HEA

Highway Electrical Association

Best Practice Guide for H.E. Work on Centre Islands and Pedestrian Refuges

(Safety for Planning or Carrying out Work on Highway Electrical and associated equipment)

Issue 1.1 2017

Contents

1. Introduction

The Highway Electrical Association (HEA) has produced this Best Practice Guide through the HEA Safety Committee, using guidance and information from the Health and Safety Executive (HSE) and National Highway Sector Schemes (NHSS) 8 and 12D. Issue 1.1 revises this Guidance in line with CDM 2015.

It is intended to be used as a best practice guide for clients, designers and those involved in the installation, maintenance and removal of highway electrical or associated equipment such as traffic bollards, refuge indicators, lighting and traffic signals on centre island or pedestrian refuge sites on the highway, hereafter referred to as centre island sites.

The document sets out a reasonably practicable approach to working at centre island sites within the current UK legal requirements through the provision of suitable and sufficient road space and temporary traffic management (TTM) to control the safe passage of vehicles past the works.

Centre island sites are provided in the highway for a number of reasons:

- To give refuge to pedestrians, cyclists and other road users whilst crossing the highway
- To reduce and / or control the speed of passing traffic
- To segregate traffic moving in opposite directions
- To regulate traffic movement at junctions
- To provide protection for cycle lanes
- To channel vehicular traffic at complex highway layouts / junctions
- As ‘gateways’ at the start of traffic calming schemes

Highway layouts where traffic islands are used are often limited in road width which can make compliance with the Code of Practice for Safety at Street Works and Road Works and the provision of a safe site for the work force difficult. It is therefore imperative that all parties involved in the design, commissioning, installation, maintenance and where applicable, removal of the asset, cooperate which each other and coordinate their activity to ensure that work is progressed safely and without risk to those undertaking the works and the public.

2. Acknowledgements

The HEA gratefully acknowledges the support of member organisations – particularly those who serve on the HEA Safety Committee – in the preparation and development of this Best Practice Guide. Special thanks are due to Mick Twist, HSE Manager, Bouygues E&S Ltd. who produced and revised a significant proportion of this document. Thanks are also due to the NHSS 12D Committee Chair and past Chair for their input.

3. Legislation, Codes of Practice and Guidance

This section sets out the key legal requirements and other guidance for the employer to ensure that there is provision for a safe site for their workforce. It also identifies where this duty extends to other relevant parties, such as clients, the highway authority and highway and lighting designers.

3.1 The Health and Safety at Work etc. Act (HASWA) sections 2 and 3 require the employer to provide a safe working environment and operate in such a way that in so far as is reasonably practicable their employees and others are not exposed to risks to their health and safety. Section 7 places a general duty on all employees to take reasonable care for their own health and safety and that of others.

3.2 The Management of Health and Safety at Work Regulations supplements the HASWA and requires that hazards and risk are considered for all work activity, that work is planned to avoid risk to the health and safety of employees and others. This is mandated through a duty to undertake risk assessments for all work activities and introduces the principles of prevention or

hierarchy of risk control. The regulations also require other health and safety management arrangements to be in place.

3.3 The Construction (Design and Management) Regulations (CDM) and associated HSE Guidance (L153) further supplements the HASWA and is discussed in detail below.

3.4 The Equalities Act requires reasonable measures to be taken to accommodate the needs of those with disabilities.

3.5 The New Roads and Street Works Act (NRSWA) refers to local authority street works and highway works - i.e. those carried out as or on behalf of utilities - and the requirements to ensure that these works are carried out as safely as reasonably possible while avoiding unnecessary disruption and risk to highway users and pedestrians.

3.6 Code of Practice for Safety at Street Works and Road Works has legal status under sections 65 and 124 (Safety Measures) of NRSWA. It provides guidance for signing lighting and guarding works in the highway.

3.7 The Traffic Signs Manual, Chapter 8, Traffic Safety Measures and Signs for Highway Works and Temporary Situations, is a code of practice to enable legal requirements to be met in a variety of situations. The document itself has no legal status.

3.8 The Highways Act sets out the requirement for the person conducting works in the highway to provide proper signing, guarding and lighting to protect the works

3.9 The Traffic Management Act places highway network management duties on highway authorities and sets out the permit requirements for undertakers conducting works in the highway. Temporary Traffic Regulation Orders (TTRO) are required when it is necessary to temporarily control vehicle movement along a section of the highway or a Temporary Traffic Order (TTO) where there is a requirement to temporarily close a section of the highway to undertake the works safely.

4. Construction (Design and Management) Regulations 2015

4.1 The Construction (Design and Management) Regulations (CDM) were first introduced in 1994, substantially revised and re-issued in 2007 and revised and re-issued again in 2015. The concept that Clients and Designers have a significant influence and therefore statutory responsibilities to ensure the safe progression of a construction project is well established in law.

4.2 The Construction (Design and Management) Regulations (CDM) support the requirements of HASWA and place duties on all parties involved with the works. In particular:

- The Client, who is required to provide contractors who have been or may be appointed by them, pre-construction information i.e. any relevant information about or affecting the site or the construction work, to ensure so far as is reasonably practicable the health and safety of persons engaged in the construction work or who are liable to be affected by the way in which it is carried out
- The Principal Designer / Designer is required to undertake their designs is such a way so as to avoid foreseeable risks to the health and safety of any person carrying out the construction work or maintaining the permanent fixtures and fittings of a structure.

Where there is residual risk that cannot be engineered out of the design, the designer shall provide sufficient information about aspects of the design of the structure or its construction or maintenance as will adequately assist the client, other designers and the contractor. Where there are residual risks associated with the design that impact the safe maintenance of the structure (eg the road layout, work at height etc) the designer shall reduce these risks, giving priority to collective control measures over individual control measures.

- The Contractor is not permitted to start work unless they can plan, manage and monitor the construction work carried out by them or that which is under their control in a way which ensures that, so far as is reasonably practicable, it is carried out without risks to health and safety.

These requirements are set out in regulations 4, 9 and 15 respectively and are included here for the avoidance of doubt:

CDM Regulation 4 – Client Duties in relation to Managing Projects

(1) *A client must make suitable arrangements for managing a project, including the allocation of sufficient time and other resources.*

(2) *Arrangements are suitable if they ensure that—*

(a) *the construction work can be carried out, so far as is reasonably practicable, without risks to the health or safety of any person affected by the project; and*

(b) *the facilities required by Schedule 2 are provided in respect of any person carrying out construction work.*

(3) *A client must ensure that these arrangements are maintained and reviewed throughout the project.*

(4) *A client must provide pre-construction information as soon as is practicable to every designer and contractor appointed, or being considered for appointment, to the project.*

(5) *A client must ensure that—*

(a) *before the construction phase begins, a construction phase plan is drawn up by the contractor if there is only one contractor, or by the principal contractor; and*

(b) *the principal designer prepares a health and safety file for the project, which— (i) complies with the requirements of regulation 12(5);*

(ii) *is revised from time to time as appropriate to incorporate any relevant new information; and*

(iii) *is kept available for inspection by any person who may need it to comply with the relevant legal requirements.*

(6) *A client must take reasonable steps to ensure that—*

(a) *the principal designer complies with any other principal designer duties in regulations 11 and 12; and*

(b) *the principal contractor complies with any other principal contractor duties in regulations 12 to 14;*

(7) *If a client disposes of the client's interest in the structure, the client complies with the duty in paragraph (5)(b)(iii) by providing the health and safety file to the person who acquires the client's interest in the structure and ensuring that that person is aware of the nature and purpose of the file.*

(8) *Where there is more than one client in relation to a project—*

(a) *one or more of the clients may agree in writing to be treated for the purposes of these Regulations as the only client or clients; and*

(b) *except for the duties specified in sub-paragraph (c) only the client or clients agreed in paragraph (a) are subject to the duties owed by a client under these Regulations;*

(c) *the duties in the following provisions are owed by all clients—*

(i) *regulation 8(4); and*

(ii) *paragraph (4) and regulation 8(6) to the extent that those duties relate to information in the possession of the client.*

CDM Regulation 11 – Duties of Principal Designer

(1) *The principal designer must plan, manage and monitor the pre-construction phase and coordinate matters relating to health and safety during the pre-construction phase to ensure that, so far as is reasonably practicable, the project is carried out without risks to health or safety.*

(2) *In fulfilling the duties in paragraph (1), and in particular when—*

(a) *design, technical and organisational aspects are being decided in order to plan the various items or stages of work which are to take place simultaneously or in succession; and*

(b) *estimating the period of time required to complete such work or work stages, the principal designer must take into account the general principles of prevention and, where relevant, the content of any construction phase plan and health and safety file.*

(3) *In fulfilling the duties in paragraph (1), the principal designer must identify and eliminate or control, so far as is reasonably practicable, foreseeable risks to the health or safety of any person—*

(a) *carrying out or liable to be affected by construction work;*

(b) *maintaining or cleaning a structure; or*

(c) *using a structure designed as a workplace.*

(4) *In fulfilling the duties in paragraph (1), the principal designer must ensure all designers comply with their duties in regulation 9.*

(5) *In fulfilling the duty to coordinate health and safety matters in paragraph (1), the principal designer must ensure that all persons working in relation to the pre-construction phase cooperate with the client, the principal designer and each other.*

(6) *The principal designer must—*

(a) *assist the client in the provision of the pre-construction information required by regulation 4(4); and*

(b) *so far as it is within the principal designer's control, provide pre-construction information, promptly and in a convenient form, to every designer and contractor appointed, or being considered for appointment, to the project.*

(7) *The principal designer must liaise with the principal contractor for the duration of the principal designer's appointment and share with the principal contractor information relevant to the planning, management and monitoring of the construction phase and the coordination of health and safety matters during the construction phase*

CDM Regulation 9 –Duties of Designers

(1) *A designer must not commence work in relation to a project unless satisfied that the client is aware of the duties owed by the client under these Regulations.*

(2) *When preparing or modifying a design the designer must take into account the general principles of prevention and any pre-construction information to eliminate, so far as is reasonably practicable, foreseeable risks to the health or safety of any person—*

(a) *carrying out or liable to be affected by construction work;*

(b) *maintaining or cleaning a structure; or*

(c) *using a structure designed as a workplace.*

(3) *If it is not possible to eliminate these risks, the designer must, so far as is reasonably practicable—*

(a) *take steps to reduce or, if that is not possible, control the risks through the subsequent design process;*

(b) *provide information about those risks to the principal designer; and*

(c) *ensure appropriate information is included in the health and safety file.*

(4) *A designer must take all reasonable steps to provide, with the design, sufficient information about the design, construction or maintenance of the structure, to adequately assist the client, other designers and contractors to comply with their duties under these Regulations.*

CDM Regulation 13 – Duties of Principal Contractor

(1) *The principal contractor must plan, manage and monitor the construction phase and coordinate matters relating to health and safety during the construction phase to ensure that, so far as is reasonably practicable, construction work is carried out without risks to health or safety;*

(2) *In fulfilling the duties in paragraph (1), and in particular when—*

(a) *design, technical and organisational aspects are being decided in order to plan the various items or stages of work which are to take place simultaneously or in succession; and*

(b) *estimating the period of time required to complete the work or work stages; the principal contractor must take into account the general principles of prevention.*

(3) *The principal contractor must—*

(a) *organise cooperation between contractors (including successive contractors on the same construction site):*

(b) *coordinate implementation by the contractors of applicable legal requirements for health and safety; and*

(c) *ensure that employers and, if necessary for the protection of workers, self-employed persons—*

> ***(i)*** *apply the general principles of prevention in a consistent manner, and in particular when complying with the provisions of Part 4;*
>
> ***(ii)*** *where required, follow the construction phase plan.*

(4) *The principal contractor must ensure that—*

(a) *a suitable site induction is provided;*

(b) *the necessary steps are taken to prevent access by unauthorised persons to the construction site; and*

(c) *facilities that comply with the requirements of Schedule 2 are provided throughout the construction phase.*

(5) *The principal contractor must liaise with the principal designer for the duration of the principal designer's appointment and share with the principal designer information relevant to the planning, management and monitoring of the pre-construction phase and the coordination of health and safety matters during the pre-construction phase*

CDM Regulation 15 – Duties of Contractors

(1) *A contractor must not carry out construction work in relation to a project unless satisfied that the client is aware of the duties owed by the client under these Regulations.*

(2) *A contractor must plan, manage and monitor construction work carried out either by the contractor or by workers under the contractor's control, to ensure that, so far as is reasonably practicable, it is carried out without risks to health and safety.*

(3) *Where there is more than one contractor working on a project, a contractor must comply with—*

(a) *any directions given by the principal designer or the principal contractor; and*

(b) *the parts of the construction phase plan that are relevant to that contractor's work on the project.*

(4) *If there is only one contractor working on the project, the contractor must take account of the general principles of prevention when—*

(a) *design, technical and organisational aspects are being decided in order to plan the various items or stages of work which are to take place simultaneously or in succession; and*

(b) *estimating the period of time required to complete the work or work stages.*

(5) *If there is only one contractor working on the project, the contractor must draw up a construction phase plan, or make arrangements for a construction phase plan to be drawn up, as soon as is practicable prior to setting up a construction site.*

(6) *The construction phase plan must fulfil the requirements of regulation 12(2).*

(7) *A contractor must not employ or appoint a person to work on a construction site unless that person has, or is in the process of obtaining, the necessary skills, knowledge, training and experience to carry out the tasks allocated to that person in a manner that secures the health and safety of any person working on the construction site.*

(8) *A contractor must provide each worker under their control with appropriate supervision, instructions and information so that construction work can be carried out, so far as is reasonably practicable, without risks to health and safety.*

(9) *The information provided must include—*

(a) *a suitable site induction, where not already provided by the principal contractor;*

(b) *the procedures to be followed in the event of serious and imminent danger to health and safety;*

(c) *information on risks to health and safety— (i) identified by the risk assessment under regulation 3 of the Management Regulations, or*

(ii) *arising out of the conduct of another contractor's undertaking and of which the contractor in control of the worker ought reasonably to be aware; and*

(d) *any other information necessary to enable the worker to comply with the relevant statutory provisions.*

(10) *A contractor must not begin work on a construction site unless reasonable steps have been taken to prevent access by unauthorised persons to that site.*

(11) *A contractor must ensure, so far as is reasonably practicable, that the requirements of Schedule 2 are complied with so far as they affect the contractor or any worker under that contractor's control.*

Therefore given these duties, the Contractor is not permitted to proceed with work at Centre Islands until they are in possession of sufficient information to enable a safe environment for their employees to work in as required by Sections 2 and 3 of the Health and Safety at work Act.

5. Guidance for Clients and Designers

5.1 Guidance may be found in the following documents;

- The Design Manual for Highways and Bridges, Volume 8 (Traffic Signs and Lighting) Section 5 (Pedestrian Crossings)
- Department for Transport, Traffic Local Transport 1/95, The Assessment of Pedestrian Crossings 1995 (second impression 2003)
- Department for Transport, Traffic Local Transport Note 2/95, The Design of Pedestrian Crossings, issued by the Department for Transport
- Department for Transport, Traffic Advisory Leaflet 6/95 Pedestrian Crossings – Assessment and Design, March 1995.
- Department for Transport, Traffic Advisory Leaflet 7/95, Traffic Islands for Speed Control, November 1995

5.2 Traffic islands and pedestrian crossing refuge islands are designed with the safety of the highway user or pedestrian in mind. The advice given to designers in the documents above, at the time of publication of this Best Practice Guide, **do not consider the risk encountered by those persons required to install, maintain or remove the street furniture.**

Therefore it is essential that Clients, the Principal Designer, Designers, the Principal Contractor and Contractors co-operate and communicate so that all the information required can be made available to under CDM and allow provision for setting up a safe site as required by the HASWA before allowing work to proceed.

6. Hazards and Risks

Highway electrical installation and maintenance works include many workplace hazards which are often compounded at centre island works due to the reduction in available road width. Three principal hazards directly associated with the centre island works are:

- The maintenance of safe working zones and clearances to allow safe passage of pedestrians and other road users, as well as a safe place of work for the work force
- Work at height
- Working on or near electrical equipment

Persons planning the works shall ensure that a suitable and sufficient risk assessment is undertaken in accordance with regulation 3 of the Management of Health and Safety at Work Regulations. They are required to consider hazards, risks and those who might be harmed.

Therefore, risk assessments should consider the likelihood of the risk arising, the potential severity of the consequences, and the persons who may be exposed to each hazard. This is referred to by the HSE as the “5 Steps to Risk Assessment” (Appendix 1)

7. Competence (Skills, Knowledge and Experience)

The CDM Regulations require all parties to have appropriate and up to date skills, knowledge and experience (i.e. competence) where they are carrying out specific duties, such as design, planning and implementation of works. The relevant duty holders, including the Client, should have demonstrable evidence of appropriate certificated training on the CDM Regulations and associated guidance. In respect of employees carrying out installation or maintenance works, including associated works such as temporary traffic management, the industry standard is set out in the relevant National Highway Sector Schemes.

For those carrying out overseeing, installation or maintenance work on highway electrical and associated equipment, the industry standard for training and assessment of competence is the Highway Electrical Registration Scheme (HERS), a requirement of National Highway Sector Scheme 8 (NHSS 8). All operational staff carrying out work on site should be registered to HERS and in possession of valid ECS HERS Cards at all times whilst on site. As part of HERS, all registrable employees are trained as required and appropriate, and also assessed for competence on site. All registrable operatives are required to gain a CBQ-NVQ qualification to agreed national occupational standards within prescribed timescales. Ongoing reviews, refresher training and continuing professional development are also requirements of HERS and NHSS8.

In respect of temporary traffic management on rural and urban roads – where most island sites are situated – employees carrying out installation or maintenance works should be trained and assessed as required by NHSS12d – this being the agreed standard for the industry. Employees carrying out work on highway electrical or associated equipment must satisfy the requirements of HERS, or of NHSS 8 (which includes HERS), as required by the client or contractor. The requirement for TTM is training to the Highway Electrical Training Specification Course 302.1 (& if required 302.2), as well as assessments on site, and inclusion of this within the Highway Electrical Sector CBQ-NVQs at Levels 2 or 3. The alternative to this is training and assessment as set out within the main body of the NHSS12d document.

NHSS 8 Highway Electrical Training Specification Course 805 – CDM Regulations is particularly applicable for clients / designers / managers to identify responsibilities within this Guide.

8. Principles of Prevention

UK health and safety legislation requires that risk control measures are considered in priority, this is referred to in CDM at Appendix 1 of the HSE Guidance as the general principles of prevention:

Priority	Principle of prevention	Centre Island / Refuge Works *Examples*
1	Avoiding risks	• Consider the need for the centre island, does it need to be there, can it be removed? • Can the work be completed under road closure? • Lighting items that can be maintained etc at ground level ie; raise and lower columns. • Use of off-grid (e.g. solar cell) or non-electrical street furniture.
2	Evaluating the risks which cannot be avoided	• Safe means of access, a road layout designed with sufficient road width to allow a safe site set up; seek ways to reduce exposure to the electrical hazard through discussion with the client and their designers.
3	Combating the risks at source	• Provide a road layout design that allows a safe site to be set up. • Traffic calming or other speed reduction measures such as chicanes or convoy working. • Provision of physical barriers to protect the work force whilst in the highway.
4	Adapting the work to the individual	• Specifying a safe system of work that minimises the need for manual handling, reduces exposure to electricity. • One which provides a safe site and allows the worker to concentrate on the task in hand without fear of collision etc from 3rd party traffic.
5	Adapt to technical progress	Where knowledge and invention provide for safer methods for construction or maintenance, they must be considered for use for example: • Low maintenance and new off grid and / or energy efficient electrical products that require less maintenance • Retro-reflective technology suitably installed and maintained.
6	Replacing the dangerous by the non-dangerous or the less dangerous	The use of, for example: • Off grid – e.g. solar cell • Extra low voltage • Retro-reflective technology suitably installed and maintained.
7	Develop a coherent overall prevention policy which covers technology and organisation of work etc	• Develop a hazard and risk register for the project. Use existing industry (e.g. Highways England / devolved governments) lists or develop bespoke hazard elimination and management lists. • Use information from the existing health and safety file (provided by the Client / Principal Designer) • Provide health and safety information to be taken into account during maintenance or other subsequent works in the health and safety file
8	Give collective protection measures over individual protection measures and	• See the foregoing
9	Give appropriate instructions to employees	• The provision of a competent workforce through HERS / NHSS8 / NHSS12d • Supported by competent Supervision and Management. • Risk assessments (including site specific risk assessments) specifying the control measures to manage risk. • Method statements communicated to the workforce through effective briefings. • Employees equipped with the correct plant, tools and other equipment. • Provision of suitable and sufficient personal protective equipment

Effective risk controls should be sought through dialogue between the Client, Principal Designer, Designer, Principal Contractor and the Contractor. Where the project is notifiable (CDM Reg 6), this must be done by the Client.

9. Managing Risk Through Design

9.1 Under CDM all duty holders must consider the risks associated with work at centre islands. In particular the Client / Principal Designer / Designer have an important role to play in the management of risk through their duties at regulation 4 / 11 / 9 of CDM.

To assist duty holders in identifying, controlling and communicating risk they should adopt the ERIC (Eliminate, Reduce, Isolate, Control) hierarchy of risk management as referenced in the CDM Approved Code of Practice.

The significant risks to the work force associated with work at centre islands are set out in the sample, non-exhaustive Hazard Elimination and Management List summary below:

Hazard	Steps to Eliminate / Minimise Risk	Actual Steps Taken	Residual Risk
Centre Island Position	Is the island necessary - can it be removed?		
Inadequate Sideways Clearance	1. Can the sideways clearance be improved by re-aligning the carriageway /footway boundary?		
	2. If not, information to be passed to relevant parties and consider whether the work be done at a different time / day of the week to limit traffic volume and type (in conjunction with suitable Temporary Traffic Management)?		
Work at Height	1. Can the post / column be changed to raising and lowering?		
	2. If not, can equipment be moved to the base of the post / column?		
	3. Can the type of electrical equipment be changed to minimise maintenance (e.g. solar cell, ELV, LED)?		
	4. If WaH unavoidable, use hierarchy of access		
Electrical Equipment	1. Can the electrical equipment be removed? (e.g. through self-righting, retro-reflective bollards where appropriate – these must be kept clean and do not work for all locations or vehicle types / heights)		
	2. Can the electrical equipment be made safer? (e.g. through solar cells / ELV)		
	3. Is the isolation point labelled and easily accessible?		

9.2 Further information for consideration

9.2.1 Road Space and 3rd Party Traffic In addition to the site control measures identified in the CoP Safety at Street Works and Road Works:

Eliminate:

- *The client and designer should review to establish if the centre island are required at all given locations. Consideration should be given to removal where they are not deemed necessary.*
- *Consider planned maintenance under road closure to minimise the presence of 3rd party traffic (other than those requiring access).*

If the identified hazard cannot be eliminated:

Reduce:

- *Consider planned maintenance under road closure to minimise the presence of 3rd party traffic (traffic eliminated other than those requiring access).*
- *The road layout surrounding the centre island/refuge must be sufficient to allow the provision of a safe site in accordance with the code of practice 'Safety at Street Works and Road Works'. Minimum road widths to allow the safe passage of heavy or light traffic as defined in the CoP. Where minimum widths are not available the work must only proceed under appropriate TTM such as Stop Works Board / Stop / Stop controls / convoy working or full road closure.*
- *The centre island should be closed to pedestrians etc during maintenance work.*
- *TTM to be granted by the highway authority to allow a lane closure for access to work at height or for the safe site set up as defined in the CoP*
- *Road closures or TTM should be planned at times that minimise disruption to the road user and at times of lower traffic volume to reduce risk to the work force and road users etc. If work is specified at night, the additional risks imported by this (reduced visibility, shift work etc) must also be adequately controlled.*

The weight given to a particular risk will be proportionate to its assessed likelihood, severity, the number of people affected, and frequency or duration of the exposure. This will be a professional judgement but guided by the CoP and Chapter 8.

And then, if significant risks remain:

Inform

Provide information on these risks to the contractor through the provision of a project risk register, design risk assessments or similar. To include for example information relating to:

- *Traffic flow and type of traffic eg:, heavy or light*
- *Road speed*
- *Road traffic accident history*

For work that is completed under projects that are notifiable to the HSE by the Client, the Principal Designer should include health and safety information to be taken into account during maintenance or other subsequent works to go in the health and safety file to be agreed with the client before installation.

Control

Providing that the Principal Designer / Designer has:

- *Made all reasonable effort to remove or reduce risk through engineering or other controls*
- *Communicated residual risk brought about by the design to those conducting the works*
- *And that the design does not change:*

The Principal Designer / Designer shall have fulfilled their statutory duties and the control of the residual risks on site during construction, maintenance or removal shall be the responsibility of those ordering and undertaking the work.

9.2.2 Work at Height

Whilst the type of hazard and the likelihood of it existing remain centred around the management of 3rd party traffic; when working at height at centre islands/refuges the severity consequence is changed/increased should the identified risk controls fail.

Therefore, the principles discussed in clause 6 still apply but in addition the following hierarchy of risk management must also be applied:

Eliminate:

- *The client and designer should review to establish how the centre island/refuges are to be lit. For example, consideration should be given to lighting from the footway where this can provide the required lighting levels.*
- *Provision of lighting that can be maintained at ground level to eliminate the need to work at height. This may import additional risk which may include the protection of the road and footway user from falling objects for example and manual handling risk during the works*

If the identified hazard cannot be eliminated:

Reduce:

- *The road layout surrounding the centre island/refuge must be sufficient to allow the provision of safe access in accordance with the Work at Height Regulations, where work cannot be completed at ground level the following means of access should be specified in priority:*
  - *An appropriate MEWP*
  - *Suitable proprietary working platform*
  - *Scaffold tower (only where site conditions allow)*
  - *Platform steps*
- *The site should be protected from the risk of falling objects therefore centre island/refuge should be closed to pedestrians etc during maintenance work.*
- *Temporary traffic control should be planned as for para 6a.*
- *The quantum of risk may be reduced through the specification of efficient and low maintenance electrical components. This risk control strategy should be in conjunction with planned maintenance*

And then, where significant risks remain:

Inform

Provide information on these risks to the contractor

Control

Providing that the Principal Designer / Designer has:

- *Made all reasonable effort to remove or reduce risk through engineering or other controls*
- *Communicated residual risk brought about by the design to those conducting the works*
- *And that the design does not change:*

The designer shall have fulfilled their statutory duties and the control of the risks on site during construction, maintenance or removal shall be the responsibility of those ordering and undertaking the work.

9.2.3 Working on or near the electricity

Eliminate:

- *The client and designer should review to establish how the street furniture is to be made visible. Consideration should be given to de-illumination through retro-reflective technology where this meets the required standards for highway design. Thereby eliminating the presence of electrical supply.*

If the identified hazard cannot be eliminated:

Reduce:

- *The provision of non-electrical self righting keep left bollards etc will reduce the quantum of risk through a reduction in exposure in attendance to replace furniture after vehicle collision.*
- *The road layout surrounding the centre island/refuge must be sufficient to allow the maintenance operative a safe workplace in which to concentrate on the task in hand without fear of harm*
- *The site should be protected from the risk of falling objects therefore centre island/refuge should be closed to pedestrians etc during maintenance work.*
- *Temporary traffic control should be planned as for para 6a.*
- *The quantum of risk may be reduced through the specification of efficient and low maintenance electrical components (e.g. solar cells / LEDs). This risk control strategy should be in conjunction with planned maintenance*

And then, if significant risks remain:

Inform

Provide information on these risks to the contractor

Control

Providing that the Principal Designer / Designer has:

- *Made all reasonable effort to remove or reduce risk through engineering or other controls*
- *Communicated residual risk brought about by the design to those conducting the works*
- *And that the design does not change:*

The designer shall have fulfilled their statutory duties and the control of the risks on site during construction, maintenance or removal shall be the responsibility of those ordering and undertaking the work.

10. TTM Assessment – Planning (Normal Traffic)

The following TTM assessment sections should be used for planning work at centre islands and pedestrian refuges on roads where there is normal traffic including buses and LGV's and is to be used in conjunction with the Department for Transport publication; Safety at Street Works and Road Works (Red Book):

10.1 Site Detail

Asset Number:							
Operative Number:							
Site Detail:							
Road (name):		Location:			Permanent Speed Limit (MPH)		
Road type	Single Carriageway		Dual Carriageway		One Way		
	Cycle Lane		Bus Route		Width of Footways	1	(m)
						2	(m)
Lane widths	Lane 1		Lane 2				
	Lane 3		Lane 4				
Time of Survey			Traffic Count (3 mins):		Large Vehicles		
					Cars and Light Vans		
Weather conditions (at time of survey)					Cyclists		
					Other (specify)		
Limits of visibility	Specify direction 1		(m)	Specify direction 2		(m)	
Other Factors affecting visibility / access (give detail)	Structures		Bends / inclines		Other Street Furniture / parked vehicles		
Centre Island Details	Centre island pedestrian refuge			For traffic control / separation etc			
	Width of island			Raised kerbs (yes/no)			
	Pedestrian Crossing (zebra, pelican etc)			Traffic bollards installed? (type)			
	Belisha beacons (height)			Centre island columns (height)			
	Illuminated signs (height)			Other			
Is the work expected to be completed in 15 minutes or less? Y / N If Y – For TTM for works of 15 minutes or less - this must have been agreed with the highway authority in advance of the works							
Summary of arrangements for the safe passage of pedestrians (from para 10.2)							
Summary of safety arrangements for road users and the workforce (from para 10.3)							
Please confirm if works can be completed without positive traffic management: (Delete Appropriate) YES/NO							

10.2 Method of Protecting Pedestrians etc

(Pnnn) refer to relevant pages in the Department for Transport publication: Safety at Street Works and Road Works:

For the safe passage of pedestrians and wheelchairs users etc the footway must be at least 1.2m wide (1.5m preferred) (P28) (Note Red Book states 1m precedes Equality Act

Over 1.2m (tick) ☐

Less than 1.2m (tick) ☐

Advance warning signs in place Barriers for work area (open excavations and Work at Height etc)

(tick) ☐

No → Site safe for the passage of pedestrians

(tick) ☐

Yes

Close footway and re-route pedestrians

(tick) ☐

No → Provide guide for safe passage of pedestrians

(tick) ☐

Divert around working area or to other footway (using appropriate crossing)

Or → Divert into carriageway

(tick) ☐

Advance warning signs: Pedestrian direction and pedestrian arrows.

(tick) ☐ (tick) ☐

- Footway ramps
- Barriers c/w tapping rail to provide safe passage in the carriageway.

(tick) ☐

- Barriers c/w tapping rail around excavations or to protect areas below work at height (tick) ☐
- Footway boards or road plates to cover excavations where required

(tick) ☐

Site is set up for the passage of pedestrians etc in accordance with the requirements of the Code of Practice; Safety at Street Works and Road Works

Name	Sign	Date

10.3 Method of Protection for Road Users and Workforce (normal traffic / bus routes)

a. For single line traffic to safely pass your work site the residual roadway width is:

Under* 3.0m? (tick) ☐ — Yes → **Speed control** (P63) if yes go to TTRO (below) (tick) ☐

No → **Risk Closure** if yes go to TRO (below) (tick) ☐ — Yes

Not permitted? → **DANGER – unable to maintain safely** (tick) ☐

No

Between 3.0*m - 3.7*m? (tick) ☐ — Yes → **Shuttle working with traffic control** (P53 – 61) (tick) ☐

	No	Yes	Comment	Duration of Works
Give & take* (Under 20 vehicles)			*Limited to 30mph max	
Priority (Up to 42 vehicles)				
Stop & Go (Up to 72 vehicles)				
Traffic Signals (No vehicle limit)				

b. For two-way traffic to pass your work site safely the residual road way width must be:

Lorries and buses over 6.75m (P52) (tick) ☐ — Yes

No

Convoy (P63) (tick) ☐

Yes

Road Closure (tick) ☐

Not permitted?

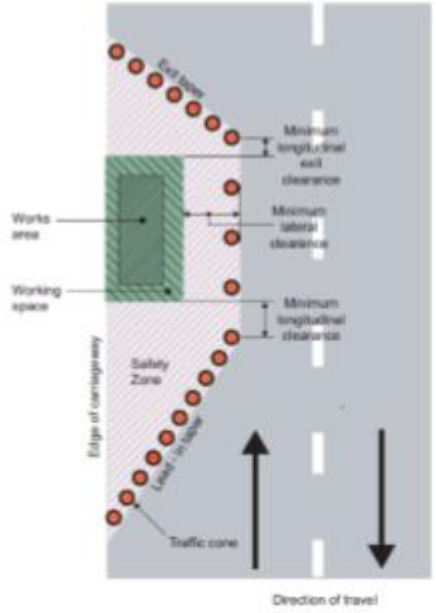
DANGER – unable to maintain safely (tick) ☐

	Yes	Comment	Duration of works
TTRO / TTO – see note 3			
Traffic delays?			

Site is set up for road users and for the work force in accordance with the requirements of the Code of Practice; Safety at Street Works and Road Works

Name	Sign	Date

Notes:



1. Working Space:
Adequate working space should be provided around the works to allow for temporary works, stores, the movement of persons, moving parts of plant or machinery such as jibs or booms, equipment and transport. The working space may vary during the period of the works and need not be a constant width around the works. However, the boundaries of the site should be sufficiently visible that workers do not stray into the safety zone or the adjacent live traffic lanes.

Consideration should be made for the opening of works vehicle doors and whether these might infringe the working space requirements.

Safety Zone
Lateral and longitudinal clearances are measured at ground level but apply above ground where relevant.

The lateral clearance is measured horizontally between the edge of the working space and the edge of the carriageway in use by vehicles. It should be noted that the areas within the coned boundaries, including tapers, should be regarded as parts of the safety zone as shown in the diagram opposite. The safety zone sideways clearance is 0.5m for road speeds of 40mph or less and 1.2m for road speeds of 50mph and above.

- Always remember to leave additional room for the 'swept path' of larger vehicles at junctions and bends.
- Bear in mind that at 3m road width or less the wing mirrors of commercial vehicles could overhang the footway or worksite – depending on the position of the vehicle in respect to the carriageway centre line.
- You must remember that the driver's capability can vary. Always plan for the worst case.

Where the carriageway width is so restricted as to prohibit the provision of the appropriate sideways clearance for your worksite and the diversion of traffic would be impracticable, traffic speeds must be reduced to less than 10mph and an agreed safe method of work imposed on the site.

Under the Traffic Management Act 2006, a Temporary Traffic Regulation Order (TTRO) must be applied for through the traffic authority where it is necessary to temporarily control vehicle activities along a length of public highway. A minimum of 6 weeks is required to secure a TTRO; temporary or short duration order can be signed by a magistrate and the time is then shorter. Under the same Act, a temporary traffic order TTO must be granted where a road closure is required.

2. Stop Works
Only use the STOP-WORKS sign when ALL the following apply:

- On single carriageway roads
- When the stoppage is to be for a maximum period of 2 minutes
- The minimum clear visibility for drivers to the sign is 60 metres for speed limits of 40 mph or under 75 metres for speed limits of 50 and above (See Safety at Street Works and Road Works – A Code of Practice)

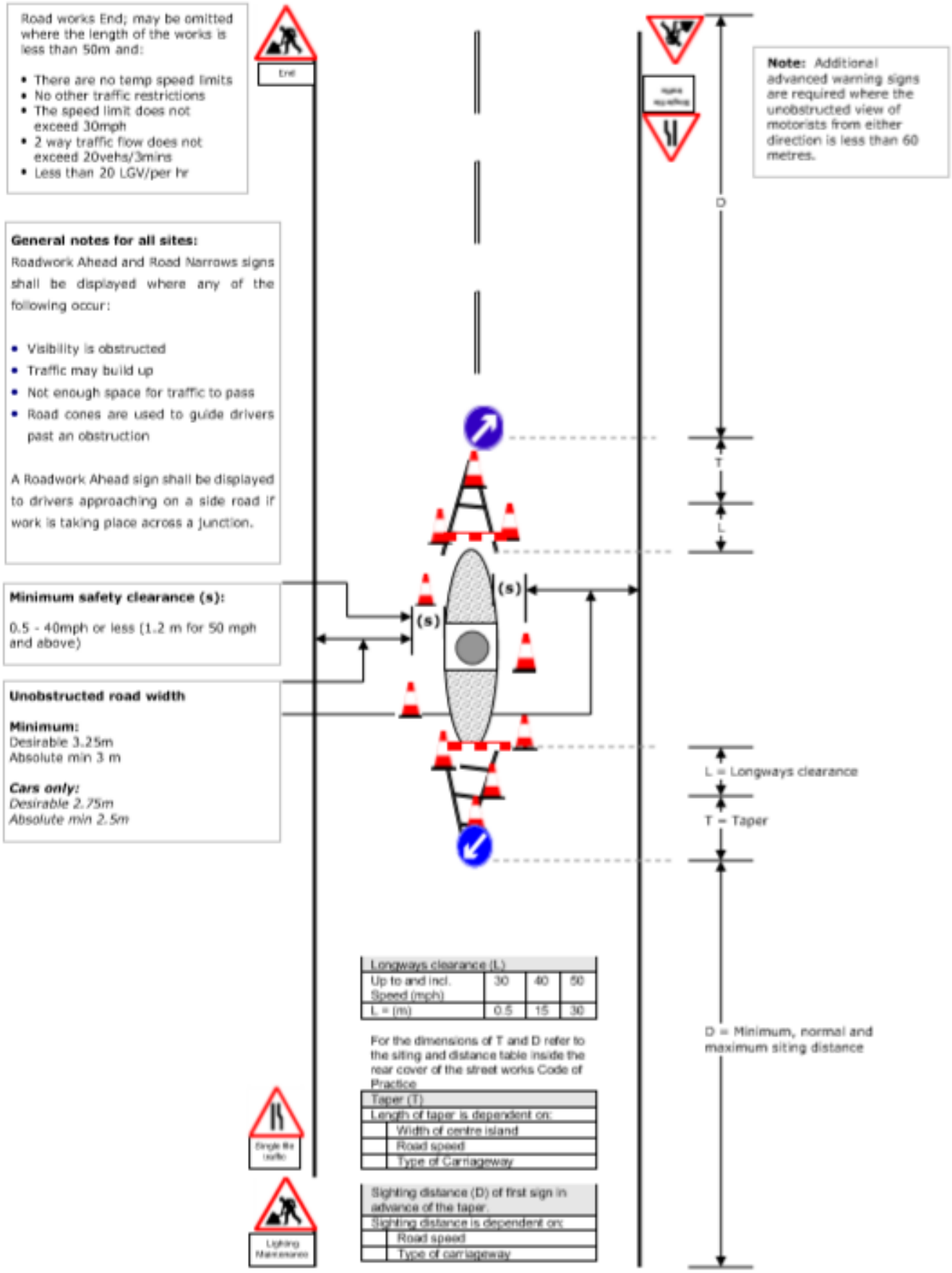
3. Use of Stop/Stop or Red / Red
On single carriageway roads with low traffic flows an extended all-red period with portable traffic signals or "STOP/GO" boards may be used. This should be used for a maximum duration of 15 minutes only – subject to the rate at which traffic queues. This should be carefully considered as drivers may ignore the use of STOP / STOP or Red / Red where they do not see a lane closed or obstructed by a works vehicle.

4. Short Duration Static Works
Works in this category may omit the use of cones and a traffic barrier (lane closed sign) provided that safe working methods are used. (See Safety at Street Works and Road Works – A Code of Practice)

5. Emergency Works
In an emergency, the provision of temporary traffic management complying with the principles included in this document may not always be possible. In such circumstances it may be necessary for those dealing with an incident to deploy emergency traffic management (ETM) using such limited traffic management resources as are available to them upon arrival at the incident. Where positive traffic control has to be used in an emergency, the site supervisor should inform the Highway Authority and the police at once and request assistance

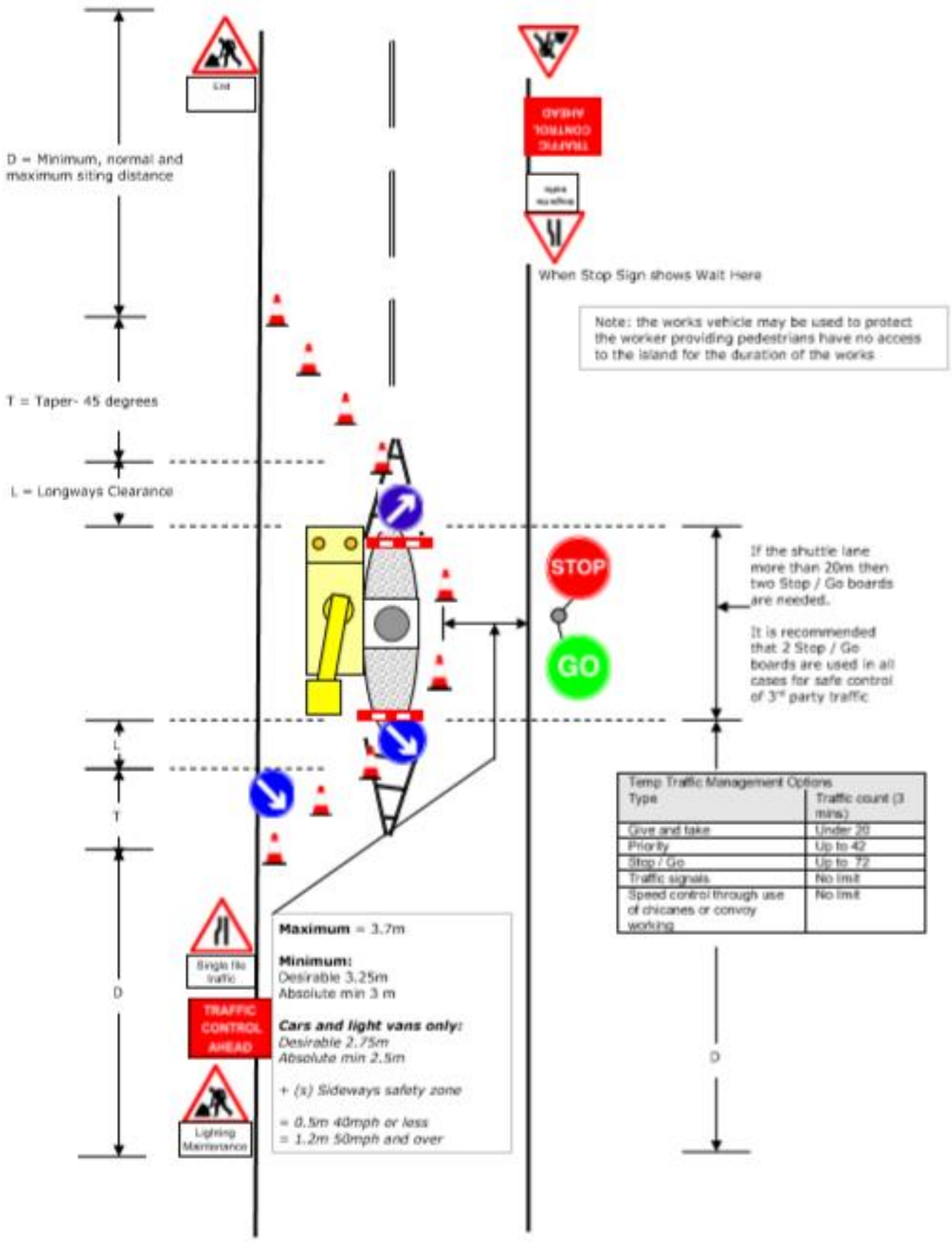
11. Typical Site Layouts

a. General clearances required for centre island works



b. Temporary Traffic Management

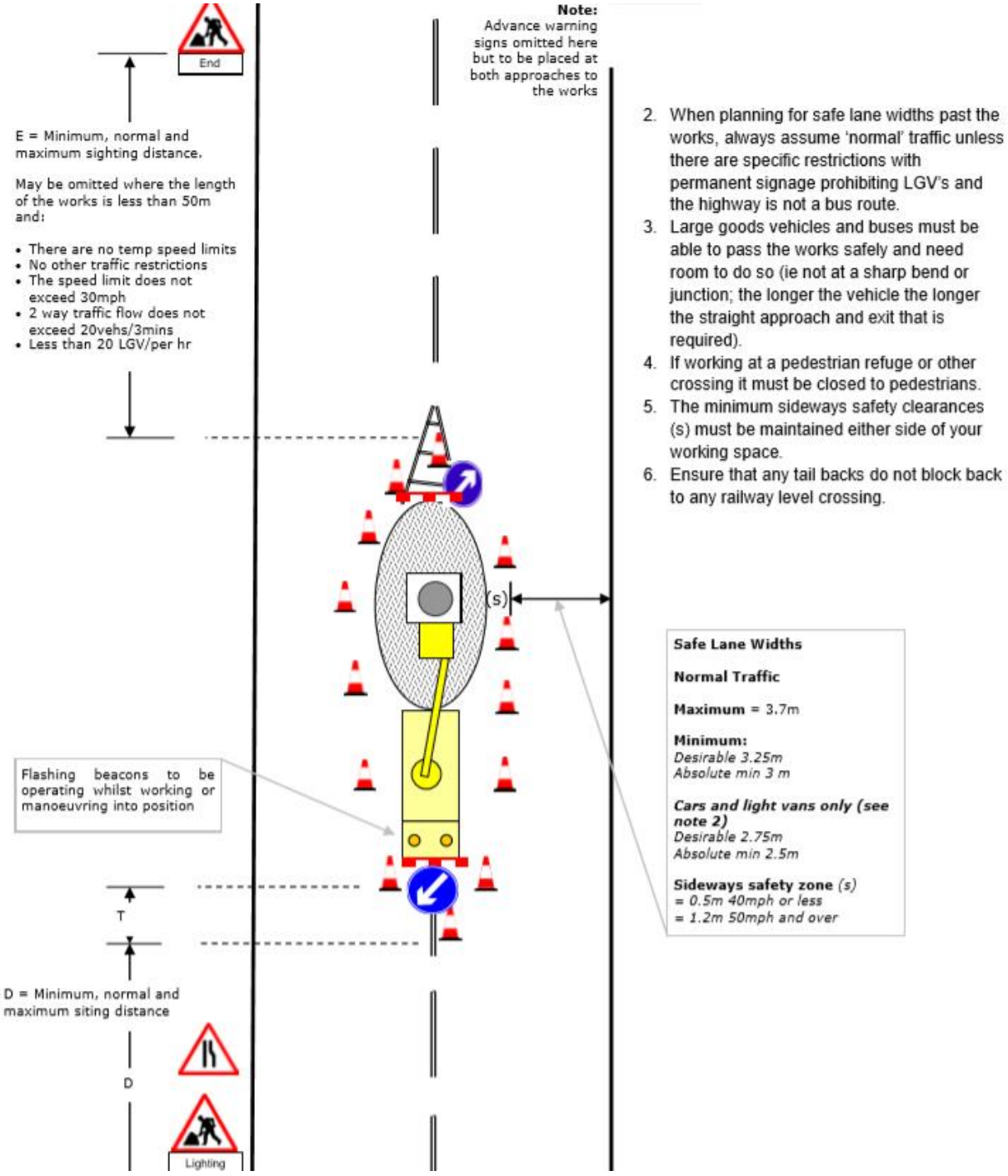
This diagram shows a typical site set up for works at a centre island where a lane has been closed (usually requires 6 weeks' notice for a TTRO to temporarily close a lane on the highway) – on a road with traffic speed of less than 50mph. The 'live' lane must have sufficient width for the safe passage of traffic, or other means of speed control should be considered see para 10e.



c. Works Vehicle in Centre of Road

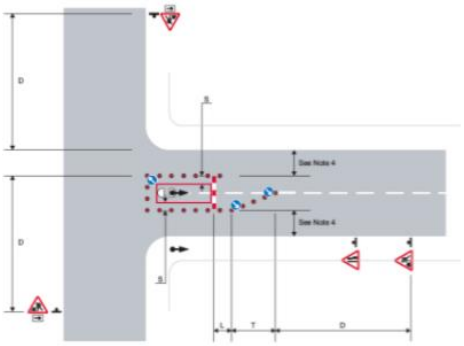
There may be occasions where the safest option to set your site is to park your vehicle in the centre of the highway to provide enhanced visibility of the worksite to road users and better protection for workers at the centre island. (for example where a centre island is wider than your works vehicle). Where the works vehicle is not used for the works itself (e.g. a MEWP) this site set up may be used where:

1. The active lanes either side of the works are at the very least 3m wide + 0.5m lateral clearance either side of your vehicle and the clearance from the works vehicle to the works is 2m (up to and incl. 30mph) or 5m (40mph or more)



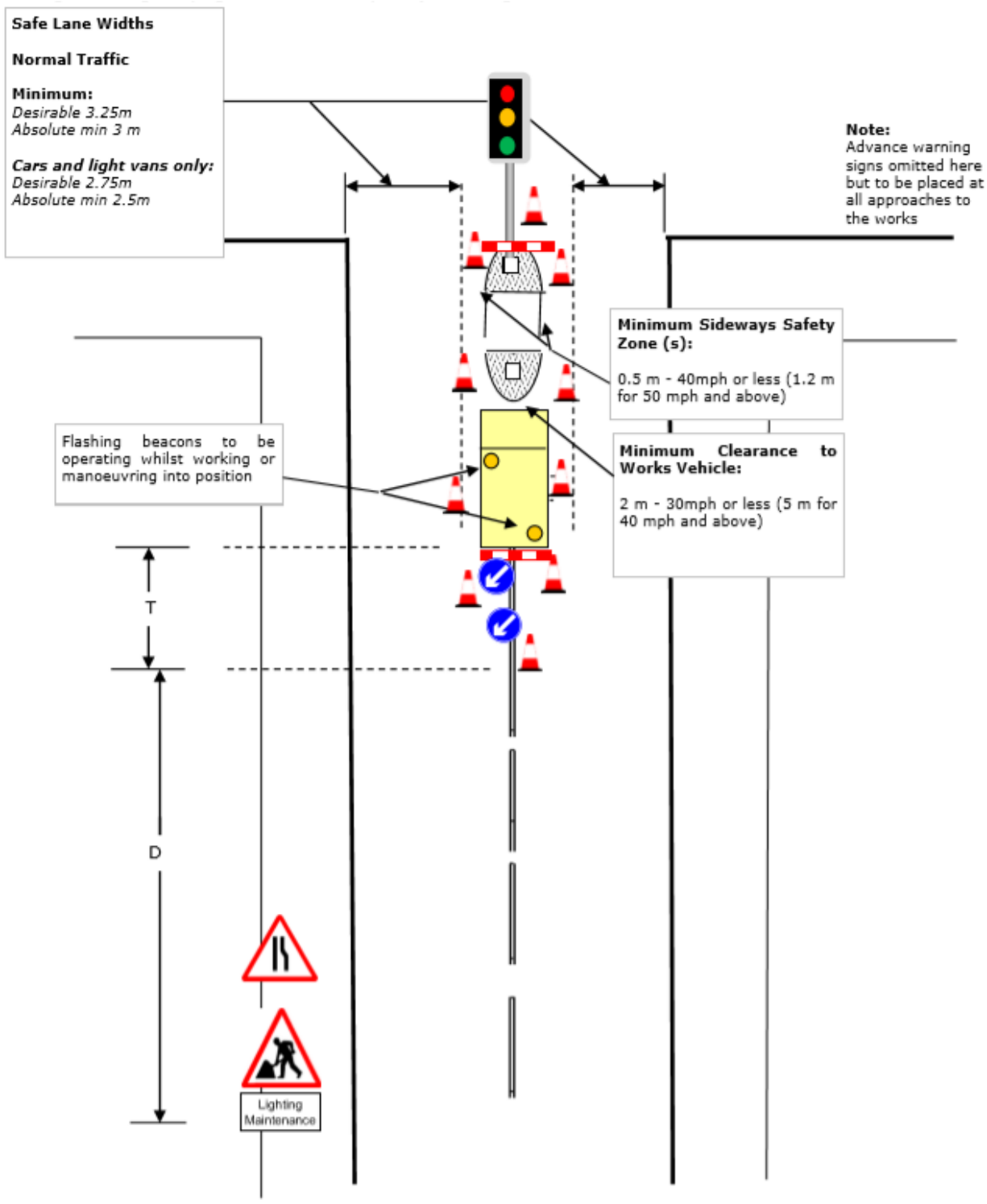
d. Centre Islands at Junctions etc

Centre islands are frequently used to control traffic at the approach and exits from junctions and traffic islands etc and to provide refuge for pedestrians.



The following layout shows the vehicle in the centre of the highway (this will only be permitted where minimum road widths are available, without which a TTRO would need to be submitted for a lane closure).

This site set up may need to be planned in conjunction with positive traffic management eg; stop /go boards or temporary traffic lights.



e. Temporary Speed Control at Centre Island Works

If there is insufficient space to provide the minimum lateral safety clearance of 0.5 m, there are a number of available options:

- If practicable, the road can be closed and traffic diverted along a suitable diversion route
- If diversion of traffic would be impracticable, traffic speeds must be reduced to below 10 mph and an agreed safe method of working imposed on the site – e.g. convoy working; this must be agreed with the Highway Authority.
- For short lengths of shuttle working, i.e. 50 m or less, on single carriageways, chicanes can be used. At least one chicane is required in each direction of the minimum size to allow a large vehicle to pass through slowly, and traffic must first be brought to a halt by positive traffic control and then released in small batches by careful use of “STOP/GO” signs or manually controlled portable traffic signals.

12. Traffic Control by Road Closure

In certain circumstances the current road design and layout will make it impossible to achieve the safe working area required by the Code of Practice for Safety at Street Works and Road Works to maintain safe traffic and/or pedestrian flows past the works.

In such cases a Road or footpath closure may be required. This option can only be considered in conjunction with the Traffic Authority and where there is a suitable diversion route for traffic and pedestrians etc. Access to property and other premises will need to be maintained.

Where this is necessary the Traffic Authority will need to issue a Temporary Traffic Regulation Order (TTRO) and sufficient notice must be given. Emergency Temporary Traffic Regulation Orders may be issued for emergency works and should be requested as soon as the need is identified.

The Traffic Authority may choose to implement one-way traffic flow where there is a suitable diversion route. This may reduce congestion and maintain traffic flows. Once again a Temporary Traffic Order will be required and sufficient notice must be given to the Traffic Authority.

Appendix 1 - Five Steps to Risk Assessment

Step 1:
Look for the hazards

Consider the significant hazards; consult with your Operatives if necessary – they may notice things that you don't: Site conditions (volume and type of traffic, visibility)

- Insufficient highway width for the safe passage of vehicles past the works
- Work at height (falls from height, falling objects)
- Work on or near the electrical supply (electric shock / electrocution)
- Traffic
- Uneven or differing surface levels
- Reduced visibility, obstruction of street signs and warnings etc

Step 2: Risk
Decide who might be harmed and how

- Workers eg; directly employed and contractors, young workers and trainees.
- Highway users including motorists LGVs and buses cyclists and horse riders etc
- Pedestrians including, the visually or physically impaired, children, the elderly and push chair or wheel chair users etc

Step 3: Evaluate the risks and decide whether the existing precautions are adequate or whether more should be done

Consider each hazard – and plot them and the site conditions into the temporary traffic Management risk assessment at para 8. Work through the TTMRA to establish either:

- That there are site conditions that exist allowing the safe site set up in accordance with NRSWA, its associated CoP and Chapter 8 or
- Refer back to the client and/or the designer

Step 4:
Record your findings

The law requires that you write your findings down and communicate the necessary control measures to those conducting the work. Use the TTM RA at para 8 to do this.

Step 5:
Review your assessment and revise it if necessary

The environment, personnel, materials, substances, plant and equipment change from site to site – you should regularly review your risk assessments to check that they remain valid and revise where necessary or for example after:

- An accident or near miss etc
- A change in site or site conditions
- A change in the design specifications
- A change in the safe system of work, the materials or plant and equipment used etc

Appendix 2 – Centre Islands – Operational Checklist

The following typical check list may be used at site by those undertaking the planning of works at centre islands to ensure that safe site conditions are set up and maintained and that the site is left in a safe condition when work is completed or suspended:

		Location	
Asset to be worked on		**Traffic count** (over 3 mins)	

		✓	×	N/A
1. Before work starts – General Safety				
a	Is everyone on site wearing high visibility clothing and required PPE?			
b	Are all signs, barriers, cones and lighting correctly placed?			
c	Do bends, hills or dips in the road obscure your temporary signs?			
d	Are advanced warning signs needed?			
e	Will the site be safe at night or in wind, fog, snow or rain if left open?			
f	Are parked vehicles, trees or other street furniture affecting the site?			
g	Is there enough road width to set up a safe site?			
h	Is temporary traffic management with shuttle lane working required?			
i	Are there any site-specific risks requiring special guarding?			
j	Has allowance been made for delivery and removal of materials?			
2. Before work starts – Pedestrians				
a	Are pedestrians given protected routes, which are wide enough - 1.2/1.5m?			
b	Are pedestrian routes clearly indicated?			
c	If the footway is closed, is there an alternative route?			
d	If so, is it clearly marked?			
e	Are there any special hazards for disabled pedestrians?			
f	If so, how are they be made safe? (ramps, barriers c/w tapping rail, other?)			
g	If a temporary footway in the road is to be used, are ramps to the kerb provided where necessary?			
3. Before work starts - Traffic				
a	Is type of traffic control right for work, traffic and speed?			
	Give and take			
	Priority			
	Stop / Go			
	Traffic signals			
	Speed control through chicanes or convoy working			
b	Have any misleading permanent signs and road markings been covered?			
c	Will there be safe access to adjacent premises?			
d	Have you a copy of portable traffic signals site approval?			
e	Have you considered the needs of cyclists and horse riders?			
4. Before work starts – Workforce (Safe Site)				
a	Are there any signs of previous traffic collision			
	▪ Damage to existing bollards etc			
	▪ Damage to kerb, wearing surface or sub-grade			
	▪ Tyre marks on island			
b	Do you feel safe to proceed with the works?			
5. When work is in progress				
a	Does signing and guarding meet changing conditions?			
b	Are signs, cones and lamps clean and serviceable?			
c	Can traffic control arrangements be improved to reduce traffic delays as conditions change?			
d	Are carriageways and footway being kept clear of mud and surplus equipment?			
e	Are materials that are left on verges or lay-bys being properly guarded and lit?			
6. When work is suspended – For Completion by the Supervisor				
a	Will checks be made on signing, lighting and guarding?			
b	Has the arrangement been changed to reflect conditions?			
7. When work is finished				
a	Have all signs, cones, barriers, and lamps been removed?			
b	Have any covered permanent signs been restored?			
c	Have the authorities been told the work is complete?			

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