Key Imperatives, safety is extremely important. Accurate Traffic Management (TM) design processing allows assessment of risk and opportunity throughout the design period. During TM design, the assessment of the following factors will be carried out:

- Safe taper locations.
- Road marking condition.
- Existing and proposed carriageway alignments.
- Stopping sight distances.
- Road user fatigue.
- Customer experience (Roadworks: A customer point of view).
- Clear and concise signage.
- Clear and safe access and egress detail and locations.
- Assessment of existing flows and impact of works on said flows.
- Minimal maintenance and risk mitigation of operational procedures.
- Assessment of speed (85th percentile speed recognition).
- Assessment of highest safe speed possible; utilising the HE 'highest safe speed toolkit' and providing GG104 framework guided safety risk assessments for detailed TM design phasing.

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Good customer service

1.2.2 Due to the nature of construction, full closures will be required in order to facilitate specific activities. The programme of works will be co-ordinated in a fashion that allows optimum use of full closures in order to minimise the amount of full closures and drive operational efficiency. Full closures will be co-ordinated with Local Highways Authorities (Peterborough City Council, and Cambridgeshire County Council), Highways England (HE) and discussed via stakeholder engagement. North Northamptonshire Council will also be engaged in regard to strategic signing. This is detailed further within the customer requirements section of this document.

1.2.3 It is essential that road markings, both temporary and existing are clear and in good condition. Poor road markings and lane delineation cause customer frustration and impact the customer experience negatively through the works. Consideration of requirements for the above elements, based upon driver behaviour and prioritising customer and workforce safety will be given.

1.2.4 In November 2020, the 'Roadworks A Customer View" Implementation toolkit document was revised. The 20 principles are documented with a brief synopsis of how each principle will be addressed within Appendix B of this document.

Projects delivered on time and efficiently

1.2.5 Working within the project team from an early stage allows the TM design to influence critical areas of design, construction planning and operational activities. The TM Early Contractor Involvement (ECI) Manager and Project Manager (PM) will integrate within the Delivery Integration Partner (DIP)/ Regional Delivery Partnership (RDP) community, attending workshops and advising on programme and works including roadspace allocation, stakeholders, risk, opportunity and buildability. A 90% accuracy over a seven-day period in regard to roadspace booking and allocation will be targeted.

1.3 Scheme Description

1.3.1 The Scheme will provide a new stretch of dual carriageway which will largely follow the existing A47 at the Wansford end, crossing to the North and running parallel to the existing A47 after the scheduled monument.

The key elements of the Scheme include:

- approximately2.6km of new dual carriageway constructed largely offline of the existing A47, including the construction of two new underpasses
- a new free-flow link road connecting the existing A1 southbound carriageway to the new A47 eastbound carriageway
- a new link road from the Wansford East roundabout to provide access to Sacrewell Farm, the petrol filling station and the Anglian Water pumping station
- closure of the existing access to Sacrewell Farm with a new underpass connecting to the farm from the link road provided

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- a new slip road from the new A47 westbound carriageway also providing access to the petrol filling station
- a link road from the new A47 Sutton Heath roundabout, linking into Sutton Heath Road and Langley Bush Road
- new junction arrangements for access to Sutton Heath Road and Langley Bush Road
- closure of the existing accesses to the A47 from Sutton Heath Road, Sutton Drift and Upton Road
- new passing places and limited widening along Upton Drift (also referenced as Main Road)
- new walking and cycling routes, including a new underpass at the disused railway
- new safer access to the properties on the A1, north of Windgate Way
- installation of boundary fencing, safety barriers and signage
- new drainage systems including:
    - two new outfalls to the River Nene
    - a new outfall to Wittering Brook
    - extension of the A1 culvert at the Mill Stream
    - realignment and extension of the A47 Wansford Sluice
    - drainage ditch interceptors
    - new attenuation basins, with pollution control devices, to control discharges to local watercourses
- River Nene compensatory flood storage area
- works to alter or divert utilities infrastructure such as electricity lines, water pipelines and telecommunications lines
- temporary compounds, material storage areas and vehicle parking required during construction
- environmental mitigation measure

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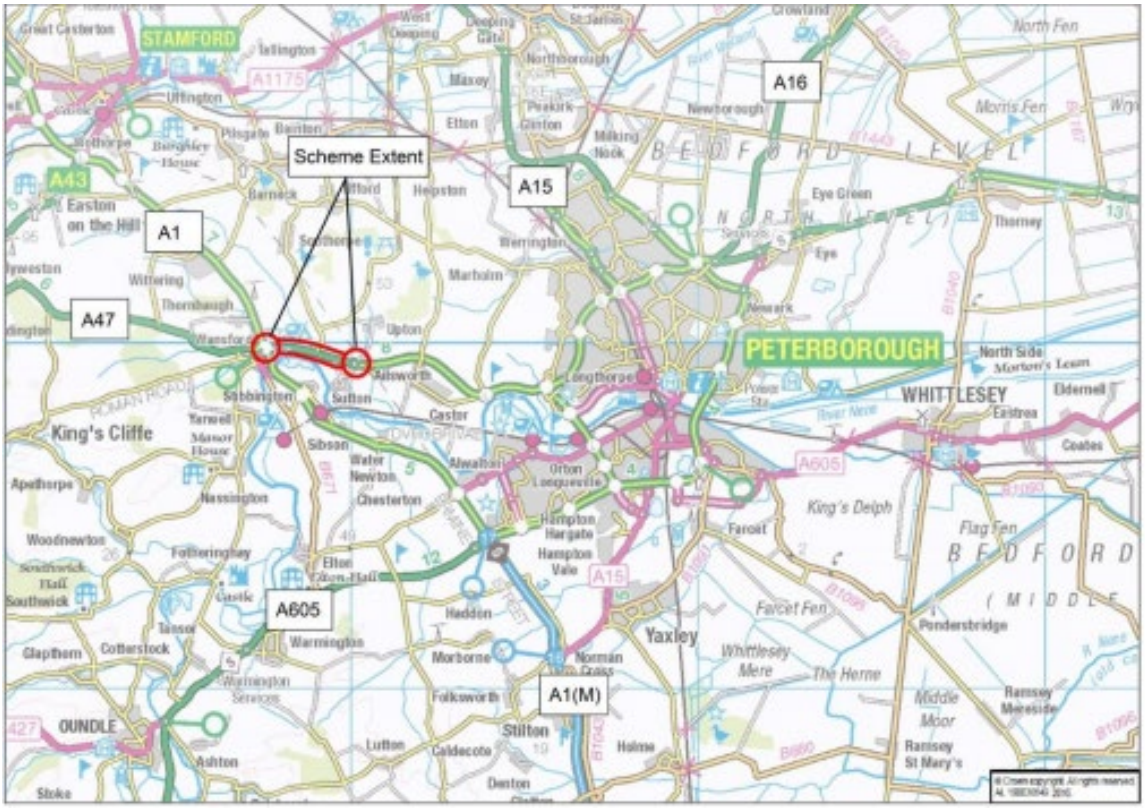
Figure 1 - Scheme Location Plan



1.4 Safety and efficiency through design

1.4.1 Collision risks on the network have been identified, which will feed into the TM design and planning, ensuring that layouts integrate risk areas and mitigate them appropriately.

1.4.2 Figure 2 illustrates the road risk rating in the surrounding area and historic collision data. It is important that the strategic road network is considered when planning works. For example, when diverting traffic and using diversion routes, thought should be given to the routes used and the impact on those routes should diverted traffic be added to the existing traffic flows.

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Figure 2 – Crash map and RSF EuroRAP Rating

Figure 3 - RSF EuroRAP Legend

1.4.3 The design risk assessment will consider key risks and mitigations within the TM strategy and designs. For instance, undertaking an incursions mapping exercise to identify the likelihood of unauthorised incursions and implement appropriate mitigations such as early stakeholder engagement, strict 'Raising the Bar 27' adherence, and use of incursion cameras and other innovations such as Intellicone. An extract from a TM design risk assessment is shown below.

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Figure 4. Extract of TM Design Risk Assessment

Ref No.	Hazard	Risk	Risk posed to	Initial Likelihood/ Severity		Control Measures	Risk subsequent to control measures		Further measures and information
				L	S		L	S	
CARRIAGEWAY GEOMETRY, CHARACTERISTICS AND SITE DETAIL									
MR001	High Speed Approach and high speed entry to gyratory narrowed lane system on single carriageway A road.	Road user collides with TM equipment	Motorists, Workforce	3	4	Staged speed limit with a reduction to 30mph prior to datum of narrowing to be Installed via TTRO. Coning to be deployed in compliance with ACOP/ TSM Chapter 8, CHEs etc and used in association with road markings where appropriate Appropriate traffic management system to be selected for site specific environment and workspace requirements All equipment to be compliant and in good condition Existing and new road markings to be compliant and suitable for conditions/location Good sight lines on approach to TM	2	4	Approaching 50 zone signed with clear double banked 30 terminals placed in line with TTRO
				12			8		
MR001	High Speed Approach and high speed entry to gyratory narrowed lane system on single carriageway A road.	Road user approaches entry to narrowed lanes at high speed and fails to negotiate TM and lane discipline correctly	Road users	3	4	Staged speed limit with a reduction to 30mph prior to datum of narrowing to be Installed via TTRO. Coning to be deployed in compliance with ACOP/ TSM Chapter 8, CHEs etc and used in association with road markings where appropriate Appropriate traffic management system to be selected for site specific environment and workspace requirements All equipment to be compliant and in good condition Existing and new road markings to be compliant and suitable for conditions/location Good sight lines on approach to TM	2	4	Approaching 50 zone signed with clear double banked 30 terminals placed inline with TTRO. Solid centreline to be installed at transition point along with solid edge of lane line on offside. 'New road layout' signage to be installed on approach to works along with appropriate 'lead in' signage.
				12			8		

1.4.4 Through engagement with specialist sub-contractors, the requirement for Closed Circuit Television (CCTV), Temporary Automatic Speed Camera at Road works (TASCAR) and temporary road markings will be assessed. It is essential that road markings, both temporary and existing are clear and in good condition. Poor road markings and lane delineation cause customer frustration and impact the customer experience through the works. Consideration of requirements for the above elements, based upon driver behaviour and prioritising customer and workforce safety will be given.

1.4.5 The TM designers will work with the main contractor programme lead, ensuring programme requirements can be achieved within TM phases and will contribute to the emerging overall construction phasing strategy.

1.4.6 A survey of the existing carriageways and impacted area/s will be carried out. In order to accomplish accurate design, the construction model will be inputted into phasing design, allowing the illustration of build and phasing detail of both the traffic management and the construction being carried out in each phase. This allows measurement of works output per phase and also clash detection.

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2 TRAFFIC MANAGEMENT PLAN – DETAILED DESCRIPTION

Table 1. Customer Requirements Log

Customer group	Who is affected by this project?	What are their requirements and how are they impacted?	How has the TM Plan taken these requirements into account and proposed mitigations using the customer principles?
Customer	*HGV drivers* *Car drivers,* *Motorcyclists* *Hauliers* *Emergency Services,* *Local Traffic* *Long distance drivers/tourists* *Coach companies* *Delivery/couriers*	*Journey time reliability* *Advance warning of closures and/or diversions* *Appropriate diversion routes* *Maximised lane widths where possible* *Clear easily navigable TM* *Review Use of Speed Control* *Co-ordination with existing/planned schemes* *Emergency services require access or alternative measures to reach destination* *Couriers under pressure to deliver – diversion routes, full closures and general works have potential to affect delivery JTR*	*Sufficient notification of closures* *Closure clashes – not having closures on alternative routes that are not subject to diversions* *Diversion routes to avoid narrow roads and low bridges* *Road Haulage Association to be notified via comms* *Consideration given to' roadworks: A customers view'* *Efficient locating of lead in zones/zone of influence to minimise traffic flow impact* *TM to be designed, installed and maintained in accordance with TSM & DMRB.*

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			Ensure HGV's are given Sufficient notification of closures. *Advance warnings and notification via mobile variable message signs MVMS and existing technology on the Network* *Advanced warnings via nationwide network technology and comms to allow long distance drivers and tourists to plan appropriately.* *Give clear and accurate information of delays displayed at remote locations so traffic can decide on alternative route* *Give clear and accurate information on the works.* *Ensure Emergency Services have access through haul road during emergencies, have suitable diversion routes and have advance warning of closures and / or diversions.* *Ensure local residents have advance warning of closures and / or diversions* *TM needs to have sensitivity to local requirements for example, market days* *Ensure minimal disruption due to works, including environmental factors (for*

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			example, noise, dust, lighting and diversion routes *Notification and liaison with individuals and / or local group representatives.* *Activity curfews for example, no piling between 22:00 – 06:00.* *Diversion route signs and information to meet driver requirements and optimise usability to reduce opportunities for error and therefore reduce congestion.*
	Disabled car driver	*Method of recovery that is suitable for physically disabled vehicle occupants and their vehicles* *Suitable roadside facilities for disabled users i.e. toilets*	*Wheelchair accessible recovery vehicles where recovery is applicable* *Welfare facilities take account of disabilities*
	Walkers, Cyclists and Horse riders (WCHR)	*WCHR routes i.e. footpaths and overbridge within works boundary* *Existing crossing points (signal controlled)*	*Sufficient width of guarded temporary WCHR route provision* *Shared WCHR temporary routes with compliant signage and disabled access. Routes to be lit, guarded and step free* *Crossing point to be assessed with provision of tactile paving or alternative suitable measures e.g. audible warnings*

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			Agreed strategy to be made in regard to footbridge
Stakeholder	*Peterborough City Council* *Cambridgeshire County Council* *Private Ambulance Services* *Peterborough City Hospital*	*Communicate and seek approval of LHA network use for full closures/diversions where applicable. .* *Sufficient notification of above closures* *Co-ordinated and appropriate diversion routes* *Minimise impact to JTR's*	*Advance warning of proposed full closures with approval from LHA roadspace team/s* *Liaise with LHA's to agree proposed/approved diversion routes* *TM design to consider minimum impact to surrounding road networks* *Works planning to consider events and embargos.* *Communication of planned closures and programme progression via scheme updates and stakeholder engagement via project communications team*
	*Adjacent Local Businesses and landowners** *Adjacent communities:*	*Advance warning of closures or diversion requirements* *Business access is maintained throughout the works* *Use local/social media for project updates* *Account for seasonal peaks e.g. Black Friday, Christmas* *Use Variable Message Signage to better inform users of incidents*	*Advance warning and sensitivity around peak times* *No access to business will be altered due to the works* *Project comms team to liaise with local businesses*

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	Highways England Operational Delivery *Area 6: Asset Support Contractor*	*Journey time reliability* *Advance warning of closures* *and/or diversions* *Appropriate diversion routes* *Maximised lane widths where* *possible* *Access for routine maintenance*	• *Sufficient notification of closures* *Closure clash avoidance – not having closures on alternative routes that are not subject to diversions* *Anticipated that the appointed Contractor will undertake the majority of maintenance activities* *Liaison with roadspace team to ensure appropriate/approved diversion routes are utilised.* *Liaison with roadspace team to avoid event clashing i.e.. Wide load movements.*

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3 NATURE OF THE WORKS

3.1 The Scheme.

3.1.1 Under the Scheme 2.6km of the existing A47 Single carriageway, between the A1 and the existing roundabout at Nene Way, is to be upgraded to a D2 Dual Carriageway. It will be constructed slightly to the north of the existing A47.

3.1.2 A new free flow lane is to be constructed connecting the A1 Southbound carriageway to the new A47 eastbound carriageway. A new underbridge is to be constructed at the western end of the Scheme giving access to Sacrewell Farm and Country Centre, and a new underbridge is to be constructed under the A47 where it crosses a disused railway line to the west of Sutton Heath Road. The existing Nene Way roundabout is to be removed and replaced with a new at grade roundabout (Sutton Heath roundabout) adjacent to Sutton Heath Road.

3.2 Proposed traffic management measures

3.2.1 Detailed traffic management measures will be developed later in the detailed design Stage.

3.3 Restrictions

3.3.1 Restrictions are currently envisaged to be as shown in Table 2 below. Traffic monitoring on initial days of TM will be carried out. Closure times will be moved from 21:00-06:00 to 22:00-05:00 if impact of full closures to customers has become severe.

Table 2. Restrictions

Restriction to be Implemented	Time of Day (Start to End)	Day/s in Week
Full closure times	21:00 – 06:00	Monday to Friday
Full closure times	21:00-06:00	Saturday
Full closure times	21:00-06:00	Sunday
Lane Closure times	20:00 – 06:00	Monday to Sunday
Mobile Lane Closure times	20:00 – 06:00	Monday to Sunday
Width Restriction	24 hours (static)	TBC

3.4 Operating lanes

3.4.1 Operating Lanes will generally be kept to the existing arrangement and will be detailed when the detailed design is completed.

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3.5 Speed limits

3.5.1 The speed limit would have to be reduced, both to ensure workforce and road user safety and due to the alterations to carriageway alignment.

Table 3. Speed Restrictions

Speed Limit (mph)	Location *(Start to End with respect to nearest junction or Marker Posts, if known)*	Justification for Speed Limit
40	Full extent of the Scheme (A47)	To match the existing speed limits

3.5.2 The temporary speed limits will be in place to enable safe operation of the temporary VRS and narrow lane systems, necessary to protect the workforce and public during the works, and to ensure sufficient working room for the temporary and permanent works to be installed. The minimised works area and deflection zone can be achieved by enforcing 40mph speed limits where required, however, a 'highest safe speed through roadworks' safety risk assessment pack will be produced, in line with GG104 framework, to ensure all options are thoroughly reviewed. The assessment will not be possible prior to detailed design.

3.5.3 Speed limit enforcement measures and methods will also be reviewed and considered during the temporary traffic management (TTM) design process and TTM design risk assessment.

3.6 Length of the traffic management

3.6.1 The overall extent of the TM on the A47 carriageways would be approximately 2.6km.

3.7 Carriageway and slip road closures

3.7.1 Full closures will be required for both construction activities where safe working room cannot be achieved, and the installation and removal of the traffic management system. Slip road closures are also envisaged for the A1 Slip roads and the complete A47 between Wansford and Sutton.

3.7.2 Full closures will be required for multiple activities, which may include, but are not limited to:

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- Construction of bridge deck.
- Resurfacing works.
- Phase changes.
- Road Marking installation.
- Construction of temporary widening.
- Construction of abutments.
- Earthworks Fill.

3.7.3 Where possible full carriageway closures will be avoided and the use of single lane running will be implemented, there will also be potential to use some of the constructed road during later phases of the project.

Table 4. Carriageway and Slip Road Closures

Type of Closure *(Slip road / Full carriageway)*	**Location** *(Start to End with respect to nearest junction or Marker Posts, if known)*	**Time of Day** *(Start to End)* **/ Stage in Programme**	**Closure Details**
Full Carriageway	Wansford to Sutton	Full closure (off-peak 9pm-6am) under diversion	Mainline closure in both directions
Full Carriageway	Sutton to Wansford	Full closure (off-peak 9pm-6am) under diversion	Mainline closure in both directions

3.8 Adjacent roadworks and other traffic management

3.8.1 The Project Team are to engage with HE once programme dates are confirmed and complete the table below as necessary.

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Table 5. Adjacent roadworks and other traffic management

Nearby Traffic Management Location	Distance from Project	Interaction with Diversion Route(s)	Duration	Contact Details	Road Spacing Compliant?
		Table to be updated at PCF Stage 5			

3.8.2 The Project Team are to engage with HE Network Occupancy team to confirm future predicted embargo dates and complete the table below as necessary.

Table 6. Bank Holidays and Embargos

Holiday	*Year*	*Year*	*Year*	*Year*
New Year's Day	2021	2022	2023	2024
Good Friday	02 April			
Easter Monday	05 April			
Early May Holiday	03 May			
Spring Bank Holiday	31 May		Table to be updated at PCF Stage 5	
Summer Bank Holiday	30 August			
Black Friday & Cyber Monday weekend	26 November 29 November			
Christmas Day	25 December			
Boxing Day	26 December			
Substitute Christmas Day	27 December			
Substitute Boxing Day	28 December			

3.9 Significant events and seasonal traffic

The Project Team are to engage with HE once programme dates are confirmed and complete/update the table below as necessary.

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Table 7. Significant Events and Seasonal Traffic

Event	Implications with TM	Proposed Mitigation Measures
Harvest Season	JTR Impacts	Working ground inclusive of Farmers Union already in place
Norfolk Agricultural Show	JTR, Capacity	

3.9.1 The TM Plan is a live document which will be kept updated throughout the project lifetime. Future updates of the TM Plan will ensure that relevant requirements of the Project Comms plan (e.g. as associated with Stage 6 construction works and traffic management) are incorporated.

3.10 Incident management

3.10.1 The provision of free recovery, speed enforcement and CCTV will need to be assessed. This may be done via a scheme GG104 guided safety risk assessment.

3.10.2 Once the above have been assessed, an incident management plan will be produced and appended to the TMP.

3.10.3 In the event of an accident the ROC shall be notified. Depending upon severity and the situation and action plan shall be confirmed with the ROC. This will include the need for emergency services, road closures, Variable Message Sign (VMS) activation (where applicable) and notification to adjoining networks, dependent upon the severity of the accident

3.10.4 Should 'free recovery' be a determined necessity (both through the above and the scheme DLOA), a 'drop of point' will need to be present. This will need to be away from criminal threat or activity or errant vehicles. Within this area the affected motorists should have access to:

- Phone service.
- Toilet facilities.
- Drinking water.
- Tea & Coffee.
- Shelter with light and heat.
- Baby changing facilities.
- TV.
- Wi-Fi.

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- Children's Games.

3.11 Incursion risk management

3.11.1 Incursion risk management will commence from the very first stages of design. It is imperative the traffic management is designed not only in accordance with the relevant legislation i.e. Traffic Signs Manual (TSM), Construction Design and Management Regulations (CDM) and Design Manual for Roads and Bridges (DMRB) but also considers driver behaviour, carriageway alignment, works access and egress locations, clarity through road works as per the 'Roadworks – A Customer View' document.

3.11.2 It is important that driver fatigue and behaviour is both analysed and monitored to prevent incursion through user error.

3.11.3 Where full closures are used, it is important that a safe system of work is adopted to ensure workforce safety and preventing errant vehicles from entering the works. This is achieved at gate points via an airlock system. Airlock systems are installed in accordance with 'Raising the Bar 27'.

3.11.4 Design risk assessments, analysis tools and relevant data collation are used throughout the design process.

Table 8. Incursion Risk Management

Incursion Risk	Proposed Control / Mitigation Measures
Driver following works vehicles into works access	Close access immediately after works vehicles have entered site.
Driver entering works access of own accord	Ensure works access location is in suitable place i.e. consider alignment of both existing carriageway and traffic management.
Breakdown – Driver entering closure due to vehicle breaking down and becoming stationary	Close monitoring of site surveillance Regular maintenance checks/Traffic Safety and Control Officer (TSCO) checks
Driver coming into contact with gate point	Full gate point Safe System of Work (SSOW)
Driver coming into contact with static taper	Installation of safety zone in accordance with TSM Chapter 8. Taper to be installed in accordance with TSM chapter 8. Taper locations to be assessed during traffic management design and assessment process.
Driver entering works at night due to confusion/sign blindness	Ensure TM design caters for associated human factors and site is easily navigable

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Figure 5 - Design Decision Tool Extract

20	Public Amenities	*YES*		*Service station, premier inn, Mcdonalds restaurant*
21	Public transport general	*YES*		*Bus Route – Ensure 6.75m working width is maintained on two way working*
22	Singular Events			*Refer to TMP PCF Stage 5*
23	Bus Route	*YES*		
24	HGV Route	*YES*		
25	Railways/Level Crossings		NO	
26	Overhead Services			TBC
27	Underground Services	*YES*		Permit to dig to be obtained from client for TVRS pinning
28	Environmental Factors			Refer to project environmental plan
29	Diversion Route	*YES*		Diversion routes approved and signed off by LHA and HE
30	Height Restrictions		NO	
31	Low/Weak Bridges		NO	
32	Weight Limits		NO	
33	One Way/Restriction		NO	

Category two – technical data

Traffic Management

Item No	Item Considered	Design Status/Description	Status Satisfactory	Details	Items Unknown or Not Applicable	Client/3rd Party Mitigation/Actions
1	Temporary Speed Limit		*YES*	Client submitted TTRO – status approved. Staged speed limit reduction		
2	Length of construction		*YES*	Circa 200m radius from centre of gyratory		
3	MP's/Chainage		*YES*	N/A		
4	Extents of TTRO		*YES*	See TTRO overview		
5	Lane Widths			Minimum of 6.75m for two way working. Single Lane width set at 3.4m		
6	Lateral Safety Zone		*YES*	0.5m (30mph) as per CH8 guidance		
7	Longitudinal Safety Zone		*YES*	10m desirable (30mph), however, will be increased to suit alignment		
8	Coning Detail		*YES*	Varies – See drawing for coning detail		
Advance Signing						
1	Advance Notification		TBC	Scheme boards with HE given description	Awaiting description	
2	Sign Design		TBC	In accordance with TSRGD		
3	Mounting Specifics		TBC	Toggled a frame mounting		

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Figure 6 - HE Incursion report template

Annex A – Vehicle Incursion Reporting Template

This form should be completed each time a vehicle incursion is witnessed. The information gained from this form will be used by Highways England to identify ways to eliminate vehicle incursions into your workplace. Please complete this form as fully as possible and hand it to your supervisor.

Name of road or contract	
Your name (This information will not be kept or used by Highways England)	
Date of incursion	
Time of incursion	
Exact location of incursion	
Weather Conditions	

Type of Incursion

- ☐ Intentional to seek benefit
- ☐ Intentional because of breakdown
- ☐ Intentional to seek information
- ☐ Unintentional – Driver confused
- ☐ Unintentional – Follow in
- ☐ Unintentional – Result of an accident

Please give any further details, including type of vehicle (use reverse of this form if required)	
Registration of vehicle (if known)	
Were the Police notified?	☐ Yes ☐ No
If yes, please give incident number	
Did the driver give any verbal abuse or threaten? physical abuse	☐ Yes ☐ No

Thank you for completing this form, the information you have provided will help us stop vehicle incursions in the future and improve your workplace safety

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Figure 7. Example gating vehicle record

Gating vehicle record/log sheet			
Job title		Site name/Location	

If a vehicle stops at your gate point please record all the details listed below before you communicate with them.
IMPORTANT – BEFORE YOU SPEAK TO MEMBERS OF THE PUBLIC TURN YOUR CAMERA ON.

Date	Time	Registration number	Vehicle make/colour	COMMENTS	Abuse or Altercation YES/NO	Operatives name

3.12 Driver compliance

3.12.1 Operationally, the project team will mitigate the risk of increased traffic on approach by maintaining carriageway capacity whilst allowing works to take place safely and efficiently. This will include continuously reviewing the success of road works through traffic modelling and data analysis to account for specific issues for example retail trends.

3.13 Communication plan

3.13.1 Communications between Highways England, its delivery partners and the key stakeholders will form an integral part of the approach to traffic management on this scheme. Communications will involve use of a wide range of channels to maximise its impact, all will be channelled through the dedicated scheme communications team. These will include:

- Roadside signage during planned works.
- Roadside signage that provides advance notice.
- Newsletters to, and meetings with the local community and businesses.
- Publicity campaigns surrounding key events within the construction programme.
- Twitter and other social media routes.
- Local authority meetings.
- Use of existing Highways England Variable message signs.

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- Use of strategically placed portable message signs.
- Use of journey time recognition (JTR) system.
- Short Message Service (SMS) updates.
- Waze Navigation and Live Traffic App updates.
- Local letter drops for the community and everyone on the diversion route.
- Stakeholder email lists.
- Community based updates.
- Information available in areas where there is a heavy footfall in the local areas.
- Motorway Service Areas (MSA) on approach.
- Radio travel news bulletins.
- Sharing of TM bulletins with neighbouring schemes to create a wider journey picture for those customers who travel further afield.
- Utilising councils/businesses webpages and request them to display project/TM updates.
- Having a presence in the neighbouring communities to become a trusted source of information.
- Tactile signage, talking signs and engagement with local, regional groups/centres in order to help to keep vulnerable users safe during construction.

3.13.2 A communications plan will be prepared for the Scheme and this will be updated throughout each stage.

3.14 Diversion route selection

3.14.1 The Diversion route (Appendix F) has been selected by the use of Highways England approved routes planner and the table below shows identified constraints that will need discussing further and the distance that will need to be travelled.

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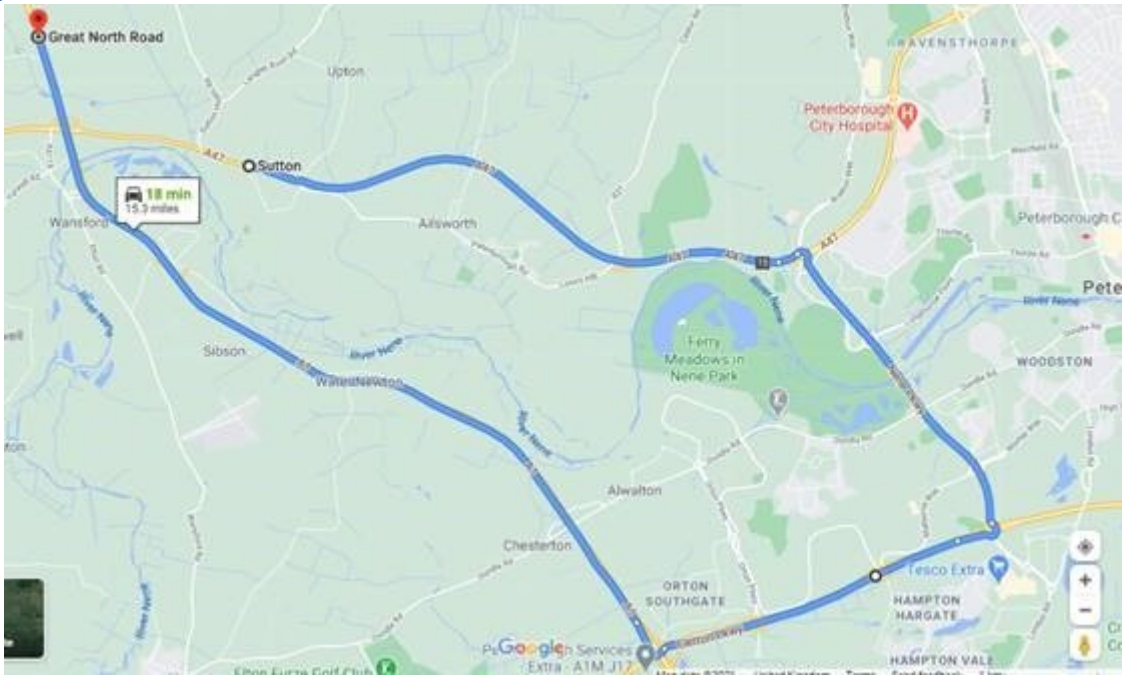
Table 9. Diversion Route

Diversion Route Description	Location *(Start to End with respect to nearest junction or Marker Posts, if known)*	Signs to be implemented	Length of Diversion	Duration of the Diversion	Additional Journey Time for the Customer due to Diversion Route	No. of Closures required
A47 Mainline Wansford Full Closure	Junction of A1/A47	Chapter 8 compliant diversion signage	15.3 miles	18 minutes (no traffic)	15 minutes	TBC

Figure 8 - Mainline Diversion Route



3.14.2 The route will be discussed with the local highways team, the Regional Operations Centre (ROC) and with the local councils that will be affected.

3.14.3 Diversion routes will be signed using scheme specific signing, this will include plotting the routes on Google Maps and TomTom for example. This will ensure that when the travelling public are using the diversions their satellite navigation is also recognising the approved route.

3.14.4 Journey time recognition will be used on the routes to determine the overall delay for the travelling public and this will be displayed on variable message boards, we will also look at using sensors to track hot spots on key routes that can automatically notify our control rooms and the travelling public.

3.14.5 All routes will be surveyed by the TM team i.e. Traffic Safety and Control Officer (TSCO) and designers to ensure suitability to users when in use. The project team will review several options when further into build phasing, such as the possibility of implementing escort systems.

3.14.6 The team will deliver good communications and engagement with communities along planned diversion routes, act on feedback where possible in advance, gain feedback from communities to establish community access requirements (local clubs, events, etc).

3.14.7 The team will assess and where practicable use VMS to display travel time on diversion routes both in advance and within the route(s).

3.14.8 The team will monitor the routes when in use to ensure incident management/response mitigates congestion and delays to the road users.

3.15 Safety measures

3.15.1 As a minimum the following measures will be in place to ensure the safety of all customer groups, including road users and the workforce.

Table 10. Safety Measures

Customer Group	Safety Measure
Workforce	Reduced Speed Limit, TVRS System, Safe Access/Egress points
Road User	Clear TM (RACV considerations), Clear road marking system, advanced signage of restrictions, strategic and advanced warning of full closure. Adequate lane widths for HGV content.
NMU	Pedestrian routes to be segregated from works clear and signed pedestrian routes.
Local Stakeholders	Communication of phasing, maintain clear access and egress to businesses.

3.16 Human Factors

3.16.1 A customer is defined as anyone we interact with throughout the life cycle of the project and is any person or organisation that uses or is affected by the SRN. According to Highways England Customer Group Definitions, this could include (but is not limited to) the following customer groups:

- Road users.
- Communities and community groups.
- Network reliant businesses.
- Emergency services.

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- Communities and pressure groups.
- Tenants and persons and organisations that lease from the Client.
- The public who use the SRN.
- Consideration to be given to strategic signage in relation to foreign haulage drivers due to works taking place on major route between the midlands and East Coast Ports.

3.16.2 In the preparation of the Traffic Management Plan, prior to implementation, a Human Centred Design approach will be used to review proposals to ensure that the needs of all customer groups are identified and addressed in the Traffic Management Plan where practicable. This behavioural-led approach is also aligned to HSE best practice guidance (http://www.hse.gov.uk/humanfactors/) and therefore also considers the needs of the workforce in terms of safety and wellbeing from a human factors perspective.

3.16.3 By understanding the behavioural drivers for customer satisfaction and aligning Traffic Management proposals to the 20 principles of Roadworks: A Customer View, the Human Centred Design approach includes the following aspects:

- Comprehensive identification of customer and stakeholder groups and their respective needs, as well as the safety and wellbeing of the workforce.
- Analysis to understand external influences such as political, social and economic factors, on travel demand, road user and stakeholder behaviour.
- Review and audit of Traffic Management plan to ensure adequate consideration of Customer needs.
- Review and input to communication interventions planning to support TM using behavioural change techniques – e.g. emotive rather than directive messaging to positively impact driver behaviour.

3.17 Proposals for management of network occupancy

3.17.1 Updates to this TM Plan will provide detail on all actions undertaken or proposed to assist the area maintenance provider in being compliant with the network management obligations specified in the:

- Network Management Manual (NMM) or;
- Asset Maintenance and Operational Requirements (AMOR) or;
- Highways England Managing Network Occupancy Requirements and;
- Accurately updating NOMS (Network Occupancy Management System) and our Digital Channels guidance.

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3.17.2 This will include, but not be exclusive to:

- Occupancy planning and consultation with the area maintenance provider.
- Management of Network Occupancy Planning within the Major Projects Contractor organisation.
- Management and contact protocol with the area maintenance provider during times of occupancy.

3.17.3 The following is an extract from Highways England '7 Day for KPI Road Closures' document and details the procedure that must be adopted when making roadspace applications.

Highways England is changing the Key Performance Indicator relating to road and slip road closures. This measure aims to improve the accuracy of roadworks information by locking down the next 7 days of closures so that our customers can better plan their journeys in advance and be confident of the information we provide.

There are 4 categories that we are currently measured on from 1 April. This is a national KPI and affects all Highways England work, including 3rd Party and Major Projects, and there is not much room for error!

- *On-time – Planned for 7 days in advance and started within 1 hour (either side) of the planned start time – PASS!*
- *Did not go ahead – Planned for 7 days in advance but did not go ahead (cancelled) – FAIL!*
- *Not on time – Planned for 7 days in advance but did not happen within 1 hour (either side) of planned start time – FAIL!*
- *Un-planned – Not planned 7 days in advance but added and went ahead. – FAIL!*

To make an instant impact on the next 7 days, the East Region will be imposing a departure process for any applications for road closures within the rolling 7-day period.

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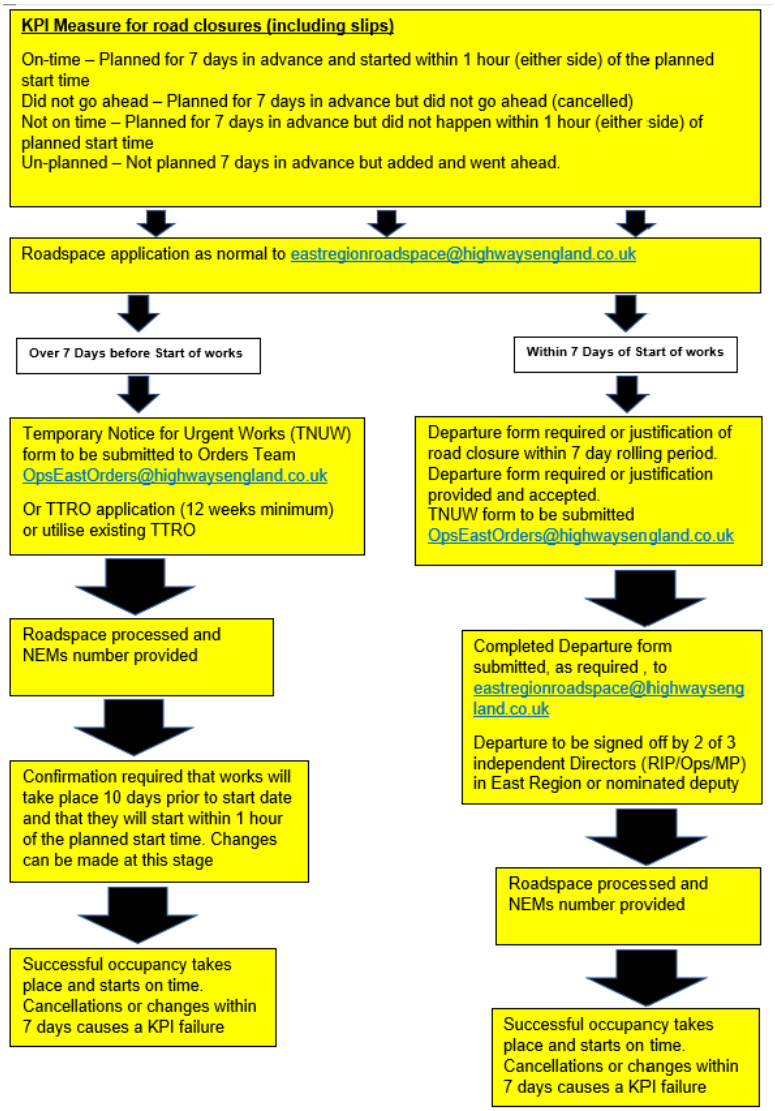
Figure 9 - Departure process for Rolling 7 Day Roadworks Accuracy Measure



3.18 Implications of traffic management measures

3.18.1 Intelligent Transport Service (ITS)

Disruption/Implications to ITS will be reviewed and updated at a later stage.

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Table 11. Intelligent Transport Service Infrastructure Impacts

Infrastructure	Impact on Infrastructure	Duration
	Table to be updated at PCF Stage 5	

3.19 Operations

3.19.1 Updates to this TM Plan will describe how the project has or will engage with services provided by the Regional Control Centre (RCC)/Traffic Officer Service (TOS) to help manage disruption.

3.19.2 As a minimum, this section will include:

- A strategy to mitigate any risks on operations – consideration will be given to the implications on day-to-day operations (such as incident management). It will provide a reference for and link to the Incident Management Plan.
- Any roadside infrastructure that impacts the operation of TOS/RCC(s) (e.g. VMS, Automatic Number Plate Recognition (ANPR) cameras, traffic loops) that will be removed during construction will be detailed. This will be cross referred to the Intelligent Transport Service in Section 3.18.1.
- Suitable measures/strategies that are being proposed/have been agreed with the TOS/RCC(s) to mitigate the disruption and impact.

3.20 Maintenance activities

3.20.1 This section will be updated to describe how the project will engage with the maintenance community to understand and capture details of any disruption to and impact on services they provide.

3.20.2 As a minimum, this section will include:

- Impact on the maintenance service provider, including those responsible for maintenance of technology (in liaison with National Traffic Operations Centre (NTOC) for ANPR and inductive loops equipment).
- Suitable measures / strategies that are being proposed or have been agreed with the maintenance service provider (following liaison with NTOC for ANPR and inductive loops equipment) to mitigate the disruption and impact.
- Status of the Detailed Local Operating Agreement (DLOA) and include reference and link to document.

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3.21 Other service providers

3.21.1 Updates to this TM Plan will provide detail of impact on services provided by 'others' such as Vehicle and Operator Services Agency (VOSA), Department for Transport (DfT) Statistics, National Roads Telecommunications Service (NRTS) contractor, etc. and how this will be managed.

3.21.2 As a minimum, this section will include:

- Impact on these other service providers.
- Suitable measures / strategies which are being proposed / have been agreed with these other service providers to mitigate the impacts on their services.

3.22 TM Plan management

3.22.1 The TM Plan will be used as a live document that is updated regularly and reviewed in line with changes in the works on site.

3.22.2 Gathering data will be an important part of managing this TM Plan. The data will be used to understand and monitor how the TM is impacting on the road performance and help to identify opportunities to mitigate any issues.

3.22.3 Updates to this TM Plan will provide detail on the provisions that may be put in place for reactively and proactively managing the TM Plan throughout the project, including:

- Who will be responsible for managing the TM Plan on site
- What data will be collected as part of the Traffic Management activities.
- The criteria for updating the TM Plan (e.g. in relation to traffic accident rates).

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Appendix A TM Options Selection

Classification L2 - Business Data

TM Option	Details of TM Option	Advantages *(including time, cost, customer impact, safety implications, operational impact)*	Disadvantages *(including time, cost, customer impact, safety implications, operational impact)*	Are their further implications or additional TM requirements if this option is selected?	Option Selected or Rejected? *(if selected, colour cell green and if rejected, colour cell red)*
1	Building a new dual carriageway partly to the North and also to the South of the existing A47	Potential for 24 hr working leading to reduction in overall programme duration. Works carried out within VRS separated work zone. Traditional form of construction using routine civil engineering techniques, hence better availability of supply chain resource.	Speed limit reductions Potential JTR impact Increased zone of influence Mainly offline working	Additional full closures will be required for mainline narrow lanes installation and removal Temporary mainline speed restriction maintenance	
		•	•		
		•	•		
		•	•		
		•	•		

Appendix B Roadworks Principles

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The Appendix B table details the proposed project approach to addressing the Principles identified within Roadworks a Customer View (RACV) and the Roadworks a Customer View Implementation Toolkit. Within the table, the 'proposed approach' is the preferred option which has been selected and the project team is required to communicate the status of the project and activities completed at the current stage. The colour-coded text in the table is an indicator of the level of activities anticipated to have been completed during **PCF Stage 3** and **PCF Stage 5**, and should be used as guidance for completing this table. This text is based on best practice within the RACV Implementation Toolkit but should not be considered exhaustive. Within 'Other options considered', project teams should record any discounted options. The RACV Implementation Toolkit should be utilised to provide further guidance regarding best practice for achieving success with regards to each Customer Principle.

Colour Coding Key

Green activities – Activities for planning, identifying and set up within PCF Stage 3 in anticipation of further detailed works to be undertaken within PCF Stage 5. These activities should also be refined within PCF Stage 5.
Blue activities – Activities to be completed during PCF Stage 5.

Table 12. Appendix B Roadworks Principles

		Key Principles	Proposed Approach	Other options considered (rejected/discounted options)
Planning and Design of Traffic Management	1	Other roadworks and improvements	• *TM planned in co-ordination with other projects and areas across the region (Highways England and non-Highways England). There are multiple projects in planning stages across the East, including the A428 and other A47 schemes. The project team will communicate with project sponsor, local highway authorities, adjoining projects and the local Highways England teams to ensure efficient co-ordination and also collaboration where possible.* • *Consideration of diversion routes in co-ordination with other projects and areas across the region (Highways England and non-Highways England). There are multiple projects in planning stages across the East, including the A428 and other A47 schemes. The project team will communicate with project sponsor, local highway authorities, adjoining projects and the local Highways England teams to ensure efficient co-ordination and also collaboration where possible.* • *Identify local regular forums prepared to review plans for TM* • *Liaison with NOMS representative for works within the area to avoid clashes in roadspace but also potential sharing of closures where possible.* • *Co-ordination of diversion routes at key decision points and publication once approved.* • *Identify and mitigate the impact of major events by engaging with LHA's, Local Stakeholders and NOMS representative*	
	2	Speed of delivery	• *Review proposed key design decisions to ensure these can be constructed without significant impact on customers* • *Carry out high level assessment of both construction options detailed within TMP; highlighting risk, impact and opportunity.*	
	3	Length of roadworks	• *Phasing of road works delivery* • *Length of road works in accordance with Traffic Signs Manual, Chapter 8, Part 3* • *Suitable traffic modelling of the TM proposals to understand the impact on the customer* • *TM proposals to incorporate and be influenced by current traffic data and also traffic modelling*	• *Options assessment being carried out by project team. Length of roadworks will be dependent on option selection and as such updated at stage 5.*
	4	Lane width	• *Consider alternative layout options, including widening non-standard/temporary 'narrow' lanes within roadworks, in design and communication of reasoning to customers* • *Consider 2 x contraflow scenarios within option one proposal. Lane width to be increased where single lane running is proposed.* • *Alternate widths to facilitate traffic flows* • *Smooth road surfaces and clear demarcation during works and after TM has been removed, and ensure sufficient budget is available to maintain this*	
	5	Speed Limit	• *Options considered to maintain the permanent speed limit and why a lower speed limit is required, where applicable* • *Suitable traffic modelling of the TM proposals to understand the impact on the customer*	• *Should option 1 (contraflow) be selected mandatory speed limit will be dependent upon crossover design.*
	6	Line demarcation	• *Removal of white line set within contracts as a standard requirement*	

	7	Visibility of temporary barrier	• *TVRS proposals to be in accordance with DMRB with safety risk assessment of TM design to be carried out.*	
	8	Night-time visibility	• *Risks and requirements of temporary lighting*	
Information Provision	9	Advance notice of works	• *Providing advanced notice, i.e. a minimum of 4 weeks prior to project commencing* • *Use of billboards and VMS at roadside prior to start of roadworks* • *Information communicated through various networks/media*	
	10	Scheme information at the roadside	• *Dependent upon the scale of the project use of either billboards or temporary signage to display reasons and timescales for the work, including signage along diversion routes, in accordance with MPI 48-042016* • *Number and locations of billboards or temporary signage within main works and along diversion routes in respect to TM* • *Size and appearance of temporary signage/billboards across the scheme*	
	11	Electronic signage	• *Use of standard approach in accordance with the Variable Signs and Signals Policy for flexible project specific messaging and in accordance with MPI 54-062016 (reissued 15/08/2018)* • *Use and location of portable VMS for travel time and project specific messaging* • *Consideration of signing strategy with respect to information overload* • *Consistency in language across projects for VMS messages*	
	12	Travel Time VMS (TTVMS)	• *To be updated at PCF Stage 5*	
	13	Visible progress	• *To be updated at PCF Stage 5*	
Engaging and Communicating with Customers	14	Local communications and outreach	• *Approach/strategy for delivering good communications at the right time* • *Stakeholder mapping for project/area* • *Use of public exhibitions* • *Use of various media for communications, e.g. newsletters, radio, etc.* • *Understanding of public requirements and key events for TM* • *Diversion route engagement (pre- and post-works) to understand access requirements* • *Progress updates* • *Communications plan*	
	15	Use multiple media channels, regularly	• *Identify provision/frequency of information and media methods to be used (make proportional to project)* • *Use of NOMS to ensure accuracy of traffic data* • *Engagement with appropriate organisations to raise awareness/advertise through their sites*	
	16	Impactful messages	• *Information to be communicated – programme/community/customer benefit messages* • *Identify media to be used*	
	17	Explain no activity	• *Strategy to provide explanation of no activity and manage customer perception of project*	
	18	Seek customer feedback on new Traffic Management	• *To be updated at PCF stage 5*	
	19	Understand customer experience	• *Agree approach to collecting customer feedback* • *Agree mechanisms to engage with various customers* • *Identify process for analysis of correspondence and feedback*	

	20	Complete the feedback loop	• *To be updated at PCF Stage 5*	

Appendix C Customer Impact Assessment Tool

The Customer Impact Assessment Tool in Appendix C (Tables 14, 15 and 16) is taken from the Roadworks a Customer View (RACV) Implementation Toolkit. This should be completed prior to Section 2.1 to provide an indicator of the level of impact anticipated by the project on each customer group at the current PCF stage. Following completion of Appendix C. The Customer Requirements Log Table 1 will be updates focusing on how the TM Plan takes account of the requirements of the customer groups rated as red and amber within this appendix, high and medium impact respectively. The requirements of the Customer Impact Mitigation Tool from the RACV Implementation Toolkit have also been included in Table 1.

Table 13. Impact of roadworks and associated construction traffic on different types of road users and level of impact

	Road user type (e.g. commuters, leisure drivers, freight, etc.)	Level of impact		
		High	Medium	Low
1.	Local residents to project		√	
2.	HGV drivers, car drivers, motorcyclists		√	
3.	WCHR's		√	
4.	Emergency services			√
5.				
6.				
7.				

Table 14. Impact of roadworks and associated construction traffic on communities and level of impact

	Community (e.g. commuters, leisure drivers, freight, non-motorised user, etc.)	Level of impact		
		High	Medium	Low
1.	Commuters		√	
2.	Leisure Drivers			√
3.	Cyclists/Pedestrians/NMUs			√
4.	Freight		√	
5.				
6.				
7.				

Table 15. Impact of diversion routes on road users and communities and level of impact

	Customer types (e.g. commuters, leisure drivers, freight, industrial estates, residents, local authorities, retail parks, schools, stadiums, local events, landowners, etc.)	Level of impact		
		High	Medium	Low
1.	Adjacent Local Businesses		√	
2.	Local communities/villages			√
3.	Warehouse Distribution Centres		√	

Appendix D Dynamic Roadworks Benchmarking Scores

Table 16 – Dynamic Roadworks Benchmarking Template

Vision	Green/ Amber/ Red/ NA/ Not yet known	Project Evidence for RAG Rating
1. Speeds *Varying the speed limits so they are appropriate for the work taking place*	N/A	
2. Length *Shortening the length of roadworks*	N/A	
3. Closures and diversions *Appropriate use of full road closures (including slip road closures) and associated diversions*	N/A	
4. Delivering quicker *Delivering road works quicker*	N/A	
5. Explaining activity *Explaining clearly what activities are, or are not, taking place*	N/A	

Appendix E Implementing the highest safe speed within roadworks checklist

Table 17 - Checklist for implementing the highest safe speed within road works

	Checklist items	Reasoning
Development of design brief	Incorporate requirements outlined in *Chief Highways Engineer Memorandum 446/19*	*(Outline how you have incorporated the requirements outlined in the Chief Highways Engineer Memorandum 446/19 into your design brief)*
Safety risk assessment	Where 60mph speed restrictions are to be used, set a safety objective to ensure the safety baseline can be maintained	*(Detail the safety objectives that have been set to ensure the safety baseline can be maintained)*
	Review appropriate evidence to inform the analysis of risk	*(Outline what sources of evidence have been used to inform the analysis of risk)*
	Ensure your scheme specific risk assessment captures all reasonably foreseeable hazards	*(Provide a summary of all the foreseeable hazards identified in your safety risk assessment when evaluating the implementation of a temporary speed restriction, along with minutes from any associated safety control review group meeting if applicable)*
Work programme and traffic management proposal	Ensure design of temporary traffic management is suitable for road users travelling at the proposed speed restriction	*(Detail how you have ensured your temporary traffic management design is suitable for road users traveling at the proposed speed restriction)*
	Where the same speed restriction cannot be used across the entirety of the scheme, consider use of varying restrictions, where suitable	*(Outline where/if varying speed restrictions have been used)*
Implementation	Consider undertaking additional safety audits to ensure that the required mitigations outlined within your safety risk assessment are implemented correctly	*(Provide details of the audit process you plan in implementing, including frequency of reviews and updates)*
	Where enforcement is required as part of your safety risk assessment, engage with enforcement agencies early	*(Where speed enforcement is required as part of your safety risk assessment, summarise your approach for how you will undertake early engagement with enforcement agencies)*
	Obtain the appropriate Temporary Traffic Restriction Orders required for your proposal	

Validation	Where assumptions in your safety risk assessment were informed by expert opinion or other sources of data, monitor suitable metrics to provide information on the performance of implemented mitigations	*(Outline what suitable performance metrics will be monitored)*
	Update your safety risk assessment and introduce new mitigations to maintain safety baseline if required	*(Provide details of the safety risk assessment review process you plan in implemented, including frequency of reviews and updates)*

Appendix F Diversion Route

Diversion Route