Convoy Operation Single Carriageway

RAMS003-CEN

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1 Document Summary

1.1 This RAMS document covers the generic installation, operation and collection of temporary traffic control use of Shuttle Lane Working with a Convoy layout.

1.2 This document has been put together using guidelines set out in the following documents.

- Safety at Street Works and Road Works
- Traffic Signs Manual Chapter 8 Part 1 2009
- National Highways Sector Schemes 12D

1.3 Where normal traffic management arrangements are not feasible because of restricted highway width, and diversion is impracticable, a method of convoy traffic management may be used. In this method, traffic is brought to a halt in advance of road works and is then led slowly in single file through the site past the works by an appropriately signed works vehicle.

1.4 It is essential with little or no safety zone clearance that traffic speeds past the working space must be reliably reduced to 10mph or less, and an agreed safe method of working imposed on the site.

1.5 It applies to all highways and roads, except motorways and any dual carriageways, where convoy works are required on a dual carriageway with a speed limit of 50 mph or more the relevant RAMS **MUST** be read in conjunction with this document. This document applies to works carried out by or on behalf of both highway authorities and statutory undertakers.

1.6 Local highway authorities have a statutory duty to co-ordinate all works in the streets for which they are responsible. Similarly, Undertakers have a statutory duty to co-operate with the highway authority and with other undertakers.

1.7 Liaison with the highway authority and other authorities or statutory bodies may be required in planning the works to obtain any necessary licences, approvals and temporary traffic regulation orders/notices in advance of the works commencing. No works are to be installed without the relevant licences and approvals in place.

1.8 The basic principles of convoy working are the same for all works situations. On single carriageway roads, the choice between single and three-vehicle working will depend on the traffic flow and the characteristics of the site. The single-vehicle method will be more appropriate when flows are low and there are convenient locations for turning round at each end of the works.

1.9 The way in which these principles are applied is dependent on the number of convoy vehicles used, the ease with which these vehicles can be turned round after they have led traffic through the site, and whether the convoy system is being operated on a unidirectional or a shuttle basis.

1.10 No works are to be installed without the relevant licences and approvals in place.

1.11 A Task Briefing will be given for all works, detailing any site-specific information relevant to the specific works being undertaken.

1.12 If any risks, operational or environmental, are identified when carrying out the on site-specific risk assessment that compromises safety you **MUST** inform the Contract Manager immediately and prior to the deployment of any traffic management equipment.

1.13 If at any point throughout your work, you encounter an unsafe situation you **MUST** stop work and contact your manager or supervisor immediately for guidance.

1.14 All Incidents, Collisions, Near Misses and Accidents are to be reported through the Notify IM app immediately.

1.15 All Incidents, Collisions, Near Misses and Accidents are to be reported directly to the client.

1.16 This method statement is to be read in conjunction with RAMS Appendix A (Standard Clauses)

1.17 RAMS Appendix A (Standard Clauses) is to be attached / sent along with this method statement.

Note Any deviation from these RAMS or any linked documents mentioned below, must be agreed with the QHSE Manager.

2 Training

2.1 TM Operatives working under this method statement must have undergone suitable training and competency assessments to satisfy the requirements of the nationally recognised standard.

- NHSS 12D M4 Convoy Working.
- NHSS 12D M5 Multi Phase Traffic Signals (more than 2 legs)
- NHSS 12D M1/M2

3 Vehicle

3.1 At a minimum, a traffic management maintenance/inspection or installation vehicle will be used in accordance with Chapter 8 Traffic Signs Manual.

- Conspicuous colour
- Reflective Markings (Chevrons on the rear of the vehicle)
- Roof mounted 360 beacon + rear strobe LED's
- "HIGHWAY MAINTENANCE" SIGN
- High visibility fluorescent yellow retroreflective strip alongside of the vehicle
- Company Livery
- Work lights
- Reverse Bleeper

3.2 A full digital check shall be carried out and recorded prior to leaving the yard, depot or at the shift changeover point. Any defects are to be reported accordingly.

3.3 The vehicles shall be loaded to ensure the equipment is secure and in such a manner so as to enable safe unloading in the correct order on site.

3.4 All drivers are to have driving licences checked on a regular basis (usually, every 6 months) prior to commencing any work, with a record being kept with the employee's HR Department and made available at request by main client.

3.5 All vehicles should carry a fire extinguisher for minor incidents. Major incidents would require the assistance of the fire service (contactable on 999 or 112 emergency calls only) other means of communication on site will be via a mobile phone, but, not during the installation of any TM equipment.

4 Personal Protective Equipment (PPE)

4.1 Minimum requirements on site for these RAMS for all personnel are:

Hard Hat	Eye Protection	Hi-Vis Clothing	Safety Gloves	Safety Boots
				
Colour dependent on role, with 4-point chin strap that meet EN397 & EN12 492 standards. Head torch to be worn for night working and poor visibility	Safety glasses or goggles To be worn for task specific work or when required by client / site	Long sleeve Hi-Vis Jacket EN 20 471 class 3 Hi-Vis trousers EN ISO 20 471 class 1	Minimum of cut level F	(laced only) metatarsal if required by client / contractor S3 steel toe cap with ankle support

Black	White	Blue
		
SMSTS Managers and SSSTS Supervisors	General use, Managers, Clients and Competent Operatives	Trainee workers and Site visitors

Note The above PPE requirements apply to either Yellow or Orange (this could depend on Client's requirements). PPE is to be clean, fit for purpose and identifiable with the company logo.

5 Stop / Go Limitations

5.1 Before setting up any traffic control, a risk assessment must be undertaken following the table of limitations below from the Safety at Street Works and Road Works A Code of Practice 2013 2nd impression (with amendments), June 2014 and Traffic Signs Manual Chapter 8 Part 1 2009 table 5.2 for the operation of Portable Traffic Signals. If these criteria cannot be met, you MUST consult your supervisor or Manager.

Method	Max Speed Limit (MPH)	Coned Area Length	Traffic Flow (Maximum)	Notes
Stop / Go Boards	Temporary limit Of 10 mph	N/A	N/A	See Convoy working on Page 68 of the Safety at Street Works and Road Works 2013.

5.2 Convoy working may be used during the hours of daylight or darkness and can be used on:

- Single carriageway roads where traffic travels either in a single direction, or in alternating opposite directions.
- Individual carriageways of two-lane all-purpose dual carriageway roads where traffic travels in one direction only and works have reduced the traffic to single file: and
- Carriageways during surface dressing operations when it is considered necessary to ensure compliance with speed limits which have been implemented to protect newly laid surface dressing.

6 Unobstructed Widths

6.1 Adequate unobstructed road width is required to allow traffic to flow safely past the work site. Where such widths cannot be provided, appropriate traffic control must be considered.

6.2 The standard widths are designed to maintain access for buses and heavy goods vehicles and must be provided wherever practicable. Where this is not practicable, and where your risk assessment concludes that it is appropriate to do so, restricted lane widths are permissible.

Work Type	Standard Normal Traffic inc. Buses & HGVs	Restricted Cars & Light Vehicles Only
2-way working	6.75m minimum	5.5m minimum
Shuttle working	3.25–3.50 m desirable width range 3.0 m absolute minimum	3.25 m desirable minimum width 2.5 m absolute minimum

7 Pre-Works

7.1 Prior to leaving the depot the TM Operative(s) MUST ensure the following:

- They have the correct PPE to undertake the works in accordance with the Task Briefing and any client specific requirements.
- They have in their possession their relevant Lantra training record card.
- All the required documentation is available on the Field Service System for the works they are to undertake.
- They understand what is required of them through the Task Briefing, if in doubt they are to speak to their Supervisor/Manager.

Note Depending on the client's requirements the TMO's working on these works maybe required to attend a daily briefing.

- They understand RAMS and other associated documentation for the works.
- Completed, Vehicle Daily Walk around check.
- Kit is suitable for the works to be undertaken; defected kit is not to be used.

Note The TM Operative is to ensure that the local depot telephone number is clearly visible on the rear of the site signs.

- Kit that is required for the works is as per the traffic management plan and spares.
- Kit is securely loaded on to the vehicle; vehicle must not be overloaded.
- Correct quantities of 2-way radios are available for all TMO's, tested, that they are fully charged, a spare radio and at least 1 spare battery (fully charged) per radio are available.
- A "Convoy vehicle no overtaking" sign is required for any vehicle that leads the convoy.

8 Portable Traffic Light Requirements for Convoy Works

8.1 Each leg of the convoy MUST have a set of double banked portable traffic lights.

8.2 All portable traffic lights must be Independently operated by at least one qualified TMO

8.3 The qualified TMO is to be positioned in a safe place so that the portable traffic lights can be operated.

8.4 Positioned so all oncoming traffic has a clear view.

8.5 Each TMO is to have a working radio with at least 1 spare battery.

8.6 Traffic light boxes to have company logo and local area contact number displayed on them

9 Arriving On Site

9.1 On arriving on site, the TM Operative MUST

- Park your vehicle in a safe area
- Carry out a traffic count's as per Stop / Go limitations section.
- Carry out the on-Site Risk Assessment using the Field Service System
- Take Pre installation Photos – from a safe location.

10 Install

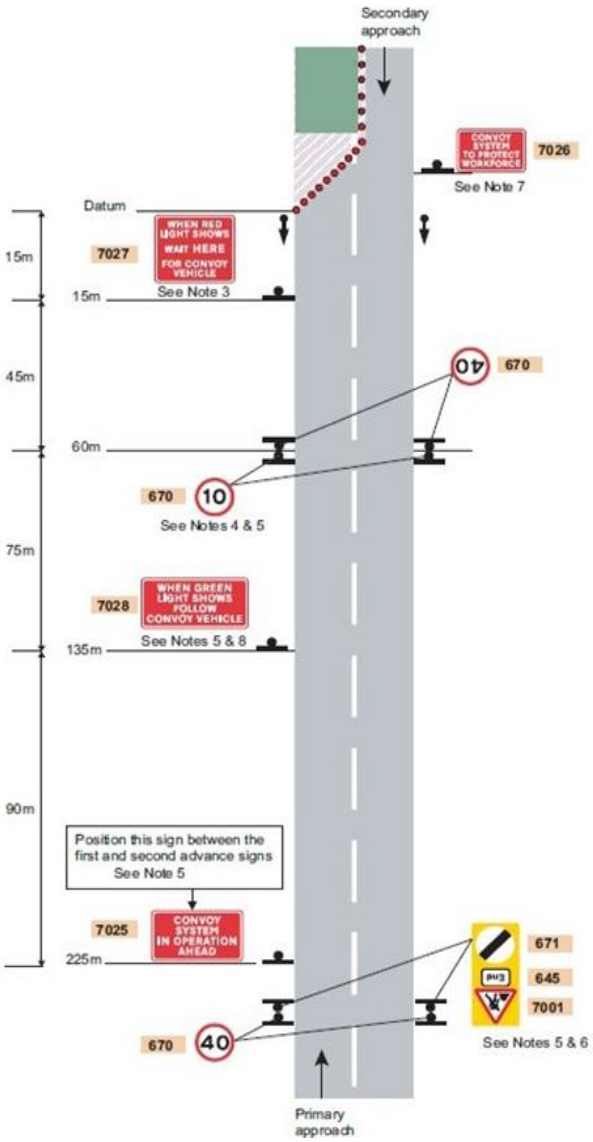
10.1 Placing of the equipment will be carried out when traffic volume is low, (i.e., off peak periods) where possible. All advance warning signing (AWS) (Equipment) will be in position prior to installation of any carriageway restriction.

10.2 The signs shown on **Fig 1** are those specifically required for convoy working. These signs supplement normal signing for traffic management control using either STOP/GO boards or Portable Traffic Signals.

10.3 Traffic Management is to be installed using either RAMS012A, RAMS102B or RAMS013.

10.4 Under no circumstances are Convoy works to be carried out until the correct traffic management is in place.

Fig 1 – Signs that supplement normal signing for traffic control



10.5 For one-way working, signs should be provided only for traffic in the relevant direction.

10.6 For two-way working the same signing is used on the primary and secondary approaches to the works.

10.7 (Fig 1) When “STOP/GO” boards are used, the legend on diagram 7027 shall be changed by substituting “STOP SIGN” for “RED LIGHT”. The position of the sign in relation to the signals or “STOP/GO” boards shall be the same as the sign to diagram 7011 shown in (Fig 2, Pg 8).

10.8 (Fig 1) A pair of speed limit signs must be placed at the point where the temporary limit begins, and repeater signs should be placed throughout the works site at 200 m intervals on alternate sides of the road.

10.9 (Fig 1) Position each sign so that it does not obscure any other sign and is not obscured itself.

10.10 (Fig 1) The end of the restrictions may be indicated by a sign to diagram 7001 with an “End” plate to diagram 645. If the temporary speed limit masks a change in the permanent speed limit at some point within the works, a sign showing the new limit must be erected on each side of the carriageway at the end of the works.

10.11 (Fig 1) The sign to diagram 7026 should be repeated at 200 m intervals through the site.

10.12 (fig 1) When “STOP/GO” boards are used, the legend on diagram 7028 shall be changed by substituting “AT TRAFFIC CONTROL” for “WHEN GREEN LIGHT SHOWS”.

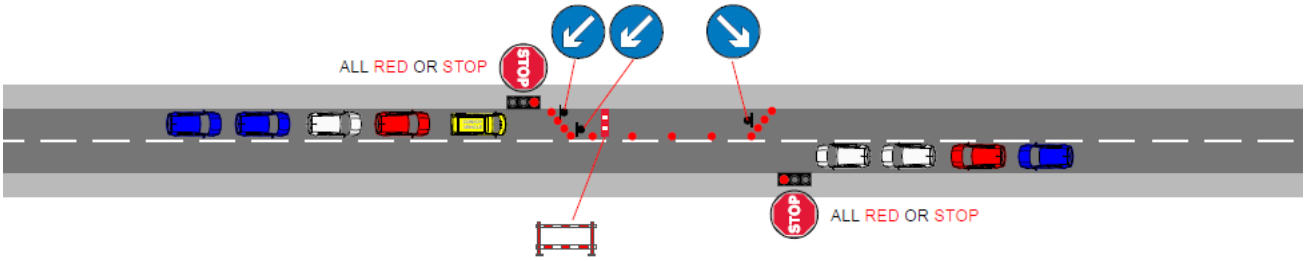
10.13 The extent of the area provided for convoy vehicles to turn should be assessed to ensure adequate clearances.

11 Convoy Working Single Carriageway – Single Vehicle Working

11.1 Convoy vehicles drivers are instructed that they are not empowered to carry out manoeuvres other than those, which any other driver could do.

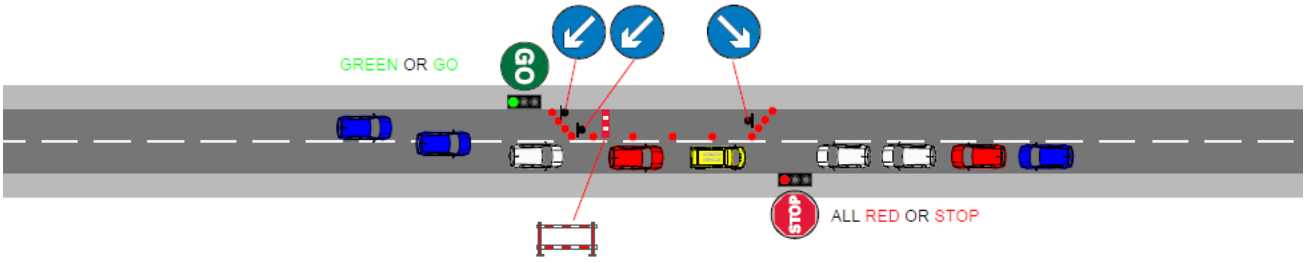
11.2 A full Radio check will be carried out just prior to the start of Convoy Operations.

11.3 With both signs on “STOP”, (Or “ALL Red” when using Portable Traffic Lights) the convoy vehicle moves into place at the head of the queue in front of the “. . . WAIT HERE FOR CONVOY VEHICLE”



11.4 The sign is changed to “GO” (Or set to Green when using Portable Traffic Lights) and the convoy vehicle sets off, leading the traffic past the works at a speed of 10 mph or less.

11.5 The TMO radios through to the other TMO controlling the opposite leg informing them of the last vehicle through the convoy. (this can be vehicle make, colour and model)

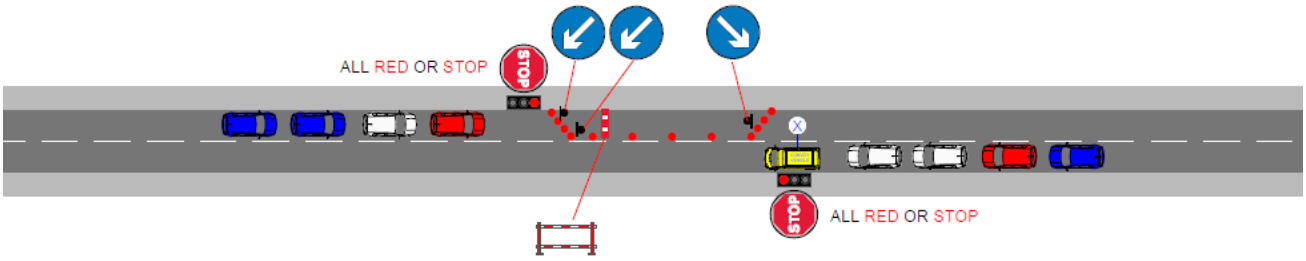


11.6 The sign is changed to “STOP” (Or to Red when using Portable Traffic Lights) when the last vehicle in the queue has entered the working area. At busy periods this may have to be restricted to a specific number of vehicles.

11.7 The convoy vehicle is to continue far enough past the work site that it does not give the opportunity for traffic to speed up behind within the works area.

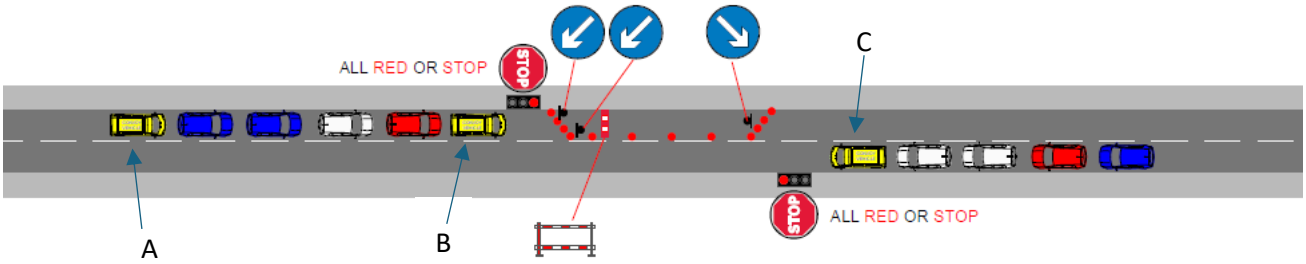
11.8 The convoy vehicle will then pull over in a save place, waits until the last vehicle has passed before turning round to proceed in the return direction as Step 1. (at No point should any convoy vehicles turn around within the works area(s)

11.9 The convoy vehicle at position X should not obscure the “STOP” (Or Red light when using Portable Traffic Lights) sign for the opposing vehicles.



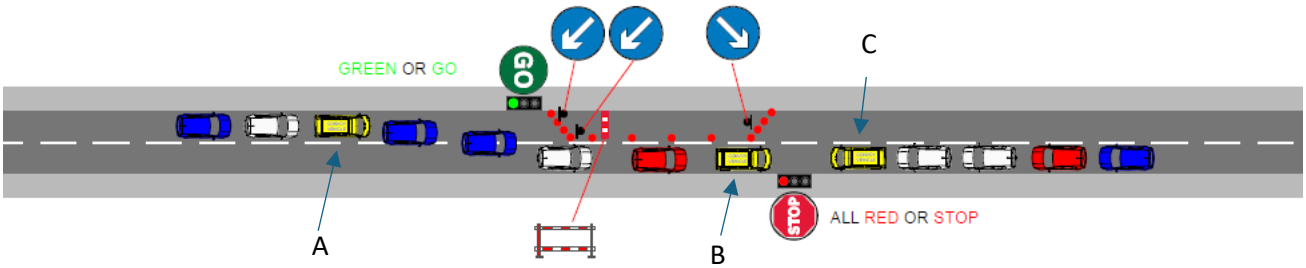
12 Convoy Operation Single Carriageway – Three Vehicle Working

12.1 Ensure the signs at both ends are on "STOP" (Or set to "All Red" when using Portable Traffic Lights) The convoy escort vehicles are labelled A, B and C.

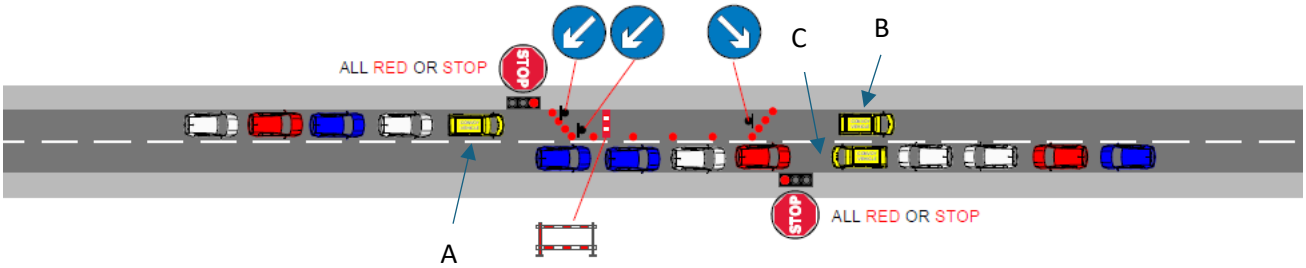


12.2 The sign in front of B is switched to "GO" (Or set to Green when using Portable Traffic Lights) and B then sets off leading traffic past the works at a speed of10 mph.

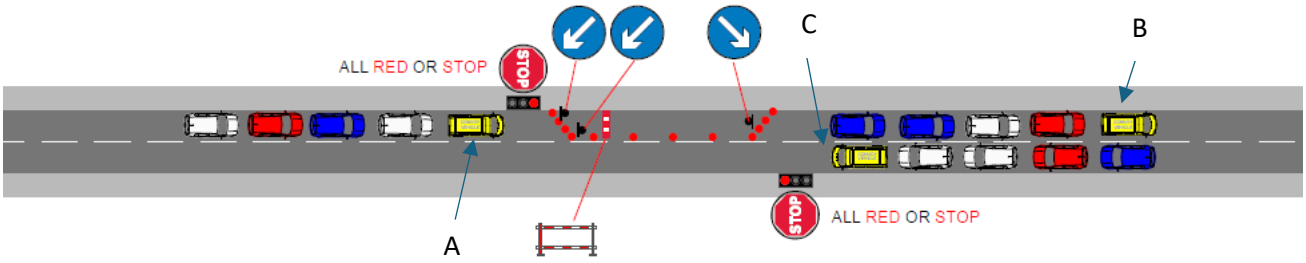
12.3 The TMO radios through to the other TMO's controlling the opposite leg informing them of the last vehicle through the convoy. (this can be vehicle make, colour and model)



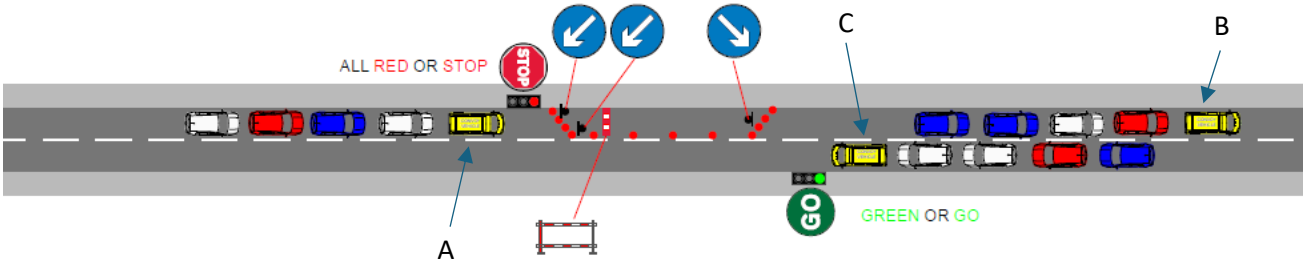
12.4 TM Operative A radios the Sign Operator to switch to "all-stop" (Or set to "All Red" when using Portable Traffic Lights) as he approaches the sign and stops in front of it to prevent following vehicles passing the sign on "STOP.



12.5 Vehicle B continues to lead the following traffic at not more than 10 mph until well clear of the works, thus ensuring that vehicles at the back of the convoy are still travelling at 10 mph.

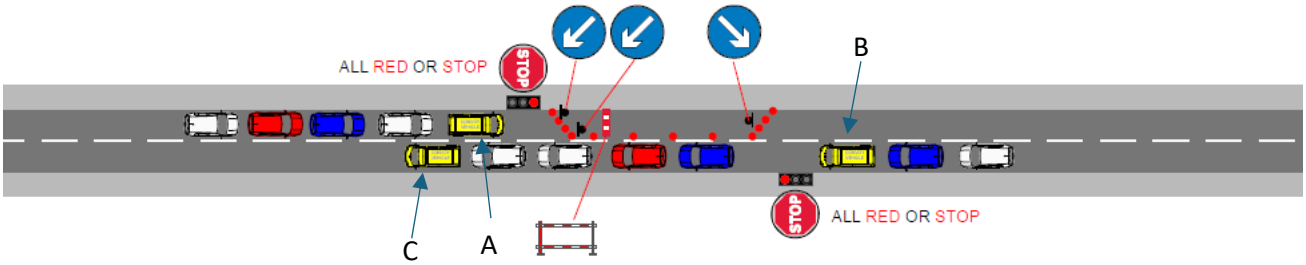


12.6 TM Operative C radios the Sign Operator when the last vehicle of the convoy has cleared the works to change his sign to “GO” (Or set to Green when using Portable Traffic Lights). TM Operative B turns around and joins the queue.



12.7 TM Operative C sets off leading traffic past the works at a speed of 10 mph. TM Operative B radios the sign operator to switch to “all-stop” (“All Red”) as they approach the sign. Depending on the length of the queue, convoy vehicle B may need to enter the queue part way along its length to limit the length of the convoy past the works.

This process is then repeated from Step 2 above, but from the opposite direction



12.8 A provision for a change of driver is to be made if long durations of work are to be carried out.

12.9 Vehicle queue lengths should be regularly monitored. If unduly large amounts of traffic occur, convoying will be suspended to clear the delay.

13 Vehicle Breach

13.1 In the event that a member of the public, works vehicle or emergency services vehicle breeches (jumps) any of the convoy legs then the below is to be undertaken.

- The TMO operating the convoy traffic lights or stop/go board leg that has been breached is to radio to all other TMO’s operating the other traffic lights or stop/go boards to “STOP, STOP, STOP” Vehicle breach vehicle breach, place lights (stop/go boards to all red.
- The TMO(s) are not to place themselves in front of any live traffic.

- Once the live traffic has come to a halt then the TMO's on site are to control the traffic and clear the breach.
- The registration, make and model number are to be taken of the vehicle that has breached the works, this is to be reported to the Police, their line Manager/Supervisor and the QHSE Manager through the Notify IM system.

14 Maintenance During Works (If required)

14.1 Visual site checks will be carried out periodically during the operations, any equipment damaged or blown over will have to be replaced or stood up when operations move or allow.

14.2 A minimum of 1 bag is required for each sign installed, the larger of the signs will be weighed down with sufficient numbers of sandbags according to the weather conditions or by fixing to barriers available with rope, sign lock straps or a suitable alternative method.

15 Removal

15.1 Removal will only commence when all of the work is complete, convoy working ceases, and the carriageway is clear; on instruction from the Main Contractor or TSCO the TM Operatives will then check this prior to removal. The removal will be undertaken by the removal method with in RAMS012 or RAMS013 depending on what traffic control is being used.

15.2 Take any photographs required to demonstrate the site has been fully cleared, from a safe location.

16 Linked Documents

Document Name
Safety at Streetworks and Road Works Code of Practice (Red Book)
Guidance Note GS6 (Fourth edition) Avoiding danger from overhead power lines.
OF20-CEN Task Briefing Sheet
PY002-CEN Vehicle Policy
PY003-CEN Incident Reporting Policy
PR006-CEN Spillage Procedure
PY007-CEN Lone Working Policy
PY036-CEN Health & Well Being Policy
PY051-CEN Working at Height Policy
PY053-CEN Personal Protection Policy (PPE)
RA015-CEN Working Near Water
RAMS025- Works at or near a level crossing in place.
Traffic Signs Manual Chapter 8 Part 1 & Part 2 2009.
Traffic Signs Manual Chapter 8 Part 3 2016

TR001-DHB (Drivers Handbook)

Note All the above documents can be found on the field service tablets or on SharePoint

17 Risk Assessments

17.1 The following risk assessments are based on Generic TM 12D; the following operational hazards and risks provide a general indication of what may be encountered during normal TM works.

- Collision of plant or personnel with moving vehicles, highway traffic or work vehicles
- Working at night
- Manual handling
- Lone working
- Driving
- Noise
- Uneven ground (slips / trips / falls)
- Violence / abuse from members of the public
- Weather conditions & visibility
- Road layout
- Fatigue

17.2 The list is not exhaustive and operational personnel **MUST** carry out an on-site dynamic risk assessment. Risk assessment to be completed on the Field Service tablet before any sector scheme 12D work is undertaken.

17.3 If any risks, operational or environmental are identified when carrying out the on-site dynamic risk assessment, you **MUST** inform your supervisor immediately and prior to the deployment of traffic management equipment.

17.4 If at any point throughout your work, you encounter an unsafe situation you **MUST** stop work and contact your supervisor immediately for guidance.

17.5 The risk assessments **MUST** be communicated to all personnel undertaking any traffic management 12D works.

- If ANY risk is **HIGH**, do not proceed with the operation, abandon the job, or look at alternative delivery methods.
- If ANY risk is **MEDIUM**, proceed only with caution, introduce additional control measures where possible.
- If All risk is **LOW**, proceed with work.

17.6 Risk Scoring Methodology & Risk Assessments

Likelihood Categories		Severity Score				
Category	**Description**	**1**	**2**	**3**	**4**	**5**
1	Extremely Unlikely	1	2	3	4	5
2	Unlikely	2	4	6	8	10
3	Occasional	3	6	9	12	15
4	Likely	4	8	12	16	20
5	Expected	5	10	15	20	25

Severity Score Description	
1	Minor Injuries/inconveniences. Employee can continue to work - short term local damage
2	Minor Injuries. Operative requires first aid treatment. Stops work - medium term local/short term regional damage.
3	Reportable/LTI or illness - long term local/regional damage
4	Major injury or illness with long term effects - long term widespread damage
5	Fatalities - Widespread permanent damage

Risk	Action Required
Low	Check that no other risks can be eliminated by modifications of design then proceed with design. Record residual risks
Medium	Reduce risks as far as reasonably practical. Consider alternative design or construction method. If alternatives are not available, specify precautions to be adopted. Record residual risks.
High	Seek alternative solutions. If alternatives are not available, specify precautions to be adopted & advise Senior Management & Supervisor (if appropriate). Record residual risks
Examples of Persons at Risk	Inexperienced
	Vulnerable Road Users (VRU's) including Public, Cyclists, Horse riders.
	Lone workers (LW)
	Operative (OP) (TMO or/and Ganger)
	Site Personnel (SP)
	All

17.7 Risk Scoring Methodology & Risk Assessment Works Environmental

Category	Control	Severity Score				
Likelihood	**Description**	**1**	**2**	**3**	**4**	**5**
1	High degree of control	1	2	3	4	5
2	Medium degree of control	2	4	6	8	10
3	Moderate degree of control	3	6	9	12	15
4	Slight degree of control	4	8	12	16	20
5	Negligible degree of control	5	10	15	20	25

Severity Score Description	
1	All aspects fully controlled or have negative effect upon the environment
2	Aspects exist at recognisable levels, which may impact on the environment; but any change is easily recoverable with no lasting effect
3	Will have an effect on the environment - Damage is short term and is always recoverable
4	Major Impact - Damage is not permanent, but may take some time to remedy
5	High Impact - Risk of severe environmental damage

Risk	Action Required
Low	Low impact identified - Control measure to be adopted and monitored
Medium	Medium impact identified - Ensure that the aspect & impact assessment is reviewed, further controls may be necessary
High	High impact identified - Re-evaluate the aspect & impact assessment and develop / determine greater controls
Examples of Receptor	Air (A)
	Land (L)
	Water (W)
	Natural Resources (NR)
	Community/Residence/Pedestrians (CRP)
	Operative (O)
	Ecology /Habitat (EH)
	Carbon Footprint (CF)

Key Environmental Issues	
Local effects of Pollution (air quality, noise, waste, lighting, odour	Carbon emissions and greenhouse effect global warming
Water source and ocean Pollution	Deforestation, soil erosion and land quality
Material resources & Land despoliation, supply chain issues & inequal disruption to impacts	Energy Supplies, innovations in food and fuel
	Agricultural issues arising from global trade

Hazard(s)	At Risk	Risks	PRE-RCM Risk score (L x S)				Risk Control Measures	POST-RCM Risk score (L x S)			
			Likelihood	Severity	Risk Score	Risk Level		Likelihood	Severity	Risk Score	Risk Level
Inexperienced TM operatives implementing TTM	TMO/P/SP	Major Injury or long term health effect	5	4	20	H	a. Structured Induction and Site-Specific Training before being allowed to work b. Buddying system with experienced TMOs or Supervisors c. Daily briefings and toolbox talks with clear role allocation and expectations d. Active supervision and mentoring until competence is demonstrated e. Regular competency checks and feedback loops f. Clear stop work authority, ensuring they know they can speak up if unsure	2	4	8	M
TM vehicles operating on public roads and sites	All	Not distinguishable to other motorists, risk of collision and fatal/serious injury	2	5	10	M	a. All TMIV's are marked and equipped as a minimum to the requirements of Traffic Signs Manual – Chapter 8: Part 2 Operations (2009) b. All TMIV's and TM vehicles are checked prior to their use daily to ensure that everything is in working order.	1	5	5	L
TM vehicles operating on public roads and sites	All	TM vehicle pulling off carriageway or into works area and colliding with other vehicles	2	5	10	M	a. TMIV to use beacons, indicators and use relevant access/exit points. High visibility markings remain facing the flow of traffic.	1	5	5	L

TM Vehicles	All	TM vehicle reversing and picking up TM equipment. Colliding with other vehicles, running over/crushing Operatives	5	4	20	H	a. TMO to check site is clear of other vehicles and any other site personnel/members of the public before commencing any reversing operations. b. Always use a banksman when on clients sites to reverse. c. Where available use reversing aids such as reversing cameras.	2	4	8	M
Convoy Working	All	Injuries from being struck by oncoming traffic Vehicle damage from Collisions	5	4	20	H	a. Approval from the relevant Highway Authority is in place. b. **Convoy Working** to be used only when • Normal traffic management arrangements are not feasible because of restricted highway width and diversion is impracticable. **c. Convoy working to only be used on** • Single carriageways where traffic travels either in a single direction, or in alternating opposite directions. • Individual carriageways of two-lane all-purpose dual carriageway roads, where traffic travels in one direction only and works have reduced the traffic to single file: and • Carriageways during surface dressing operations when it is considered necessary to ensure compliance with speed limits which have been implemented to protect newly laid surface dressing. d. Convoy working is not used on Motorways. **e.** TMO must have undergone suitable training and competency assessments to satisfy the requirements of the nationally recognised standard, **NHSS Lantra 12D M4.** f. The correct application are in place before any works is undertaken. g. AWS are to be placed before Convoy work is undertaken. h. MAX speed limit set to temporary a limit of 10MPH. i. Planning takes into consideration of pedestrians, cyclists, other VRU's and keeps disruption to a minimum. j. Convoy vehicles have roof mounted 360 amber beacons fitted and working during all convoy operations.	2	4	8	M

							k. Safe location at the end of the works for the TM convoy vehicle to pull out of the running lane to be in place. l. TM Convoy vehicle displays a "CONVOY VEHICLE NO OVERTAKING," on the rear of each convoy vehicle.  m. Convoy TMO's have radio contact with the TL TMO or manual Stop/Go TMO. n. TMO operating the TL's and Safety Incursion Barrier to have communication with the works sigh Forman/supervisor or Manager. o. Single vehicle system is used where traffic flows are low, traffic control of manual Stop/Go boards to be used. p. 5 Vehicle system is to be used in higher traffic flow sites. q. Convoy operations are suspended at times where there are insufficient Convoy vehicles and a full safety zone to be put in place or the work suspended. r. Traffic Control is operated Manually during Convoy works. s. Periods between convoys in the same direction are not more than 5 minutes. t. Convoy drivers are not to turn around within the works at any time.				
Use of the Incursion Barrier system within the Convoy Works (if required)	TMO	Injuries from being struck by oncoming traffic Vehicle damage from Collisions	5	4	20	H	a. If used the TMO is to have familiarisation training for the incursion barrier system before use and recorded on the HS016-CEN form b. Additional AWS are installed on the NS & OS on the approach to the Traffic Signal Set up. c. Two sets of Warning Barrier ahead signs are in place. d. Double headed temporary traffic lights are to be installed. e. The incursion barrier system is to be installed at both ends of the works f. Incursion Barrier system to be installed within the traffic islands. g. No works are to be started by the contractor until the systems is installed and tested.	2	4	8	M

							h. The TMO is to stand clear of the Lights and Incursion barrier system i. The TMO that is controlling the lights and Incursion barrier is to have constant radio contact with the Works Foreman, Supervisor or Manager in the event of an Incursion. j. TMO to ensure that emergency notification in the way of "STOP, STOP, STOP, vehicle breach, vehicle breach" over the radio with the contractor in the event of an incursion. k. The TMO lowers the incursion Barrier system once the last vehicle is through and the traffic lights are on RED				
TM Installation and Removal	TMO/SP	Signs falling on TMO(s)/public/SP	4	4	16	H	l. Set up as per method. m. Only TMO's with 12D sector scheme training to be used. n. PPE to be worn, clean and serviceable. as per PPE section o. Carry out TM works at times of reduced traffic flow. p. Use appropriate manual handling. q. Always work from the safe side and be vigilant of any road user.	1	4	4	L
TM Installation and Removal Erecting signs	TMO/P/SP	Signs falling on TMO(s)/public	4	4	16	H	a. Erect signs on firm, level ground. b. Ensure adequate number of sandbags used to secure frame/sign. c. Ensure that signs are visible to the highway user and do not reduce the footway to less than 1 metre. d. Operatives trained in manual handling techniques.	1	4	4	L
Live traffic during light setup/removal	All	Struck by vehicle, serious injury or fatality	5	4	20	H	a. Use advance signage to warn road users before the setup zone b. Establish a safe working zone using cones and Chapter 8 layouts c. Ensure operatives wear correct high-visibility PPE (Class 3 minimum) d. Always face the oncoming traffic when deploying/removing heads near live carriageways e. Brief operatives on live traffic risks before starting setup	1	5	5	L

Incorrect light phasing/timing	All	Head-on collisions, public injury, reputational damage	3	5	15	M	a. Only trained, competent personnel to program and test light heads b. Phase timings calculated according to traffic flow and visibility c. Trial run conducted before going live d. Use of manufacturer's instructions or pre-approved timing plans	1	5	5	L
Power failure or battery loss	All	Signals fail, uncontrolled junction, increased crash risk	4	4	16	H	a. Fully charge all batteries before deployment b. Use quality-checked battery packs or mains supply (if applicable) c. Keep spare battery packs or alternative power on site d. Regular visual checks and test cycles throughout the shift e. Stop/Go boards to be placed at the traffic lights in the event of TL failure f. Include battery maintenance in daily vehicle/plant checks	1	4	4	L
Poor visibility of lights (e.g. bends, dips, poor lighting)	All	Drivers run the red, risk of vehicle collision	3	5	15	M	a. Place TTLs where drivers have a clear, unobstructed line of sight b. Use repeater heads if visibility is limited due to bends, hills, or lighting c. Install additional warning signs in advance of signal heads d. Check visibility during daylight and low light conditions e. Consider temporary lighting or illumination in poorly lit areas	1	5	5	L
Obstruction of pedestrian paths	All	Slips, trips, impact with equipment	3	3	9	M	a. Ensure TTL heads, barriers, and cables do not block pedestrian footways b. Divert footways only with proper signage and safe alternative routes c. Use ramps or coverings over cables to prevent trips d. Brief site team on pedestrian interaction zones e. Inspect the area regularly to keep access clear	1	3	3	L

Improper placement (e.g. wrong distance between heads)	All	Confusion, driver error, accidents	3	4	12	M	a. Confirm placement using site-specific traffic management drawings b. Double-check signal angle to ensure visibility for all approaches c. Correct distances and placements before go-live	1	4	4	L
Public interference or vandalism	All	Signal moved or switched off, uncontrolled site	3	4	12	M	a. Fit anti-tamper locks or security bolts to TTL units b. Cone or barrier off the signal head to deter tampering c. Place signage warning of legal consequences of interference d. Monitor TTLs regularly during shifts, particularly on overnight setups e. Immediately report and replace damaged or moved equipment	2	4	8	M
Use of Stop/Go Boards (in the event that TL are Inoperative)	TMO/P/Road users	Operative struck by vehicle while controlling traffic Driver confusion or non-compliance (e.g. ignoring signals) Lack of coordination between ends Fatigue or distraction of the operative Poor visibility or lighting conditions Untrained or unbriefed operatives Slips/trips while crossing or standing in carriageway	4	5	20	H	a. Only trained TMOs operate Stop/Go boards b. PPE to be worn as per these RAMS c. Stand on firm ground, behind taper or cones, facing traffic clearly d. Radios or visual cues between both ends to prevent conflict e. Operatives clearly visible in low light (use head torch & portable lighting if needed) f. Confident handling of board, assertive presence, regular rotation to avoid fatigue g. Stop/Go use should be covered in RAMS and briefed during	1	5	5	L
Contractor's staff straying into the safety zone or carriageway	SP	Serious injury to SP	2	5	10	M	a. Light continuous barrier or second row of traffic cones and safety Line will be placed adjacent to the working space to mark the inside edge of the sideways safety zone (S) and a traffic barrier after the longways safety zone (L) to prevent any possible straying or parking of vehicles/plant in these areas.	1	5	5	L

Vehicle Movement within the Road Closure.	TMO/SP	Collision with Plant or Operatives	2	5	10	M	a. Amber Beacons to be illuminated when driving through the works area. b. Site Speed limit to be kept to 10mph (unless stated otherwise). c. Be aware of plant operating on site. Wait until the plant operator has acknowledged awareness of TMIV or other TM vehicles before passing (particularly excavators when slewing). d. Always gain eye contact with plant operators/signallers/slingers and wait for their instructions. e. Avoid any reversing on site and use a banksman to revers when reversing is required. f. Always use site access and exit points and don't enter/exit site through safety zones.	1	5	5	L
Vehicle Strikes	TMO/SP	Serious injury to TMO & SP	4	4	16	H	a. Use of cones, Barriers and signage to be used. b. Set up as per Section 5, barrier Installation. c. Only TMO's with 12D sector scheme training to be used. d. PPE to be worn, clean and serviceable. as per PPE section	1	4	4	L
Verbal abuse aggression from public	TMO	Stress, injury	4	4	16	H	a. Conflict management training. b. Clear signage to be used. c. TMO not to put themselves in danger, get into a conflict situation. d. TMO to return to their vehicle and lock the door e. Contact supervisor/police if needed f. Report and record all incidents through notify. g. Contact supervisor/police if needed	2	4	8	M
Incorrect access given to unauthorised vehicle	SP/P	Security breach, risk to site works	4	4	16	H	a. TMO to check ID or reason for access b. TMO to use access list if provided c. Escort through works when required d. Supervisor/QHSE team to review process if breached.	1	4	4	L

Trips/slips and falls	TMO/SP	Sprains, bruising, head knocks	3	3	9	M	a. Keep area tidy at all times b. Store any unused TTM equipment on vehicle c. Avoid trailing equipment around access point(s) d. Use cones to mark hazards around near access points. e. PPE to be worn, clean and serviceable. as per PPE section f. Head torch is to be fitted to Hard hat and switched on at night or in inclement weather. g. Mobile lighting to be used when required h. Vehicle work lamps to be used when loading/unloading at night or in inclement weather.	1	3	3	L
Weather exposure (heat, cold, rain)	TMO	Fatigue, dehydration, illness	3	2	6	M	a. Suitable clothing to be worn, PPE, waterproofs in wet weather. b. Shelter breaks c. Water breaks to be implemented in extreme heat. d. Sun cream to be applied to exposed skin in extreme heat.	1	2	2	L
Manual handling of signage/barriers	TMO	Strain/injury	4	4	16	H	a. Team lifts where needed b. Use of mechanical aids (e.g., Tail lift, sack truck or trolley) c. Manual handling awareness undertaken d. Lightweight equipment to be used were possible	1	4	4	L
Lifting SLG items (signs, cones, frames) by hand	TMO	Manual handling injuries (strain, sprain, back injury)	4	4	16	H	a. TMO carries out a full site risk assessment b. TMO not to proceed with work if site unsafe and report to supervisor. c. Manual handling training d. Team lifting for heavy/bulky items e. Use of mechanical aids (e.g., Tail lift, sack truck or trolley) f. Plan load layout in advance to minimise handling	1	4	4	L
Loading on uneven or unstable ground (site)	TMO	Slips, trips, falls	4	4	16	H	a. Pre-check ground stability b. Maintain clear access and egress c. Use suitable footwear with good grip as per PPE requirements S3 Standard with laces fastened up fully.	1	4	4	L

Lifting above shoulder height onto flatbed	TMO	Musculoskeletal injuries, falling items	4	4	16	H	a. Hard Hat to be worn and fastened up. b. Use drop-down tailgates or steps c. Use two-person lift or mechanical hoist if available d. Store heavier items lower on vehicle	1	4	4	L
Poor visibility during loading (early morning/night)	TMO	Trips, vehicle collisions	4	4	16	H	a. Adequate task lighting, vehicle lights, work lights on rear of vehicle. b. Wear Hi-Vis PPE c. Site lighting in depot d. Position vehicle in well-lit area	1	4	4	L
Traffic movement during site loading	TMO	Hit by vehicle	4	4	16	H	a. Temporary Traffic Management in place b. Use of Lookout/Signaller/2ndTMO c. Exclusion zones around loading areas to be used where required d. Vehicle beacons and hazard lights to be switched on when outside the works area	1	4	4	L
Unsecured items during transit	TMO P	Falling load during transit	3	1	3	L	a. Use of vehicle-specific securing systems (straps, ratchets) b. Regular checks during journey, retighten straps when required c. Use a Load configuration plan	1	1	1	L
Poor visibility/night work	TMO/SP	Reduced safety, increased accident risk	2	4	8	M	a. Use of reflective clothing b. Illuminated signage c. Adequate lighting	1	4	4	L
Fatigue (long hours, low alertness)	TMO	Reduced concentration, increased error risk	2	3	6	M	a. Adequate breaks b. Rotate duties c. Fit-for-work checks d. Avoid excessive overtime e. Reporting of fatigue to supervisor	1	2	2	L
Reinstating moved traffic	TMO	Struck by vehicle, manual handling injury	4	4	16	H	a. Conduct task during low traffic flow b. Use buddy system c. Wear full PPE	1	4	4	L

management equipment							d. Follow safe manual handling practices e. Use IPV				
Environmental Risk assessment											
Use Of Vehicle – C02, S0x, N0x and particulates emissions	A/CRP/O	Air Pollution – Green House gases = Global Warming and Climate Change	2	3	6	M	a. Driver Behaviour Monitored, Speeding, Cornering, harsh braking and vehicle idling b. Euro VI vehicles used c. C02, NOx & PM monitored and reported to Senior Management d. Driving assessments carried out at induction. e. Vehicle policy in place f. Drivers' handbook in place g. TBTs, Alerts and Memos given to Drivers h. Vehicle serviced and maintained regularly i. Vehicles renewed on a 3 yearly cycle	1	3	3	L
Use Of Vehicle – Use of fossil fuels (natural resources)	NR	Material resources & Land despoliation, supply chain issues & inequal disruption to impacts	2	3	6	M	a. TBTs, Alerts and Memos given to Drivers. b. Vehicle serviced and maintained regularly. c. Vehicles renewed on a 3 yearly cycle. d. FORS Silver accreditation in place e. 14001 Accreditation in place. f. Fuel, MPG, Ltrs mileage reports reviewed by Senior Management	1	3	3	L
Refuelling of Vehicle/Plant - Use of fossil fuels (natural resources)	W/L/H	Water source and ocean Pollution, Deforestation, soil erosion and land quality & Biodiversity loss	2	3	6	M	a. Vehicles are filled up in a controlled environment. b. TBT given regarding Spillages/pollution c. Weekly walk around checks are carried out by the DM's	1	3	3	L
Vehicle Plant Maintenance - Use of fossil fuels (natural resources)	L/W/NR/EH	Water source and ocean Pollution, Deforestation, soil erosion and land quality & Biodiversity loss. Material resources & Land despoliation, supply chain issues & inequal disruption to impacts	2	3	6	M	a. Supplier of the vehicle carries out the maintenance and not on our sites. b. Minor top ups carried out on vehicle and plant, Jugs and funnels used c. Servicing's dates are monitored by the TAF at each depot to ensure the vehicles/plant is serviced on time	1	3	3	L

Emissions to land or water from spillage of fuel or oil											
Disposal of Waste - Failure to follow waste hierarchy Failure to comply with Duty of Care Avoidance of disposal of waste	All	Local effects of Pollution (air quality, noise, waste, lighting, odour) Water source and ocean Pollution, Waste and International waste trade Deforestation, soil erosion and land quality, Biodiversity loss	2	3	6	M	a. Waste is collected from site and brought back to the depot to dispose of within the waste receptacles. b. A Contractor GoGreen manages waste. c. Reports are generated by the QHSE Manager and reported on at the Senior Management QHSE meetings d. Weekly walk around checks are carried out within the depots to ensure waste is in the correct areas	1	3	3	L
PPE - Use of fossil fuels (natural resources)	NR	Material resources & Land despoliation, supply chain issues & inequal disruption to impacts	2	1	2	L	a. PPE controlled and supplied b. Stock off PPE kept c. New PPE is swapped for old and recycled through the supplier where it is reused.	1	1	1	L
Site Works – Noise generation	CRP/EH	Local effects of Pollution (noise)	2	1	2	L	a. TM Vehicles have silent night reversing Bleepers fitted. b. TM Operative not to communicate by shouting, radios to be used. c. Vehicle sound systems levels to be low. d. Vehicle horns not to be activated in a built-up area between the hours of 11.30 pm and 7.00 am except when another road user poses a danger.	1	1	1	L
Site Works – Obtrusive Lighting	CRP/EH	Local effects of Pollution (lighting)	2	1	2	L	a. Lighting is only used for short periods of time when laying out a site. b. Head torches are used at night-time and point in the direction of travel. c. TM vehicle head lights are used for traveling only.	1	1	1	L

							d. TM Vehicle work lights are used for loading unloading only and not to be left on. e. TM hazard beacons are only used for warning others of stopping to set up a sight or leaving a site.					