

The Delivery Hub health, safety and environment

Raising the bar 16

Working at height

Version 1 - September 2013

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Objective

To help reduce the number of work at height related injury accidents by detailing minimum standards and promoting good practice for operations where work at height is unavoidable.

Background

Falls continue to be the biggest cause of fatal injury in Britain's workplaces, 51 per cent of worker deaths in construction in 2011/12 resulting from a fall from height. On top of this, over 2,200 major injuries such as broken bones or fractured skulls are reported to Health and Safety Executive each year by the construction industry, the most common cause of major injuries are falls.

Minimum requirements

The work at height regulations requires the employer to carry out a risk assessment for all work at height and put in place arrangements for:

- eliminating or minimising risks from working at height
- safe systems of work for organising and performing work at height
- safe systems for selecting suitable work equipment to perform work at height
- safe systems for protecting people from the consequences of work at height

All work at height is considered a high risk activity. From the design stage through the construction process and into the maintenance phase of a project work at height must be eliminated where ever possible either through design, sequencing or other methods. A risk assessment and overall strategy for prevention of injury needs to be produced and reviewed at each phase of the project. Examples of this for work on motorway verges can be found in appendix one and two of this document.

The following hierarchy of control should be adopted:

- **avoid** the risk by not working at height
- **prevent** falls by means of work equipment or other measures where work at height cannot be avoided
- **minimise** the distance and consequences of a fall should one occur by the use of work equipment or other measures
- give **collective measures** preference over personal protective measures.

Considerations

Examples of avoidance of working at height

The use of long-handled tools or other equipment can sometimes be used to safely carry out a task from ground level, eg a long handled brush or roller for painting and water-fed poles with brushes for window cleaning. Think about whether it is possible to design out the need to work at height, eg could new or replacement services, such as pipes or cables, be put at ground level?



Pre-slinging and bulk/pallet delivering of loads for mechanical handling off delivery vehicles will help prevent the requirement of access to the back of delivery vehicles

Prefabrication/assembly of structures at low level and the installation of systems such as gantry cable routes etc. prior to final installation at high level.

Minimise working at height on structures

http://assets.highways.gov.uk/specialist-information/major-projects-knowledge-sharing-a46/L16_rev_1_-_No_bridge_work_at_height_-_Richard_Jones.pdf

Emergency arrangements

Due to the very nature of work at height emergency arrangements are particularly important, links to several examples are given to help project teams determine the best approach for their own set of circumstances.

Escape from scaffold structures:

<http://partoneclaims.highways.dft.gov.uk/minisite/ssrtoolkit/HS%20Toolkit/Escape%20access%20within%20scaffold%20structures.pdf>

Role call and evacuation routes:

The use of roll call/tally boards is particularly important where multiple access points or complex areas where in the event of an emergency numbers of persons missing or trapped may be vital to emergency services.

The posting of evacuation routes and assembly points can also prove vital in emergency situations.



Working adjacent to overhead power lines

Health and Safety Executive guidance on work near overhead power lines

www.hse.gov.uk/construction/safetytopics/overhead.htm

Exclusion zones

The creation of exclusion zones around and below the working areas

- Limitations due to inclement weather
- Medical limitations – health assessments (for safety critical workers?)
- Highways Agency raising the bar standard B12 occupational health

<http://www.highways.gov.uk/our-road-network/safety/major-projects-delivery-hub-health-safety-action-group/>

Legislation/guidance

Management of health and safety at work regulations 1999

Work at height regulations 2005 (amended) (WAHR)

INDG401: The Work at height regulations 2005 (as amended) a brief guide

INDG367: Inspecting fall arrest equipment made from webbing or rope (leaflet)

HSG150: Health and safety in construction (Health and Safety Executive books)

HSG33: Health and safety in roof work (Health and Safety Executive books)

CIS58: The selection and management of mobile elevating work platforms

Construction safety manual (CIP)

GE700 Construction site safety, section D 01-06 (CITB)

IPAF website: www.ipaf.org/en/

Highways Agency raising the bar standard occupational health B12

Health and Safety Executive guidance on use of ladders:

www.hse.gov.uk/falls/ladders.htm

Health and Safety Executive guidance work at height access equipment information toolkit: <http://www.hse.gov.uk/falls/wait/index.htm>

Collective protection

Edge protection warning systems

Minimum requirements

Guardrails, toe boards and similar barriers are provided wherever someone could suffer personal injury as a result of a fall.

The guardrails provided are:

- strong and rigid enough to resist any loads likely to be placed on them
- securely fixed to a structure capable of supporting them include:

a main guardrail at least 950mm high for temporary structures and 1m for permanent structures

a toe board of at least 150mm high

additional intermediate guardrails positioned so that the unprotected gaps do not exceed 470mm

Barriers other than guardrails may be used provided that they offer an equivalent standard of protection.



Desirable

Early installation of edge protection

<http://partoneclaims.highways.dft.gov.uk/minisite/ssrtoolkit/HS%20Toolkit/>

Fixed Scaffold

Minimum requirements

- Scaffolds are to be designed, erected, altered and dismantled only by CISRS trained scaffolders with competence specific to the scaffold type and to the required level. A competent person shall also supervise the work
- Provision of suitable access to install, maintain and dismantle scaffolds must be considered at the design stage and form part of the scaffolding process.
- Scaffolders to work to NASC latest guidance SG4:10.
- Scaffolders always adopt fall prevention measures during erection and dismantling; this normally means wearing a safety harness
- System scaffolds are installed in accordance with manufacturers' instructions. The instruction manual is made available on site
- Scaffolds are based on a firm, level foundation that is capable of supporting the weight of the scaffold and any imposed loads
- The scaffold is adequately braced and tied into a permanent structure or otherwise stabilised. If a tie is removed to allow work to proceed, an equivalent tie is provided nearby to maintain stability.
- Where scaffolds need to take heavy loads or are to be sheeted, this is brought to the attention of the provider; a special design may be required
- Platforms are fully boarded and wide enough for the work and for access, with boards that are properly supported and not overhanging excessively. (The recommended overhang for a 38mm thick board is 50mm minimum and 150mm maximum)
- Tower staircase providing access to all working platforms unless restricted by space available.

- All openings are fitted with gates
- Checks are made before use, after substantial alteration and where adversely affected by the weather
- Scaffolds to be tagged/labelled with person responsible for erection, latest inspection dates and design loadings. Inspections are determined by risk assessment, but should be at least weekly and records available on site



Desirable

- Anti slip tread on steps

<http://partoneclaims.highways.dft.gov.uk/minisite/ssrtoolkit/HS%20Toolkit/Anti%20Slip%20Tread.pdf>

Netting

Minimum requirements

Safety nets are usefully employed to reduce potential falls and to minimise their effects. They offer collective, passive safety as they protect everyone working within their boundary without requiring those workers to act to be protected. All safety nets must meet the specific requirements and testing methods given in BS EN 1263-1.

All safety nets must be fitted in accordance with manufacturer's instructions and the safety requirements for positioning in accordance with BS EN 1263-2.

Safety nets overlaid with a fine mesh debris cover can also protect those who have to work or pass below. An enhanced inspection and maintenance regime must be put in place if debris netting is utilised with any safety net. This must include measures to stop works if the build up of debris may injure a faller or damage the safety netting/supports.

Adequate clearance must be allowed below the net to allow it to function properly.

Ladders are not recommended for erection of netting.



Desirable

A fully designed netting system with the following:

- inspection and maintenance regime
- emergency rescue plan and a
- program of emergency drills.

[Planning%20early%20installation%20of%20edge%20protection%20at%20permanent%20works.pdf](#)

Air mats

Air mats are an alternative to netting where but should only be used where falls of less than 2 metres are possible. This type of protection should not be used as a first choice as alternative methods which prevent falls should be utilised first.

If air mats are utilised they must be installed as per manufacturer's instructions and checked for compliance to ensure they will provide the protection specified.

Consideration should be given prior to use of the risk of a falling person striking objects during a potential fall such as intermediate walls or adjacent objects/structures.



Mobile elevated work platforms MEWPS

Minimum requirements

MEWPS are classified as lifting equipment and as such are covered by the lifting operations and lift equipment regulations 1998 (LOLER) regulation 8 requires lifts to be properly planned by a competent person.

For the purposes of this standard a competent person with regard to lifting is the

holder of a CPCS (blue) competent person card endorsed with category A62. Appointed persons-lifting operations or similar.

Hazards/considerations that must be taken into account during planning operations for MEWPs are given in but not limited to the listed below:

- Alternative means of undertaking the work by safer method
- Work to be undertaken from the platform
- Overturning
- Falls of persons or materials
- Collision
- Height to be reached
- Route to work site including travelling in a raised position
- Entrapment of operator or basket against structures
- Ground conditions – uneven/soft ground conditions, excavations or subsurface chambers such as manhole/duct runs etc.
- Temporary structures/covers
- Segregation from passing traffic
- Protrusion of MEWP into live road or other transport route
- Weather conditions High winds- wind speed limitations etc.
- Overhead lines
- Power cables
- Use of and position of outriggers

- Emergency/rescue procedure

- Supervision of the works

The risk of falling from a MEWP is from sudden movements caused by an impact, ground movement, failure of a stability critical part, or overreaching. The wearing of appropriate fall protection equipment can provide protection against the residual risk of falling, or being thrown out of the carrier. Guidance on appropriate Fall Protection in Mobile Elevating Work Platforms can be found at <http://www.hse.gov.uk/pubns/misc614.pdf> and www.ipaf.org/fileadmin/user_upload/documents/en/H10812.pdf

MEWPs have a thorough examination and inspection by a competent person at least once every 6 months. They are also inspected and maintained in accordance with Manufacturers instructions.

All MEWPS used on projects covered by this standard must meet the requirements of BS EN 280 standard (mobile elevating work platforms) BS8460 Safe use of MEWPS Code of practice must also be used to assist in the selection, hiring, positioning maintenance and thorough examination of MEWPS. The code of practice should also be used for guidance on the safe use of MEWPS selection/training of operators and other personnel.

The safe working load must be clearly marked at the base of the machine and on the working platform. The load specified must not be exceeded. Care needs to be taken to reduce the build up of debris on the platform, and any materials being lowered into the platform area.

Telescopic and articulating machines are normally designed to carry operators and tools only, while scissor lifts may have the capability to carry some materials. Manufacturer's instructions must be followed.

All MEWP controls must be suitably shrouded or fitted with a cut off device to prevent inadvertent operation of the control panel.

All operators of MEWPS must be trained and competent; recognised training accepted is CPCS and IPAF PAL + it is important that the correct category of training for operator is matched to the equipment to be used. Checks on the

category/training for each type of MEWP can be found at <http://www.citb.co.uk/cards-testing/construction-plant-competence-scheme-cpcs/cpcs-downloads/> and www.ipaf.org/en/training/pal-card/

Before using a MEWP the operator and another responsible person on site (who is not working on the platform) must know how to use the emergency controls.

Persons should not leave the working platform whilst in an elevated position, nor should materials be transferred, unless the risk assessment has addressed this requirement and the full control measures are in place.

Lone working is prohibited.

The minimum requirements of Highways Agency raising the bar standard B1.08 plant and equipment-MEWPS must also be adhered with <http://www.highways.gov.uk/our-road-network/safety/major-projects-delivery-hub-health-safety-action-group/>

Desirable

Best practice guidance for MEWPS 'is available via this link to the IPAF website: www.ipaf.org/en/ also within documents noted in the reference section of this guidance.

Managers and supervisors responsible for MEWP operations are to have awareness training covering the management of MEWPS or similar eg IPAF managers for MEWPS

Best practice guidance for MEWPS Avoiding trapping/crushing injuries www.ipaf.org/en/publications/avoiding-trapping-crushing-injuries/

The use of "IPAF Trained" helmet stickers for all scissor lift and articulated boom operators.

These are issued to all IPAF certified operators with use of MEWPs prohibited if not displayed by the user.



Mobile access towers

Minimum requirements

When a scaffold tower is to be used:

- It is erected, altered and dismantled only by PASMA trained personnel, or CISRS trained scaffolders with type specific training.
- Mobile access towers must be inspected by a competent person.
 - after assembly in any position;
 - after any event liable to have affected its stability; and
 - at intervals not exceeding seven days.
 - towers to be tagged/labelled with the name of the person
 - responsible for erection, latest inspection dates
 - register of inspections held on site.

New inspection reports are not required every time a mobile access tower is moved to a new location on the same site. However, if guard rails or other components have to be removed to enable the tower to be moved past an obstruction, then a preuse check should be undertaken by a trained and competent person.

- The manufacturer's instructions for erection, use and dismantling are followed. An instruction manual is made available on site – if the scaffold has been hired, the hirer ought to provide this information
- The tower is kept vertical with the legs resting properly on firm, level ground
- Wheels and outriggers are locked in position; base plates provide greater stability if the tower doesn't have to be moved
- A safe means is provided to get to and from the platform, for example internal ladders. www.hse.gov.uk/pubns/cis10.pdf

- Proper edge protection (guardrails and toe boards) is provided
- The tower is tied rigidly to the structure it is serving, or other additional support is provided if:
 - the tower is sheeted
 - it is likely to be exposed to strong winds
 - it is used for water jetting or grit blasting
 - heavy materials are lifted up the outside or
 - the tower base is too small to ensure stability for the height of the platform

When moving the tower:

- check for power lines or overhead obstructions
- check that there are no holes or dips in the ground
- ensure that people or materials do not remain on the platform.

Ladders and steps

Minimum requirements

The use of ladders, whether to perform work at height or as a means of access or egress, is subject to risk assessment. The assessment is appropriate to the risks involved, but even for simple tasks, doing a risk assessment ensure that the risks are recorded. The assessment covers such factors as the height to be negotiated, the site conditions, the duration and extent of the work and the frequency of access. However, when considering the use of ladders it is important to remember that:

- Ladders are used as a place of work only when other, potentially safer, means such as tower scaffolds are not reasonably practicable
- Ladders are used for access only when provision of a staircase is not reasonably practicable
- A register to be held of all podium/steps/ladders detailing unique identification numbers, type, date and result of inspection along with date of next routine inspection.

In practice, ladders are used as a workplace only for short-term work under the following conditions:

- The work only requires one hand to be used.
- The work can be reached without stretching
- The ladder can be fixed to prevent slipping
- A good handhold is available

Whatever the use, the ladder needs to be strong enough for the job and in good condition ie the stiles not damaged, buckled or warped, no rungs are cracked or missing and any safety feet are not missing. In use:

- The ladder is set at an angle to minimise the risk of slipping outwards ie one out for every four up
- The top of the ladder rests against a solid surface.
- Both feet are on a firm footing and cannot slip
- The ladder is fixed at the top or footed at the base
- The ladder extends at least one metre above any landing place unless some other adequate handhold is available
- Suitable landings are provided where ladders are used in a run measuring a vertical distance of nine metres or more

Desirable

- Permit to use steps/ladder issued following completion of specific task based risk assessment
- All podium/steps/ladders that are available for use to be tagged/labelled with unique Identification numbers, date of last and next inspection and the name of person who completed the last inspection

- The use of podiums steps to be encouraged over the use of just ladders



- The use of fall arrest systems with ladders <http://partoneclaims.highways.dft.gov.uk/minisite/ssrtoolkit/HS%20Toolkit/Fall%20arrest%20for%20ladders.pdf>

Lifting operations – man riding

Minimum requirements

Operations that involve the lifting of persons will usually be undertaken by work equipment specifically designed for that purpose eg passenger hoists or MEWPs.

Man riding on cranes is permitted only for work when another safe means of access cannot be provided and is limited to work of short duration as far as possible.

The use of excavators for man riding is prohibited.

Man riding is classed as a complex lifting operation. It therefore requires a lift plan approved by the appointed person lifting (APL.)

Any crane used for man riding must be adequate and suitable for the task. In addition:

- is subject to 6 monthly thorough examination
- any free-fall capability must be locked-out – a hydraulic crane is preferable
- is equipped with appropriate devices such as 'deadman' controls, safety hook on block, hoisting limiter, lowering limiter, rated capacity indicator and rated capacity limiter
- hoist rope at least 8mm diameter
- the SWL at the required radius is at least twice the weight of the carrier plus its contents
- work stops if wind speed exceeds 7m/s (approx. 15.6mph)
- no lifts may be made with any other hoist line on the crane during man riding operations
- the crane may not travel

The use of forklift trucks or telescopic handlers for man riding duties is only ever considered in exceptional circumstances. A failsafe method of communication must be put in place and fully understood by the machine operator and those within the basket.

Carriers used for man riding are subject to specific requirements. These include:

- a notice attached to the carrier stating 'man riding duties only'
- a notice stating the SWL and maximum number of passengers
- secure attachment to the crane by means of a shackle or latched hook

- daily recorded inspection by a competent person
- anti-spin arrangements such as the use of multiple-fall ropes or swivel hook block and the use of tail ropes where appropriate
- doors or gates that open inwards fitted with a safety catch to prevent inadvertent opening
- edge protection sufficiently strong to prevent people or equipment falling through
- provision for safety harnesses to be used and anchored

Man riding is appropriate mainly as a means of access. Where work has to be done from the man rider, then safety harnesses are worn except for work over water, where lifejackets are worn, not harnesses.

The safe system of work for man riding must include arrangements for rescue in the event of a failure.

Delivery vehicles

Minimum requirements

The main aim of all tasks associated with work at height whilst loading and unloading delivery vehicles should be reviewed to see if they can be fully or partially completed at ground level.

The use of loading/sheeting bays or loading docks either permanent or temporary structures must be the first considered for all deliveries, the use of tail lift vehicles (with edge/side protection) should also be considered.

Where personnel are required to access open sided vehicles where there is the potential of a fall from height edge protection should be considered as the first level of control to prevent falls from height.

Where access is required to a delivery vehicle and there is the potential for a fall from height the following are minimum requirements:

Provision of safe access and egress, either by fixed ladder or purpose designed hand/foot holds.



Examples of ladder access flat bed vehicles

<http://partoneclaims.highways.dft.gov.uk/minisite/ssrtoolkit/HS%20Toolkit/Ladder%20access%20to%20flat%20bed%20lorries.pdf>

Protection to prevent a fall

The uses of proprietary systems are preferable where permanent or semi permanent loading docks cannot be utilised.

<http://partoneclaims.highways.dft.gov.uk/minisite/ssrtoolkit/HS%20Toolkit/Edge%20protection%20system%20for%20flat%20bed%20lorries.pdf>

Example of side rails installed on vehicles



Where the risk of a fall cannot be eliminated, use work equipment to minimise the distance of a fall

Desirable

- All loads to be designed to be removable from vehicles without the need to work at height. eg palletised loads, pre-slung loads etc.
- All aggregate/surfacing delivery vehicles fitted with automatic sheeting and automatic tailgates
- Construction plant hire-association best practice guide work at height whilst loading/unloading transport CPA 0902 www.cpa.uk.net/p/Safety-Leaflets/

Individual protection

Harnesses

Minimum requirements

In some circumstances it is not reasonably practicable to provide physical measures to prevent a person falling. In such cases, a full body harness, suitably anchored and incorporating some form of energy absorber may be the only precaution available. This at least ensures that if a fall occurs, it is safely arrested.

The safe performance of a safety harness depends completely on a suitable anchorage being provided. The adequacy of the anchorage point, including the ability of the supporting structure to carry the loads, is verified by calculation or by testing.

Anchorage are installed as high as possible, preferably above the user and never below foot level. Retractable type fall arrestors are anchored at chest height or above.

Adequate clearance is required in order for a fall arrest system to function. When establishing fall arrest systems consideration must also be given to possible pendulum effect on the system users particularly when energy absorber/arrester devices are utilised.

Training in the use of safety harnesses should align with BS8454 Code of practice for the delivery of training and education for work at height and rescue and as a minimum include the following:

- Introduction to working at height and the need for fall protection equipment (PFPE).
- Height safety legislation, standards and guidelines.
- Principles of personal fall protection systems for travel restraint, work positioning and fall arrest.
- Pre-use inspection procedures.
- Equipment connection and adjustment.
- Practical application, problem solving and use of workplace PFPE.
- An appreciation of emergency actions, rescue incl. suspension trauma.

Desirable

Control of harness usage, none regular harness users to be issued with a harness permit ([see appendix 3](#))

Appendix 1: Example - motorway verge works edge protection / delineation matrix

Motorway Verge Works - Edge Protection/Delineation Matrix

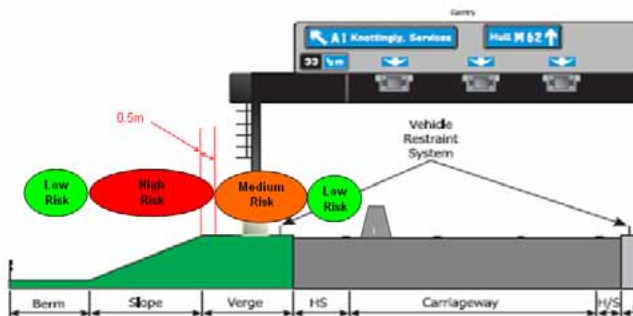
This document should be used as guidance to aid in the Risk Assessment Process and the actual type of Protection or Delineation needs to be considered on an activity by location basis.

Working at Height Risk Zones

Low Risk
Works on Hardshoulder (1)
Works on bottom of Embankment (4)

Medium Risk
Works on Verge (2)

High risk
Works on batter slopes or within 0.5m of
slop top (3)



Activity	Work Zone 1. Hardshoulder 2. Verge 3. Batter Slope 4. Berm	Type of Location / Topography			
		Flat or slope no steeper than 1:2 with no hazards or obstructions	Slope no steeper than 1:2 with hazards or obstructions	Slope steeper than 1:2	Vertical Drop e.g. Retaining Wall / Wing Wall / Helical Pile Platform
Works within hardshoulder I.e. Replace drainage manhole ironwork	1	N/A	1	2	4
Works within verge I.e. Longitudinal ducting and chambers	2	1	1 2 Subject to level of risk	2 4 Subject to level of risk	4
Works on top of Batter Slope I.e. Installation of Environmental Fence Posts	3	1	4 (isolate the obstruction)	4	4 6 Subject to stage of works
Works on Batter Slope I.e. construction of access steps	3	1	4 (isolate the obstruction)	6	N/A
Works within berm I.e. El Cabinet Installation	4	1	N/A	N/A	N/A

Type of Protection and / or delineation

1	No delineation or protection
2	Edge delineation system (e.g. cones or posts & rope)
3	Free standing fence system (e.g. pedestrian guardrail)
4	Fixed edge protection system (e.g. scaffold tube & lifting / ultraguard)
6	Individual / personal protection (e.g. fixed lanyard / static lanyard)

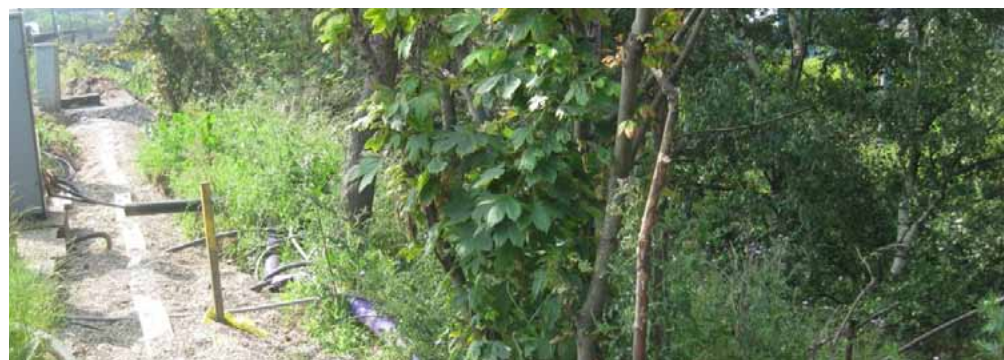
Visual examples of varying topographical conditions



Generally flat



Slope no steeper than 1:2 with no hazards or obstructions



Slope no steeper than 1:2 with hazards or obstructions

Appendix 1: Example - motorway verge works edge protection / delineation matrix

Visual examples of varying topographical conditions



Slopes no steeper than 1:2 with hazards or obstructions



Slopes steeper than 1:2



Shear/vertical drop eg wing wall / helical pile platform

Types of protection



Edge delineation system (eg cones and rope)



Free standing fence system (eg pedestrian guardrail)




Fixed edge protection system (eg scaffold tube and fitting / ultraguard)

Appendix 1: Example - motorway verge works edge protection / delineation matrix


		Ref. No. WAH	Sheet No. of 1 2	Risk Assessment <i>This Risk Assessment should be accompanied by a Point of Work Assessment relating to the specific location and completed on the day/shift by the person leading the work activity</i>																																					
Part 1 – Risk Assessment Details Title: Working at height Assessed by: Rob Nybody Contract: BB3MM Phase 3 Approved by: Site: Motorway N/B & S/B																																									
Part 2 – Review History Date established: 15/07/13 Review 1 (Date): Review 2 (Date): 			Part 4 – Additional Safety Information Details of related safety information; i.e. further documents required for the activity. This assessment outlines the areas of risk (risk zones) for works on a gradient slope or in proximity to a gradient slope, within the longitudinal working area of Birmingham Box Phase 3 Temporary works edge protection must be installed by competent people using fall restraint systems. Anchored to either safety barrier, fence posts, steel or concrete structures. Note that Zone 3 (below) extends into the verge by 500mm																																						
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Risk Rating Matrix All Risk Assessments must be written by a Competent Person The Risk Rating should be determined using the matrix set out on the right. Hazards should be assessed before and after determining what the control measures are to be. Once a final Risk Rating has been established the rules set out below must be applied. <table style="width: 100%;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">Likelihood of incident or injury</td> <td style="width: 10%; text-align: center;">Inevitable</td> <td style="width: 10%; text-align: center;">Probable</td> <td style="width: 10%; text-align: center;">Possible</td> <td style="width: 10%; text-align: center;">Remote</td> </tr> <tr> <td style="text-align: center;">Major</td> <td style="text-align: center;">Extent of incident or injury</td> <td style="text-align: center;">Red</td> <td style="text-align: center;">Red</td> <td style="text-align: center;">Amber</td> <td style="text-align: center;">Green</td> </tr> <tr> <td style="text-align: center;">Serious</td> <td style="text-align: center;">Extent of incident or injury</td> <td style="text-align: center;">Red</td> <td style="text-align: center;">Red</td> <td style="text-align: center;">Amber</td> <td style="text-align: center;">Green</td> </tr> <tr> <td style="text-align: center;">Minor</td> <td style="text-align: center;">Extent of incident or injury</td> <td style="text-align: center;">Red</td> <td style="text-align: center;">Amber</td> <td style="text-align: center;">Green</td> <td style="text-align: center;">Green</td> </tr> <tr> <td style="text-align: center;">Low</td> <td style="text-align: center;">Extent of incident or injury</td> <td style="text-align: center;">Red</td> <td style="text-align: center;">Amber</td> <td style="text-align: center;">Green</td> <td style="text-align: center;">Green</td> </tr> </table> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;">Red</td> <td style="width: 10%;">Do not proceed – Re-assess</td> </tr> <tr> <td style="text-align: center;">Amber</td> <td>Review the Control Measures</td> </tr> <tr> <td style="text-align: center;">Green</td> <td>Proceed with activity</td> </tr> </table> Contact the IMS Team for further guidance.							Likelihood of incident or injury	Inevitable	Probable	Possible	Remote	Major	Extent of incident or injury	Red	Red	Amber	Green	Serious	Extent of incident or injury	Red	Red	Amber	Green	Minor	Extent of incident or injury	Red	Amber	Green	Green	Low	Extent of incident or injury	Red	Amber	Green	Green	Red	Do not proceed – Re-assess	Amber	Review the Control Measures	Green	Proceed with activity
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Appendix 1: Example - motorway verge works edge protection / delineation matrix


		Ref. No. WAH	Sheet No. of 2 2	Risk Assessment – (continuation sheet) <i>This Risk Assessment should be accompanied by a Point of Work Assessment relating to the specific location and completed on the day/shift by the person leading the work activity</i>							
Part 3 – Hazards & Risks (continued)		Who could be affected?		To what extent?		How we will stop this activity from going wrong (Control Measures)		This is how safe we have made it!			
What might go wrong? (Hazard)	Outcome or consequence (Risk)	Employee	Public	Client	Other (Specify)	Red	Amber	Green	Red	Amber	Green
ZONE 2 Verge Area	Potentially working at height subject to actual task and proximity to slope edge	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ZONE 1 Hard shoulder	Not working at height	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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		Ref. No.	Sheet No.	of	
		WAH	1	2	<h2 style="margin: 0;">Risk Assessment</h2> <p><i>This Risk Assessment should be accompanied by a Point of Work Assessment relating to the specific location and completed on the day/shift by the person leading the work activity</i></p>
Part 1 – Risk Assessment Details					
Title	Working on Motorway inclines no steeper than 1.2 with obstructions				
Assessed by	Rob Nybody		Contract	BB3MM Phase 3	
Approved b			Site	Motorway N/B & S/B	
Part 2 – Review History					
Date established	16/07/13				
Review 1 (Date)		Reviewer	Signature		
Review 2 (Date)					
All Risk Assessments must, as a minimum, be reviewed annually. Once reviewed the updated document must be communicated to all those who use it. Once a document has been reviewed twice (or three years since it was originally created) it must be rewritten.					
Part 3 – Hazards & Risks					
What might go wrong? (Hazard)	Outcome or consequence (Risk)	Who could be affected?	To what extent?	How we will stop this activity from going wrong (Control Measures)	This is how safe we have made it!
		Select all relevant options. Specify "other" in the Additional Safety Information box.	Select only one option. This Risk Rating is determined using the Risk Rating Matrix.	Control measures should always seek to eliminate the hazards that are described.	Residual Risk. This Risk Rating is determined using the Risk Rating Matrix.
Installation of delineation or edge protection system	Falling objects and people from height.	Employee <input checked="" type="checkbox"/> Public <input checked="" type="checkbox"/> Client <input type="checkbox"/> Other Operator <input type="checkbox"/>	Red <input type="checkbox"/> Amber <input checked="" type="checkbox"/> Green <input type="checkbox"/>	Individuals installing fixed edge protection system using an harness & lanyard (inertia reel) fixed to safety fencing, fencing posts, concrete or steel structures. Ensure fall arrest system is checked daily prior to using and report any defects if applicable. Exclusion zones implemented	Red <input type="checkbox"/> Amber <input type="checkbox"/> Green <input checked="" type="checkbox"/>
Ducting, Chambers and Cabinet Construction within the Verge	Falling objects and people from height.	Employee <input checked="" type="checkbox"/> Public <input type="checkbox"/> Client <input type="checkbox"/> Other Operator <input checked="" type="checkbox"/>	Red <input type="checkbox"/> Amber <input checked="" type="checkbox"/> Green <input type="checkbox"/>	No working unless fixed edge protection system has been installed and checked isolating the obstruction.	Red <input type="checkbox"/> Amber <input type="checkbox"/> Green <input checked="" type="checkbox"/>
Works on batters (e.g. steps / ducts / drains)	Falling objects and people from height.	Employee <input checked="" type="checkbox"/> Public <input type="checkbox"/> Client <input type="checkbox"/> Other Operator <input checked="" type="checkbox"/>	Red <input checked="" type="checkbox"/> Amber <input type="checkbox"/> Green <input type="checkbox"/>	No working unless fixed edge protection system has been installed and checked isolating the obstruction.	Red <input type="checkbox"/> Amber <input type="checkbox"/> Green <input checked="" type="checkbox"/>
Environmental Screen Post Installation	Falling objects and people from height.	Employee <input checked="" type="checkbox"/> Public <input type="checkbox"/> Client <input type="checkbox"/> Other Operator <input checked="" type="checkbox"/>	Red <input checked="" type="checkbox"/> Amber <input type="checkbox"/> Green <input type="checkbox"/>	No working unless fixed edge protection system has been installed and checked isolating the obstruction.	Red <input type="checkbox"/> Amber <input type="checkbox"/> Green <input checked="" type="checkbox"/>
Formwork (Back of Narrow Verge Shutter – (install / remove	Falling objects and people from height.	Employee <input checked="" type="checkbox"/> Public <input type="checkbox"/> Client <input type="checkbox"/> Other (Specify) <input checked="" type="checkbox"/>	Red <input checked="" type="checkbox"/> Amber <input type="checkbox"/> Green <input type="checkbox"/>	No working unless fixed edge protection system has been installed and checked isolating the obstruction.	Red <input type="checkbox"/> Amber <input type="checkbox"/> Green <input checked="" type="checkbox"/>


Appendix 1: Example - motorway verge works edge protection / delineation matrix

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Part 3 – Hazards & Risks (continued) What might go wrong? (Hazard)		Who could be affected? <small>Select all relevant options. Specify "other" in the Additional Safety Information box.</small>				To what extent? <small>Select only one option. This Risk Rating is determined using the Risk Rating Matrix.</small>			How we will stop this activity from going wrong (Control Measures) <small>Control measures should always seek to eliminate the hazards that are described.</small>		This is how safe we have made it! <small>Residual Risk. This Risk Rating is determined using the Risk Rating Matrix.</small>		
Outcome or consequence (Risk)		Employee	Public	Client	Other (Specify)	Red	Amber	Green			Red	Amber	Green
Formwork (Back of Narrow Verge Shutter – (install / remove)	Falling objects and people from height.	X			X	X			6. No working unless fixed edge protection system has been installed and checked isolating the obstruction.				X
Hand works - Re-soiling / finishing works	Falling objects and people from height.	X			X	X			7. No working unless fixed edge protection system has been installed and checked isolating the obstruction				X
Environmental Screen Panel Installation	Falling objects and people from height	X			X	X			8. No working unless fixed edge protection system has been installed and checked isolating the obstruction.				X
Cable Installation Works (Works within verge accessed from hard shoulder	Falling objects and people from height	X			X		X		9. Edge delineation of pegs & orange rope to demarcate edge of slope.				X
									10.				
									11.				
									12.				
									13.				


Appendix 1: Example - motorway verge works edge protection / delineation matrix

	Ref. No. <div style="border: 1px solid black; padding: 5px; text-align: center; font-size: 1.2em; font-weight: bold;">WAH</div>	Sheet No. of <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;">1</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">2</div> </div>	<h2 style="margin: 0;">Risk Assessment</h2> <p style="margin: 0; font-size: 0.9em;">This Risk Assessment should be accompanied by a Point of Work Assessment relating to the specific location and completed on the day/shift by the person leading the work activity</p>																																																																																																																																														
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <h3>Part 1 – Risk Assessment Details</h3> <p>Title Working on Motorway inclines steeper than 1.2</p> <p>Assessed by Rob Nybody Contract BB3MM Phase 3</p> <p>Approved by Site Motorway N/B & S/B</p> </div> <div style="width: 50%;"> <h3>Part 4 – Additional Safety Information</h3> <p style="font-size: 0.8em;">Details of related safety information; i.e. further documents required for the activity.</p> <p>This document explains the controls for working on gradients steeper than 1.2. Fixed edge protection system will be installed by competent people defined by foremen with skill knowledge & experience to carry out such tasks. Fixed edge protection system is classed as temporary works, drawing will be produced and checks carried out by people named on the temporary works check register. Edge Delineation will consist of Inserted pegs with rope where applicable.</p> </div> </div>																																																																																																																																																	
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Works on batters (e.g. steps / ducts / drains)	Falling objects and people from height.	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>Employee</td><td>Public</td><td>Client</td><td>Other Operator</td></tr> <tr><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr> </table>	Employee	Public	Client	Other Operator	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>Red</td><td>Amber</td><td>Green</td></tr> <tr><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr> </table>	Red	Amber	Green	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Individuals installing fixed edge protection system using an harness & lanyard (inertia reel) fixed to safety fencing, fencing posts, concrete or steel structures. Ensure fall arrest system is checked daily prior to using and report any defects if applicable. Exclusion zones implemented	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>Red</td><td>Amber</td><td>Green</td></tr> <tr><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td></tr> </table>	Red	Amber	Green	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>																																																																																																																								
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Appendix 1: Example - motorway verge works edge protection / delineation matrix

		Ref. No. WAH	Sheet No. of 2 2	Risk Assessment – (continuation sheet) <i>This Risk Assessment should be accompanied by a Point of Work Assessment relating to the specific location and completed on the day/shift by the person leading the work activity</i>									
Part 3 – Hazards & Risks (continued) What might go wrong? (Hazard)		Who could be affected? <small>Select all relevant options. Specify "other" in the Additional Safety Information box.</small>				To what extent? <small>Select only one option. This Risk Rating is determined using the Risk Rating Matrix.</small>			How we will stop this activity from going wrong (Control Measures) <small>Control measures should always seek to eliminate the hazards that are described.</small>		This is how safe we have made it! <small>Residual Risk. This Risk Rating is determined using the Risk Rating Matrix.</small>		
Outcome or consequence (Risk)		Employee	Public	Client	Other (Specify)	Red	Amber	Green			Red	Amber	Green
Formwork (Back of Narrow Verge Shutter - install / remove)	Falling objects and people from height	X			X	X			6. No working unless fixed edge protection system has been installed and checked.				X
Hand works - Re-soiling / finishing works	Falling objects and people from height.	X			X	X			7. Individuals installing fixed edge protection system using an harness & lanyard (inertia reel) fixed to safety fencing, fencing posts, concrete or steel structures. Ensure fall arrest system is checked daily prior to using and report any defects if applicable. Exclusion zones implemented				X
Environmental Screen Panel Installation	. Falling objects and people from height.	X			X	X			8. Individuals installing fixed edge protection system using an harness & lanyard (inertia reel) fixed to safety fencing, fencing posts, concrete or steel structures. Ensure fall arrest system is checked daily prior to using and report any defects if applicable. Exclusion zones implemented				X
Cable Installation Works (Works within verge accessed from hard shoulder)	Falling objects and people from height	X			X	X			9. Edge delineation of pegs & orange rope to demarcate edge of slope.				X
									10.				
									11.				
									12.				
									13.				

Appendix 1: Example - motorway verge works edge protection / delineation matrix

		Ref. No. <div style="border: 1px solid black; padding: 5px; font-size: 24px; font-weight: bold;">WAH</div>	Sheet No. of <div style="display: inline-block; border: 1px solid black; padding: 5px; margin: 0 5px; font-size: 24px; font-weight: bold;">1</div> <div style="display: inline-block; border: 1px solid black; padding: 5px; margin: 0 5px; font-size: 24px; font-weight: bold;">2</div>	<h2 style="margin: 0;">Risk Assessment</h2> <p style="margin: 0; font-size: 12px;">This Risk Assessment should be accompanied by a Point of Work Assessment relating to the specific location and completed on the day/shift by the person leading the work activity</p>																																		
Part 1 – Risk Assessment Details																																						
Title Working on Motorway inclines with vertical drop																																						
Assessed by Rob Nybody		Contract BB3MM Phase 3																																				
Approved by 		Site Motorway N/B & S/B																																				
Part 2 – Review History																																						
<p style="font-size: 10px;">All Risk Assessments must, as a minimum, be reviewed annually. Once reviewed the updated document must be communicated to all those who use it. Once a document has been reviewed twice (or three years since it was originally created) it must be rewritten.</p>																																						
Date established 16/07/13		Reviewer Signature 																																				
Review 1 (Date) 																																						
Review 2 (Date) 																																						
Part 4 – Additional Safety Information																																						
<p style="font-size: 10px;">Details of related safety information; i.e. further documents required for the activity.</p>																																						
<p>A sheer drop is defined as any area with a leading edge Fixed edge protection system will be installed by competent people defined by foremen with skill knowledge & experience to carry out such tasks</p>																																						
<p>Fixed edge protection system is classed as temporary works, drawing will be produced and checks carried out by people named on the temporary works check register.</p>																																						
Risk Rating Matrix																																						
<p style="font-size: 10px;">All Risk Assessments must be written by a Competent Person The Risk Rating should be determined using the matrix set out on the right. Hazards should be assessed before and after determining what the control measures are to be. Once a final Risk Rating has been established the rules set out below must be applied.</p>																																						
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td colspan="2"></td> <td colspan="4" style="font-size: 8px;">Likelihood of incident or injury</td> </tr> <tr> <td colspan="2"></td> <td style="font-size: 8px;">Inevitable</td> <td style="font-size: 8px;">Probable</td> <td style="font-size: 8px;">Possible</td> <td style="font-size: 8px;">Remote</td> </tr> <tr> <td rowspan="4" style="font-size: 8px; writing-mode: vertical-rl; transform: rotate(180deg);">Extent of incident or injury</td> <td style="font-size: 8px;">Major</td> <td style="background-color: red; color: white;">R</td> <td style="background-color: red; color: white;">R</td> <td style="background-color: orange; color: white;">A</td> <td style="background-color: green; color: white;">G</td> </tr> <tr> <td style="font-size: 8px;">Serious</td> <td style="background-color: red; color: white;">R</td> <td style="background-color: orange; color: white;">A</td> <td style="background-color: yellow; color: black;">Y</td> <td style="background-color: green; color: white;">G</td> </tr> <tr> <td style="font-size: 8px;">Minor</td> <td style="background-color: orange; color: white;">A</td> <td style="background-color: yellow; color: black;">Y</td> <td style="background-color: lightgreen; color: black;">L</td> <td style="background-color: green; color: white;">G</td> </tr> <tr> <td style="font-size: 8px;">Low</td> <td style="background-color: orange; color: white;">A</td> <td style="background-color: yellow; color: black;">Y</td> <td style="background-color: lightgreen; color: black;">L</td> <td style="background-color: green; color: white;">G</td> </tr> </table>								Likelihood of incident or injury						Inevitable	Probable	Possible	Remote	Extent of incident or injury	Major	R	R	A	G	Serious	R	A	Y	G	Minor	A	Y	L	G	Low	A	Y	L	G
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Extent of incident or injury	Major	R	R	A	G																																	
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	Minor	A	Y	L	G																																	
	Low	A	Y	L	G																																	
<p style="font-size: 10px;"> R Red Do not proceed – Re-assess A Amber Review the Control Measures G Green Proceed with activity </p> <p style="font-size: 10px;">Contact the IMS Team for further guidance.</p>																																						
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		Employee	Public	Client	Other Operator																																	
Installation of delineation or edge protection system	Falling objects and people from height.	X			X																																	
Ducting, Chambers and Cabinet Construction within the Verge	Falling objects and people from height.	X			X																																	
Environmental Screen Post Installation	Falling objects and people from height.	X			X																																	
Formwork (Back of Narrow Verge Shutter - install / remove)	Falling objects and people from height.	X			X																																	
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Appendix 1: Example - motorway verge works edge protection / delineation matrix

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Outcome or consequence (Risk)		Employee	Public	Client	Other (Specify)	Red	Amber	Green			Red	Amber	Green
Concrete (Narrow Verge Works)	Falling objects and people from height.	X			X	X			6. Individuals installing fixed edge protection system using an harness & lanyard (inertia reel) fixed to safety fencing, fencing posts, concrete or steel structures. Ensure fall arrest system is checked daily prior to using and report any defects if applicable. System for slipping over edge				X
Hand works - Re-soiling / finishing works	Falling objects and people from height.	X			X	X			7. No working unless fixed edge protection system has been installed and checked. Exclusion zones implemented if applicable.				X
Environmental Screen Panel Installation	Falling objects and people from height.	X			X		X		8. No working unless fixed edge protection system has been installed and checked. Exclusion zones implemented if applicable.				X
Cable Installation Works (Works within verge accessed from hard shoulder)	Falling objects and people from height.	X			X	X			9. Works are only isolated at Helical Pile platform locations. No working unless fixed edge protection system has been installed and checked				X
									10.				
									11.				
									12.				
									13.				

Appendix 2: BB3MM – M6 S/B departure from perry barr work unit



No protection as flat area.

Activity – environmental screen post Installation.



Edge delineation to top of embankment, slope no steeper than 1:2 with hazards or obstructions.

Activity – no work, awaiting panel installation



Edge protection to top of embankment with slope steeper than 1:2.

Activity – formwork (back of narrow verge shutter -install / remove).



Edge protection to edge of vertical drop on underpass.

Activity – No work, awaiting panel installation.



No protection to top of embankment with slopes steeper than 1:2 with no hazards.

Activity – No work, finished detail.



Edge delineation to top of embankment, slope no steeper than 1:2 with hazards or obstructions.

Activity – no work, awaiting panel installation.



Edge protection to top of embankment with slope steeper than 1:2.

Activity – install concrete apron.



Edge protection to edge of vertical drop.

Activity – gantry base reconstruction.

Appendix 3: Sample harness permit

Harness Permit		Expiry date:		
Contract name:		Contract no:		
Date:		Permit no:		
As a result of risk assessment the use of a harness is deemed appropriate for the following activity:				
At location(s):				
Details of individual who will use the harness				
Name:				
Employer:				
Type of harness to be used:	Work position / restraint	Yes	No	
	Fall arrest	Yes	No	
	Rescue	Yes	No	
Training, Competence and rescue: If the answer is 'No' to any question – the permit cannot be issued				
Evidence of training has been verified by permit issuer:		Yes	No	
Is the user trained and competent in:				
The use of the type of harness listed above?		Yes	No	
Inspection of the type of harness listed above?		Yes	No	
Arrangements for rescue are in place:		Yes	No	
Permit Validity				
Date of issue:				
The permit is issued to:				
On behalf of xxxxx by:				
Receipt of Permit				
Signed				
Print				
Date				

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