National Grid UK Electricity Transmission plc

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NATIONAL SAFETY INSTRUCTION
and
Guidance

NSI 8
MOBILE ELEVATED WORK PLATFORMS, LORRY LOADERS, VEHICLES, CRANES AND OBJECTS IN SUBSTATIONS

DOCUMENT HISTORY

Issue	Date	Summary of Changes / Reason	Author(s)	Approved By (Title)
1	27TH March 2009	New Guidance Document to follow 3rd edition Electricity Safety Rules layout.	NSI Working Group	MDE Manager Les Adams 
2	04/04/2011	Annual review; document amended as detailed below and minor text changes as highlighted in yellow.	NSI Review Group	MDE Manager Les Adams 
3	April 2014	Renamed as "National Safety Instruction and Guidance" which now incorporates and replaces NSI 8 Issue 4 and NSI 8 Guidance Issue 2.	NSI Review Group	ETAM Operations North Manager Mike Dean
4	April 2016	Annual review; document amended as detailed below and minor text changes as highlighted in yellow.	NSI Review Group	ETAM Operations North Manager Matt Staley

KEY CHANGES

Section	Amendments
Definitions	Words added to recognise management of Impressed Voltages.
4.6c	Clarification to use of Field Equipment Earths added.

MOBILE ELEVATED WORK PLATFORMS, LORRY LOADERS, VEHICLES, CRANES AND OBJECTS IN SUBSTATIONS

CONTENTS

1 Purpose and Scope

To apply the principles established by the Safety Rules and provide guidance on National Safety Instruction 8 when, mobile elevated work platforms, lorry loaders, vehicles, cranes and *Object(s),* are being moved or used within substations to achieve **Safety from the System** for personnel working on or near to **High Voltage Equipment**.

When activities are outside a **Location** but near to overhead lines the guidance given in the Health and Safety Executive's guidance document HSG GS6 'Avoidance of Danger from Overhead Electric Power Lines' shall be applied.

There are two levels of authorisation to this NSI for a **Competent Person(s)**, limited and full.

Limited authorisation roles and repsonsiblities are:-

- Enacted within the demarcated work area
- Drive vehicles of a *Fixed Height* on roadways within a ***HV*** *Compound*.

Full authorisation roles and responsibilities are:-

- Extended to encompass the **Location**.

The layout of this guidance note reflects that of legislative codes of practice, where the rule (or mandatory obligation) is identified by a green panel on the left-hand side. The guidance follows after the rule and is identified by a blue panel.

Within National Grid, guidance notes hold equivalent status of an Approved Code of Practice (ACOP) in law. If not followed, you will be required to demonstrate that your safe system of work is of an equal or higher standard.

2 Definitions

Terms printed in bold type are as defined in the Safety Rules.

Title	Definition
Field Equipment Earth	Connections for bonding items of field or access equipment to earth in order to manage Impressed Voltage conditions. The earths are coloured orange to identify them from **Drain Earth(s)** and are not included on an **Earthing Schedule**. They shall have a minimum cross sectional area of 25mm^2 copper equivalent.
Fixed Height	Whereby the height of the relevant vehicle cannot be changed.
Object(s)	Items of equipment, which if not controlled during handling could infringe **Safety Distance**, such as ladders, scaffold poles, ropes, reinforcing bar, plywood sheets etc.
Operator	An individual who has been trained and assessed to use specific types of mobile elevated work platforms, lorry loaders, vehicles, or cranes.
Safety Observer	A **Person** selected by the recipient of the **Safety Document**, or the **Senior Authorised Person**, to assist in ensuring the safe movement, or use, of mobile elevated work platforms, lorry loaders, vehicles, cranes and *Objects* within the demarcated work area.
Appointed Person	An individual trained to establish and implement the safe system of work for the lifting operation in accordance with the requirements of BS 7121, Safe use of Cranes.
***HV** Compound*	A secured area that contains **HV Equipment**. This excludes areas that only contain over sailing conductors.
Height Barrier	A barrier or boom suitably constructed with a sign denoting the safe height to control over height vehicular access.

3 Dangers

The **System Danger(s)** to personnel during the movement and use of mobile elevated work platforms, lorry loaders, vehicles, cranes and *Objects,* in substations containing exposed **Live HV** conductors and **Equipment** operating above atmospheric pressure are electrocution, burns and effects on eyes arising from:-

- Inadvertent infringement of **Safety Distance**
- Badly connected or insecure *Field Equipment Earth*
- Incorrectly identified *Field Equipment Earth*
- The application of *Field Equipment Earth* to an inadequate or defective earth system
- Induced voltages
- Uncontrolled release of stored pressure

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4.1 to 4.4

4 Storage, Movement and Use of Object(s)

4.1 *Object(s)* shall be stored, moved and used in a controlled manner to ensure that they do not infringe **Safety Distance**. When moved at ground level, *Object(s)* shall be carried in a horizontal position, as near to the ground as possible

4.2 Substation areas separated from the ***HV*** *Compound* by a palisade fence or similar fixed division.

(a) When there are no over sailing conductors

No restrictions or authorisation under this NSI

(b) When there are over sailing conductors

The storage, movement and use of *Object(s)*, can be carried out by:-

(i) A **Competent Person** with full authorisation under this NSI

(ii) Individual(s) under the **Personal Supervision** of a **Competent Person** with full authorisation under this NSI

(iii) **Personnel** as defined on a designated route diagram produced by a **Senior Authorised Person**

4.3 Within a ***HV*** *Compound*

The storage, movement and use of *Object(s)*, can be carried out without consulting a **Senior Authorised Person** by:-

(i) A **Competent Person** with full authorisation under this NSI

(ii) Individual(s) under the **Personal Supervision** of a **Competent Person** with full authorisation under this NSI

4.4 Within a demarcated work area

The storage, movement and use of *Object(s*), can be carried out without consulting a **Senior Authorised Person** by:-

(i) A **Competent Person** with limited authorisation under this NSI

(ii) An individual(s) under the **Personal Supervision** of a **Competent Person** with limited authorisation under this NSI

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4.5 to 4.7

4.5 Additional Requirements for Ladders

(a) Ladders used shall be of no greater length than is required for the work.

(b) When not in use all ladders shall be securely **Locked** to a suitable anchorage.

(c) If ladders are moved within a demarcated work area after the initial placement, the movement shall be carried out in accordance with the specific instructions of the **Competent Person** in charge of the **Working Party**.

4.6 Additional Requirements for Scaffolding

(a) Before scaffolding is erected or dismantled a **Senior Authorised Person**, on site, shall assess the risks from **System** derived hazards.

(b) The recipient of the **Safety Document** shall consider whether to select a member(s) of his **Working Party** as a *Safety Observer*(s).

(c) *Field Equipment Earth(s)* shall be applied to scaffolding erected near to **Live HV Equipment** by the recipient of the **Safety Document** as soon as it is practicable to do so. The **Competent Person**, or a **Person** under his **Personal Supervision** may apply and remove *Field Equipment Earth(s).* As erection proceeds, *Field Equipment Earth(s)* shall be applied at approximately 5m intervals, vertically and horizontally, or as determined by the **Senior Authorised Person**.

When *Field Equipment Earth(s) are* to be applied the following sequence shall be undertaken:-
• Earth end clamps shall be applied first
• Equipment end clamps can then be applied

For removal of *Field Equipment Earth(s)* the following sequence shall be undertaken:-
• Equipment end clamps shall be removed first
• Earth end clamps can then be removed

4.7 Additional Requirements for Temporary Metallic Fences

Field Equipment Earth(s) shall be applied to temporary metallic fences installed within an ***HV** Compound* and hence the main earth system as soon as it is practicable to do so. As erection proceeds, *Field Equipment Earth(s)* shall be applied at approximately 50m intervals, at changes of direction, where busbars or power lines cross overhead, or as determined by the **Senior Authorised Person**.

Where a temporary metallic fence is connected to the main earth system but abuts an independently earthed fence they shall be electrically separated.

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4.2

4 Storage, Movement and Use of Object(s)

4.2(a) Access to substations areas outside the ***HV*** *compound* where there are no over sailing conductors and therefore no **System** derived hazards, shall be controlled by the Occupier, such activities controlled by the Occupier may include access / egress by the cleaner / window cleaner.

4.2(b)(iii) **Senior Authorised Person** shall decide based on the risk from over sailing conductors the appropriate level of authorisation and control measures, e.g. Controls identified within the combined Risk Assessment & Method Statement (RAMS) produced to manage the work or a **Person** issued with a movement F1 form / designated access route plan, or for a higher risk a **Competent Person**.

4.2 Reference should be made to Management Procedure – NSI 30 "Appointment of Persons" for the process to achieve full or limited authorisation to this NSI.

4.3 The **Competent Person** shall undertake a risk assessment for the movement and use of *Object(s)*. The risk assessment shall consider the following:-

- Loss of control - Number of staff required to ensure control of *Object(s)*
- Ground conditions along the route
- Reference to Category 2 RAMS file where required

4.4 The **Competent Person** shall ensure that the requirements of the **Safety Document** and RAMS are complied with at all times.

4.5 (a) Aluminium ladders can be used in substations, including 132 kV, if the movement and use is controlled as per this NSI. However, in the hierarchy of controls wood or fibre glass ladders should be considered for use before aluminium.

(b) To ensure ladders, when not in use are kept secure, the **Competent Person** shall ensure they are:-

- Tied off e.g. chained and padlocked to a scaffold
- **Locked** in a store room or **Locked** to a suitable anchorage point

In substation areas outside ***HV*** *Compounds* where there are no over sailing conductors the appropriate individual shall ensure ladders are kept secure when not in use by:-

- Tied off e.g. chained and padlocked to a scaffold
- **Locked** in a store room or **Locked** to a suitable anchorage point

Before use, a **Competent Person** shall lock in position, portable ladders provided to give access to fixed ladders which terminate above ground level. These shall remain **Locked** in position during the period the ladders are in use.

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4.6

4.6 (a) Before scaffolding is erected or dismantled a **Senior Authorised Person** shall assess the risks from **System** derived hazards. This assessment needs to take into account, the risk of any scaffolding equipment encroaching within the specified **Safety Distance** to exposed **HV** conductors and insulators which are **Live**. This assessment needs to take into account the risk of loss of control, which may result in the infringement of **Safety Distance**.

Typical aspects to consider in the planning process as part of the principles of prevention are:

- Elimination of **HV** hazards. Proximity outages may be required where there is foreseeable risk of infringing **Safety Distance** due to loss of control of scaffolding equipment.
- Phased elimination of **HV** hazards. Proximity outages for a period of time e.g. whilst the scaffold is erected or dismantled.
- Consider isolating the scaffold from the source of the **HV** hazard by a fixed barrier, netting or hoarding. The installation of this measure may require elimination of the **HV** hazard whilst the isolation method is being erected.
- Use of controls and suitable safe systems of work, for example reduced length components such as poles, ladders, and use of alternative components such as cup lock. Consultation with the Scaffolding Company may be required when considering reduced length or alternative components.

Below is a non exhaustive list of the items that should be considered for communication to the scaffold company, to enable them to develop a safe system of work.

- Confirm the point of work and the work content
- Confirm working platform criteria, e.g. proposed usage of the scaffold, foot print dimensions and location
- Size of demarcated area
- Proximity of **Live Equipment** / over sailing conductors
- Ground conditions
- Access / egress to point of work
- Other hazards: duct covers, compressed air, hazard zones
- Other works on site, National Grid, contractors and CDM
- Storage and lay down areas, including the requirement to control any surplus scaffolding left on skids, e.g. by sheeting and banding
- Security issues
- Emergency procedures
- Weather protection / tented areas
- Emergency Restoration Times (ERT)

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4.6 Cont: to 4.7

National Grid **Senior Authorised Person** to provide when required:-

- Scaled diagrams of civil and plant elevations indicating the proposed demarcated work area
- Details of the distances associated with adjacent **Live HV Equipment**
- Access and egress routes to and from the demarcated work area

The above shall be conveyed to the Scaffold Company via the Scaffold Location Form F2 or within the RAMS prepared by the **Senior Authorised Person**.

Scaffold Company to provide at the site visit:-

- Details of any health and safety issues that may arise due to the proposed method of work, e.g. length of scaffold pole selected
- Any limits or restriction associated with the proposed access scaffold, e.g. duty rating wind loading etc.
- Completed sketch indicating the dimensions of the scaffold in relation to the specified **Safety Distance** and demarcation within a site/job specific risk assessment and method statement.

If there are any changes prior to the work being executed or during the course of the scaffold erection, a **Senior Authorised Person** is to review the process and the implications of the changes with regards to **Safety from the System**.

During the execution phase suitable sensible monitoring is to be carried out in accordance with the requirements of Asset Management Business Procedure – AMBP 310 - “Work and Work Execution”.

4.7 The electrical separation should be by means of a 2 metre insulation panel as detailed in Technical Specification TS 3.01.02

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5.1 to 5.3

5 Planning for the Use of Mobile Elevated Work Platforms, Lorry Loaders, Vehicles and Cranes in Substations

5.1 A **Senior Authorised Person** shall assess the risks from **System** derived hazards. At no time shall any part of the equipment encroach over exposed **Live HV Equipment**.

When cranes are to be used in substations, a **Senior Authorised Person** shall consult with the *Appointed Person*. The *Appointed Person* shall establish a safe system of work for the lifting operation.

5.2 As part of the planning process a written risk assessment and method statement shall be produced for the work.

5.3 In normal circumstances only *Operator(s)* who have been appointed as a **Person** should be used. If the **Senior Authorised Person** decides to allow an *Operator* who is not a **Person** to be used, all use shall be under the **Personal Supervision** of a **Competent Person**.

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NSI 8
5.2

5 Planning for the Use of Mobile Elevated Work Platforms, Lorry Loaders, Vehicles and Cranes in Substations

5.2 The **Senior Authorised Person** shall consider the following to ensure **Safety from the System** is achieved.

- Proximity outages (may be phased)
- Size of demarcated work area
- Equipment (lorry loader, crane etc.) to be used e.g. correct size crane, access platform etc.
- Potential to infringe **Safety Distance** if access platform or crane controls malfunction
- Ground conditions
- Access and egress to demarcated work area (refer to Section 6)
- Third parties e.g. other work areas
- Use of movement limiting devices
- Malfunction of radio/remote controlled equipment

The RAMS also has to include that the correct access platform for height etc. is selected or the correct size crane for the lift is selected. This does not have to include the movement of vehicles which is covered in Section 6.

The **Senior Authorised Person** shall produce RAMS when National Grid staff are using equipment.

In CDM areas the Principal Contractor shall produce the risk assessment and method statement which shall be reviewed by the **Senior Authorised Person** to ensure **Safety from the System**.

The *Appointed Person* shall produce a written risk assessment and method statement covering the lifting operation, incorporating any requirements identified by the **Senior Authorised Person** to achieve **Safety from the System** e.g. limiting devices.

If the *Appointed Person* decides it's not a requirement for the *Appointed Person* to be at site during the lifting operation this shall be recorded within the method statement provided.

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5.2 Cont: to 5.3

Where it is considered necessary by the risk assessment, and where it is reasonably practicable to do so, devices shall be fitted to the mobile elevated work platform, lorry loader, vehicle or crane to limit its' movement. Details on how this is to be achieved shall be incorporated within the method statement.

The **Senior Authorised Person**, or in the case of cranes, the *Appointed Person,* shall consider whether it is necessary to consult an appropriately qualified specialist to ensure that safe ground bearing pressures will not be exceeded.

This is particularly important where wheels, stabilising devices or outriggers may need to be positioned over ducts or soft ground. Where necessary load spreading devices shall be used.

Planning access and egress to / from Contractors Demarcated Work Area

To enable access and egress to and from the Contractors demarcated work area within a ***HV*** *Compound*, the **Senior Authorised Person** shall consider the following options for Contractor staff with limited authorisation to this NSI:-

(a) Authorise Contractors personnel to **Competent Person** full NSI 8 as per Management Procedure NSI 30 "Appointment of Persons".

(b) Extend demarcated CDM area to incorporate access and egress where there are no **HV** hazards within the extended CDM area.

(c) Issue a **Limited Access Certificate** and delineating access and egress to the demarcated work area

Use of Radio/Remote controlled equipment

When using remote/radio controlled equipment it may malfunction due to external interference. If **Safety Distance** can be compromised due to malfunction then the equipment shall not be used.

5.3 Examples where **Personal Supervision** may be required:-

(i) Emergency work
(ii) Contractor does not have a contract in place with a company employing staff authorised as a **Person** (Only acceptable for small one-off jobs)
(iii) Delivery of equipment

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6.1 to 6.2

6 Movement of Mobile Elevated Work Platforms, Lorry Loaders and Vehicles in Substations outside Demarcated Work Areas

6.1 Substation access roads outside the ***HV*** *Compound* separated from **HV Equipment** by a palisade fence or similar fixed division.

(a) When there are no over sailing conductors

No access restrictions or authorisation required under this NSI

(b) When there are over sailing conductors

No access restrictions providing a *Height Barrier* is installed that ensures **Safety from the System** for vehicles of a *Fixed Height*.

If a *Height Barrier* is not installed or the vehicle is not a *Fixed Height* the procedure in Section 6.2 shall be applied.

6.2 Movement within ***HV*** *Compounds*

(a) An individual may drive a *Fixed Height* vehicle below 2.3m in height on designated roadways to a designated parking position within a ***HV*** *Compound* provided a **Competent Person** with full authorisation under this NSI, provides **Personal Supervision** to the whole period of movement.

(b) **Personnel** may drive a *Fixed Height* vehicle below 2.3m in height on a designated roadway within a ***HV*** *Compound*.

If necessary a **Competent Person** with full authorisation under this NSI may drive a *Fixed Height* vehicle below 2.3m in height off designated roadways. **Safety distance** shall be maintained from any structure containing exposed **HV Equipment**.

(c) Where the highest part of a mobile elevated work platform or lorry loader in the transport position, is below 2.3m, a **Competent Person** with full authorisation under this NSI, will provide **Personal Supervision** for the whole period of movement.

(d) Where the highest part of a mobile elevated work platform, lorry loader or vehicle, in the transport position, is higher than 2.3m, a **Competent Person** with full authorisation under this NSI shall provide **Personal Supervision** for the whole period of movement, provided all the conditions in Appendix B are met.

(e) If any of the conditions in Appendix B cannot be met, the **Senior Authorised Person** shall assess the risks and identify the safe route on form F1, refer to Appendix A. This shall then be communicated to a **Competent Person** by the **Senior Authorised Person**.

The **Senior Authorised Person**, when deciding on the route to be taken, shall confirm all protections on adjacent circuits are in service.

The **Competent Person** with full authorisation to this NSI shall provide **Personal Supervision** during the whole period of movement.

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6.2 Cont:

(f) To avoid dangers associated with induced voltages, contact shall not be made by individuals on the ground with the mobile elevated work platforms, lorry loaders or vehicles when it is moving under or adjacent to **Live HV** conductors.

(g) The **Senior Authorised Person** shall specify to a **Competent Person** when, *Field Equipment Earth(s)* are required to bond to earth mobile elevated work platforms, lorry loaders, and vehicles during the movement.

Guidance
NSI 8
6.2

6 Movement of Mobile Elevated Work Platforms, Lorry Loaders and Vehicles in Substations outside Demarcated Work Areas

6.2(a) A designated roadway is a recognised maintenance access route to which vehicular access is required and is of tarmac or concrete construction. Safety clearance from exposed **HV** conductors has been designed in accordance with Technical Specification 2.1.

6.2(b) Where vehicles are driven off designated roadways within ***HV** Compounds* the main **Danger(s)** are from a collision, driving over trench covers, or parking too close to structures supporting **HV Equipment**.

Vehicles are only to be driven over trench crossing points designed for the weight of the vehicle and the maximum distance possible shall be maintained from structures supporting **HV Equipment** when driving to the point of work.

6.2(c) When assessing the height of the mobile elevated working platform the height of the operator shall be taken into account. This shall also apply to the use of dumper trucks etc.

6.2(e) The **Senior Authorised Person** assessing the risk may decide to incorporate the F1 form information into combined RAMS produced to manage the work as explained in AMBP311, all the information on the F1 must be provided within the RAMS using drawing or sketches as appropriate

NSI 8
7.1 to 7.4

7 Movement of Cranes in Substations outside Demarcated Work Areas

7.1 When cranes are to be moved within substations a **Senior Authorised Person** shall assess the risk from **System** derived hazards.

7.2 The **Senior Authorised Person** shall assess the risks and identify the safe route on form F1, refer to Appendix A. This shall then be communicated to a **Competent Person** by the **Senior Authorised Person**.

The **Competent Person** with full authorisation to this NSI shall provide **Personal Supervision** during the whole period of movement.

7.3 To avoid **Danger(s)** associated with induced voltages contact shall not be made by individuals on the ground with the crane when it is moving under or adjacent to **Live HV** conductors.

7.4 The **Senior Authorised Person** shall specify to a **Competent Person** when, *Field Equipment Earth(s)* are required to bond to earth the crane during the movement.

Guidance
NSI 8
7.2

7 Movement of Cranes in Substations outside Demarcated Work Areas

7.2 The **Senior Authorised Person** assessing the risk may decide to identify safe routes to / from work areas within combined RAMS produced for the work, all the information on the F1 must be provided within the RAMS using drawing or sketches as appropriate.

The **Competent Person** providing **Personal Supervision** for crane movements shall have the means to communicate immediately with the Crane *Operator*, so as to require him to take immediate action to avoid **Danger**. This can be accomplished by means of a radio, air horn or loud hailer if the noise of the crane movement prevents normal verbal communication.

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8.1 to 8.4

8 Operation of Mobile Elevated Work Platforms, Lorry Loaders, Vehicles and Cranes within Demarcated Work Areas

8.1 The recipient of the **Safety Document** shall ensure that, as soon as practicable after reaching the demarcated working area, a *Field Equipment Earth* is applied.

8.2 The recipient of the **Safety Document** shall be satisfied that the *Operator* knows:-

- What work is to be done
- Controls are operating correctly

8.3 The recipient of the **Safety Document** shall consider whether to select a member(s) of the **Working Party** as a *Safety Observer(s)*.

Where reasonably practicable and when necessary, the *Safety Observer* shall be provided with a means of halting the movement to avoid **Danger**.

8.4 The recipient of the **Safety Document** shall be responsible for the safe movement within the demarcated work area.

Guidance
NSI 8
8.1 to 8.3

8 Operation of Mobile Elevated Work Platforms, Lorry Loaders, Vehicles and Cranes within Demarcated Work Areas

8.1 Equipment provided for personnel access shall be electrically bonded to the earth system to which the **HV Equipment** is **Earthed**, so as to provide an equipotential zone.

This can be achieved by connecting the access equipment through a *Field Equipment Earth* to the same point as the **Primary Earth** or **Drain Earth** attached to the **HV Equipment**. There shall be an electrical bond between the access platform and the vehicle chassis, which shall have a cross section of not less than 25mm^2 copper equivalent.

8.2 The *Operator* shall ensure that effective use is made of any stabilising devices or outriggers.

8.3 The recipient of the **Safety Document** shall assess the risks in relation to:-

- Work being done
- Equipment being used
- Field of vision of the *Operator*
- Potential for the equipment to encroach outside the demarcated work area
- **Equipment** operating above atmospheric pressure

For the operation and use of cranes within the demarcated work area, a *Safety Observer* may be required. The recipient of the **Safety Document** will select a member of their **Working Party** for this role. The *Safety Observer* for crane operation shall have the means to communicate immediately with the Crane *Operator*, so as to require him to take immediate action to avoid **Danger**. This can be accomplished by means of a radio, air horn or loud hailer if the noise of the crane movement prevents normal verbal communication.

NSI 8
9.1 to 9.3

9 Gas Insulated Switchgear Substations

9.1 A **Senior Authorised Person** shall assess the risks from **System** derived hazards when mobile elevated work platforms, lorry loaders, vehicles, cranes and *Object(s)* are to be moved or used.

9.2 The rules established in Sections 4 to 8 of this NSI shall be applied in Gas Insulated Switchgear (GIS) substations that have elements of exposed **HV Equipment** within the GIS substation unless additional control measures are applied.

9.3 Where the main GIS substation contains no exposed **HV Equipment**:-

(a) *Object(s)*

The storage, movement and use of *Object(s)*, can be carried out without consulting a **Senior Authorised Person** by:-

(i) A **Competent Person** with limited authorisation under this NSI

(ii) Individual(s) under the **Personal Supervision** of a **Competent Person** with limited authorisation under this NSI

(iii) **Personnel** as defined on a designated route diagram produced by a **Senior Authorised Person**

(b) Movement and use of elevated work platforms, lorry loaders, vehicles, and cranes

The **Senior Authorised Person** shall ensure that the movement and use does not have potential to impact on pressurised **Equipment**.

The **Competent Person** holding limited authorisation under this NSI shall ensure controls established by the **Senior Authorised Person** are maintained.

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NSI 8
9.2 to 9.3

9 Gas Insulated Switchgear Substations

9.2 The rules in Section 9.3 can be applied to GIS substations containing exposed HV Equipment if additional control measures prohibiting access to the area of the GIS substation containing exposed **HV Equipment** e.g. metallic fencing such as - heras fencing etc. are applied.

9.3(b) The main **Danger(s)** associated with the movement and use of mobile elevated work platforms, lorry loaders, vehicles, cranes in GIS substations is the potential to damage pressurised **Equipment**.

Where this is identified the **Senior Authorised Person** shall issue a safe movement of mobile elevated work platforms, lorry loaders, vehicles, cranes or *Object(s)* form F1 refer to Appendix A, or incorporate the information into the combined RAMS produced for the work, to control the risk. This may include the use physical barriers.

Appendix A – Safe Movement of Mobile Elevated Work Platforms, Lorry Loaders, Vehicles, Cranes or Objects in Substations

National Grid UK Electricity Transmission Safety Rule

Safe Movement of Mobile Elevated Work Platforms, Lorry Loaders, Vehicles, Cranes or *Objects*

Form NSI 8.F1

This form is to be used by **Personnel** as appropriate to manage the safe movement of Mobile Elevated Work Platforms, Lorry Loaders, Vehicles, Cranes or *Objects* in substations and **HV** *Compounds.*

Location		Associated **Safety Document** Number	

Equipment/Circuit *****

Work / Movement #
Defined Work Area and / or Route to and from Work Area (Sketch / Attachment)

Issue	Signed by **Senior Authorised Person**	Time	Date
Recipient	Signed by **Competent Person**	Time	Date
Clearance	Signed by **Competent Person**	Time	Date
Cancellation	Signed by **Senior Authorised Person**	Time	Date

- Write N/A if Not Applicable
- # Delete as appropriate

Appendix B – Movement Route Criteria

B.1 All of the vertical and horizontal clearances to **HV Equipment** have been measured and confirmed as being equal or greater than those specified in the latest issue of Technical Standard 2.1, over the full width of all roadways. For designated parking areas adjacent to roadways, clearances will also be measured. Technical Standard 2.1 specifies minimum design specifications for Substations.

B.2 A drawing of the site has been produced showing the above roadways and any adjacent designated parking areas as approved routes. A **Senior Authorised Person** will approve these drawings, this drawing may be referred to in RAMS.

B.3 The **Competent Person** will have a copy of this drawing and will make reference to it during the movement of the mobile elevated work platform, lorry loader or vehicle. The **Competent Person** shall provide **Personal Supervision** during the whole period of movement.

B.4 Movement is only on approved roadways or approved designated parking areas shown on the diagram reference B.2 above.

B.5 No part of the mobile elevated work platform, lorry loader or vehicle, in the transport position, (including radio aerials), is greater than 4 metres from ground level.

B.6 The maximum height of the mobile elevated work platform, lorry loader or vehicle, (including radio aerials), in the normal transport position, is known.

B.7 During the movement, no part of the vehicle will project outside a vertical line projecting from the edge of the roadway.

If any of the conditions in B.1 to B.7 cannot be met then a **Senior Authorised Person** shall be consulted.

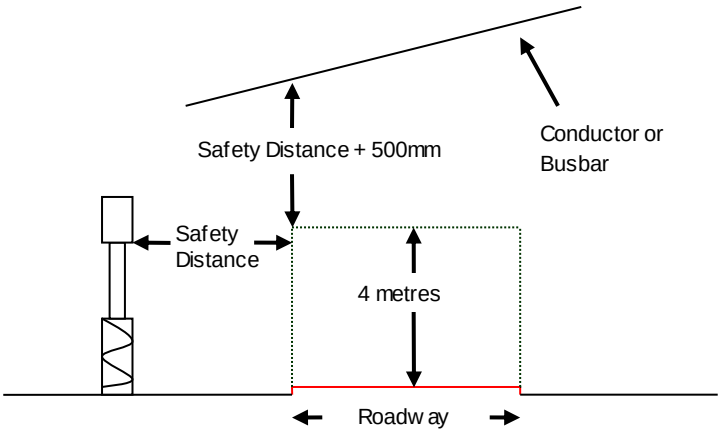
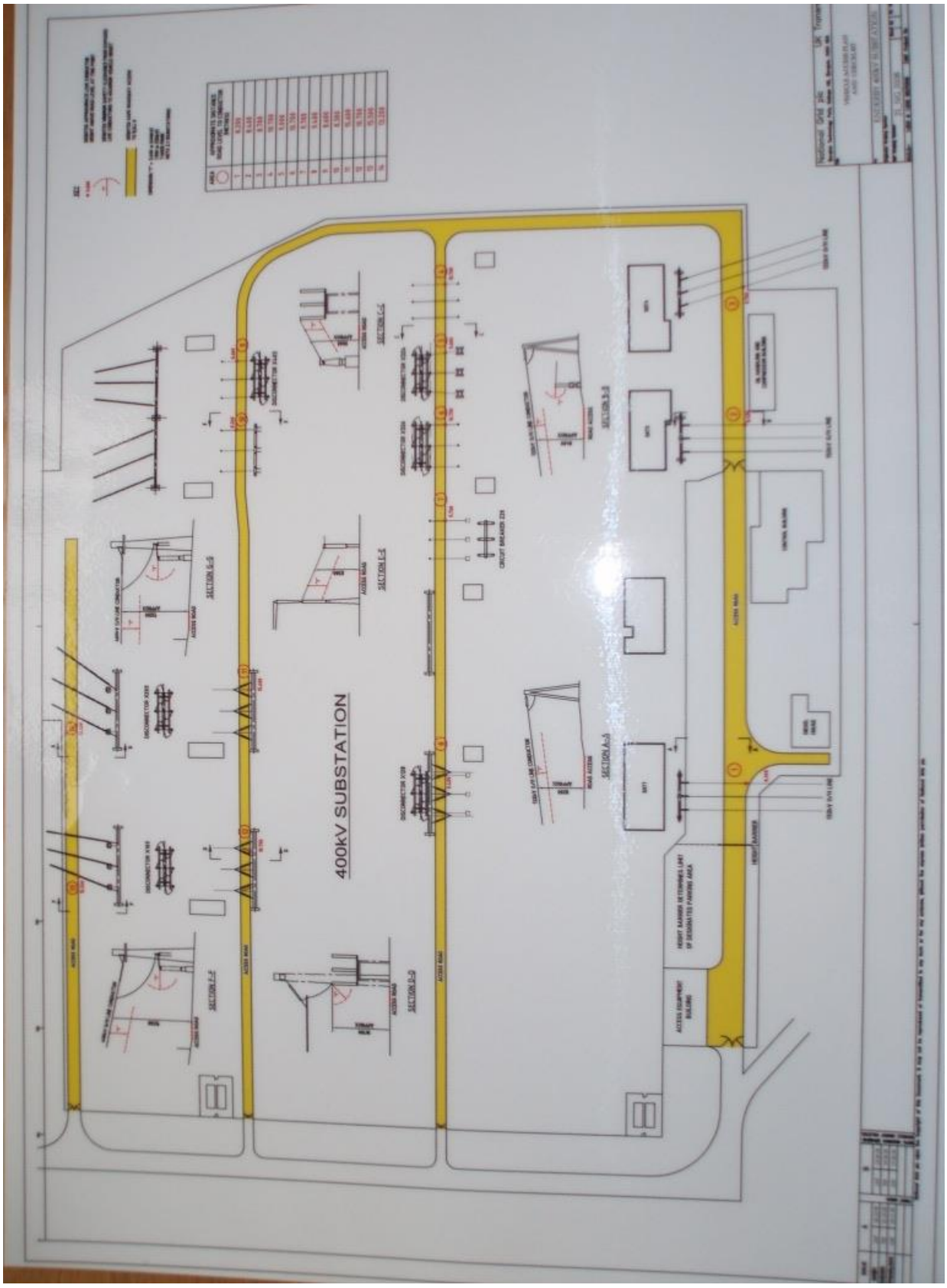


Figure B1 – Example of Vertical and Horizontal Clearances

Example of Safe Movement Route Drawing (B.2)



Appendix C -

Proposed Scaffold Location Plan Form F2

Location			
Equipment to be scaffolded			
Proposed scaffold dates		Topam No.	
Prepared by		Where over sailing conductors are present identify vertical clearance below	
Contact number			

Appendix D - Authorisation Matrix for Personnel

Contractor **Personnel**	**Person**	**Competent Person Limited**	**Competent Person Full**	**Senior Authorised Person**
Sections		4.1 4.4 4.5 4.6 5.3 All Section 8 9.3	All Section 4 5.3 All Section 6 7.2 7.4 All Section 8 9.3	