

National Grid UK Electricity Transmission plc

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NATIONAL SAFETY INSTRUCTION and Guidance

NSI 33 THE ADDITION/REMOVAL OF EQUIPMENT TO/FROM THE ELECTRICITY TRANSMISSION SYSTEM

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DOCUMENT HISTORY

Issue	Date	Summary of Changes / Reason	Author(s)	Approved By (Title)
1	April 2014	Renamed and reformatted as "National Safety Instruction and Guidance" which replaces NSI 33 Issue 6.	NSI Review Group	ETAM Operations North Manager Mike Dean
2	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
4.4	Corrections to section references and addition of words to clarify process.

THE ADDITION/REMOVAL OF EQUIPMENT TO/FROM THE SYSTEM

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1 Purpose and Scope

To apply the principles established by the Safety Rules and provide guidance on National Safety Instruction 33, to achieve **Safety from the System** for personnel when adding *Plant* or removing **Equipment** to/from the **System**, and when changes in Name or Nomenclature for existing circuits or **Equipment** are required.

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.

National Grid Safety Rule R.1. 2, requires that **Equipment** shall only be added to or removed from the **System** in accordance with an **Approved** procedure. This document as the **Approved** procedure defines when National Grid Electricity Safety Rules apply or cease to apply. Where **Equipment** is to be added to or removed from a **System** subject to the application of National Grid Electricity Safety Rules, this procedure must be followed.

When **Equipment** is to be added to or removed from a **System** subject to a third party's Safety Rules and where National Grid undertakes the role of **Control Person (Safety)**, the principles of this procedure must be followed in conjunction with the third party's safety management system.

This procedure defines a safe system of working when adding *Plant* or removing **Equipment** to/from the **System**, and when changes in Name or Nomenclature for existing circuits or **Equipment** are required. This procedure provides a method of formally identifying the existence of **Equipment** to the *Off Site Control Person*.

Construction sites are covered by this procedure where there is to be temporary or permanent connection of Earthing, **LV**, or Mechanical services which require the interface to be managed.

OVERVIEW

When *Plant* is brought onto a National Grid operational site the requirements of National Grid Electricity Safety Rules shall apply with regard to the movement of large objects and any potential proximity to **HV Equipment**. Before *Plant* can be connected or is readily connectable to the **HV System** it must be formally identified as **HV Equipment**.

The *Local Control Person* in conjunction with the **Senior Authorised Person(s)** are responsible for the safety aspects of new *Plant* entering site until it is declared as part of the National Grid **System** and defined as **Equipment**.

The **Control Person** has no responsibilities for the *Plant* until after it has been declared as **HV Equipment**. This two-stage process described recognises both **Control Person's** responsibilities.

The Site Responsibility Schedule shall be amended to identify each **Control Person's** responsibility following the addition/removal of **Equipment** to/from the **System**.

The process of declaring an item of *Plant* as **HV Equipment** has also to be co-ordinated with the requirements of the *Operation Diagram*, Site Responsibility Schedule and the Management Systems of the **Control Person** taking responsibility for the **HV Equipment**.

2 Definitions

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

<i>Commissioning</i>	The preparation for and energising of Equipment for the first time. This is a two-stage process consisting of Stage 1 Commissioning and Stage 2 Commissioning. Further information is available in TP106 "Equipment Commissioning and Decommissioning".
<i>Commissioning Engineer</i>	Responsible for defining the arrangements for achieving safety from the System , to manage the implementation of UK/BP/SE 301 – "Managing Safety Interfaces" requirements (including Operations Diagrams) and to confirm the adequacy of the health and safety file on completion.
<i>HV System Change Certificate. (HVSCC)</i>	A certificate used to notify contractors and National Grid Operating Units when adding <i>Plant</i> or removing Equipment to/from the System , and changes in name or Nomenclature for existing circuits or Equipment. On the completion of Part 6 the changes defined in Part 3 become effective. The <i>Local Control Person's</i> copy of the document shall be the definitive document. The <i>Control Person's</i> copy of the document shall have printed names in Part 6, backed up with logged statements.
<i>Notification of Change Certificate (NCC)</i>	A certificate used to notify Contractors and National Grid Operating Units, of a change to the original date on an existing HVSCC.
<i>Occupier</i>	The person having control over the premises and who regulates and controls the work that is done at that location.
<i>Occupiers Representative</i>	<p>The person identified by the <i>Occupier</i> who shall discharge the duties and responsibilities of the <i>Occupier</i> on the premises.</p> <p>On National Grid Operational sites this will normally be the Delivery Manager or Team Leader.</p> <p>On National Grid non-operational sites it will be a representative of the party who regulates and controls the work associated with the premises and within the parameters of the location. i.e. Locations occupied by staff that Property are responsible for the facilities and site maintenance.</p>
<i>Control Person</i>	The Control Person (Operations) and Control Person (Safety) for the HV System as defined in the Site Responsibility Schedule. Where authorisations allow, this may be done by the <i>Local Control Person</i> .
<i>Local Control Person</i>	A Senior Authorised Person (SAP 1 and/or 2 and 3) acting as the Control Person (Operation) and Control Person (Safety) for LV and mechanical Equipment . Where Equipment is to be transferred to a CPS1 the <i>Local Control Person</i> shall be an SAP1 .

<i>Operations Diagram</i>	<p>The series of National Grid issued diagrams which define the following information: (Ref. TP 119 Operation Diagrams)</p> <p>Sheet 1 S/S single line diagram Sheet 2 S/S Technical Data Sheet Sheet 3 S/S Gas Zones Sheet 4 S/S Gas Zone Alarm Schedule Sheet 5 S/S Oversailing Hazard Schedule Routes National Routes OHL OHL Colours (Technical Data) Accessed from http://infonetuk/ohl/ Routes Oversailing Conductors Schedule</p>
<i>Plant</i>	Electrical and/or Mechanical items, which are not part of the System and Disconnected from the System .
<i>System Connection Form</i>	A document used to formally authorise connection of <i>Plant</i> subject to the control of another party's Safety Management System to the System . See appendix C.
<i>Isolation Request Form</i>	This document is used to define, secure and maintain safety precautions across the interface of two Safety Management Systems. See appendices D & E.

3 Dangers

The **Danger(s)** to **Personnel** arising out of inadequate management of adding *Plant* or removing **Equipment** to/from the **System**, and when changes in Name or Nomenclature for existing circuits or **Equipment** are required in substations and Overhead Lines are electrocution, burns, impact from release of pressure and effects on eyes arising from:-

- Failure to establish or maintain safety precautions on **Equipment** due to addition to the **System** without the *Control Person's* knowledge.

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4.1 to 4.4

4 HV Procedure

4.1 Removal Of HV Equipment

A permanent physical disconnection (greater than the **Safety Distance**) between the **Equipment** and the **HV System** shall be established while the **Equipment** is part of the **HV System**, the **Equipment** will then be declared as being removed from the **HV System**. The former **HV Equipment** will then become *Plant*. Part A of an *HVSCC* shall be completed and issued for this purpose.

4.2 Change Of Circuit Name Or Nomenclature

When **HV** circuit names or **Equipment** nomenclature change, the appropriate *Operation Diagrams* shall be updated. Part B of an *HVSCC* shall be completed and issued for this purpose.

4.3 Addition Of Plant

Prior to any physical connection being made between the **HV System** and *Plant*, the *Plant* shall be declared as part of the **HV System** and defined as **HV Equipment**. Part C of an *HVSCC* shall be completed and issued for this purpose.

Note: completion of matrix in Part 3 N/A required for sections not used.

4.4 OHL. Towers and Conductors

The same principles as 4.1, 4.2, and 4.3 shall apply to OHL conductors. When **Equipment** (i.e. new conductors) are applied to a tower, the tower shall be made subject to **HV** Electricity Safety Rules. Subsequent addition of conductors to the other side of the tower will require those conductors to be declared as **Equipment** via the issue of a *HVSCC* after the addition of the first conductors and towers but prior to the subsequent conductors becoming readily connectable to the system.

Where a risk assessment defines that cross jumpering of Over Head Line double circuits is required, the action to add cross jumpers (inter circuit conductors) and the removal of jumpers to form a disconnected circuit will be defined on the *HVSCC* on completion of the cross jumpering.

When **Equipment** is transferred from the Electricity Safety Rules of National Grid to or from the Safety Management System of another company the Site Responsibility Schedule (Ref TP136 "Responsibility Schedules") shall be updated and signed by all interested parties prior to the transfer. Part D of the *HVSCC* should be used to define the **Equipment** and control party at the start and finish of the process.

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4.6 to 4.8

4.6 Temporary Removal Of **Equipment** From The System

Equipment temporarily removed from the **System**, e.g. for workshop repair, return to manufacturers etc, shall be considered to be not subject to the requirements of the HV Electricity Safety Rules from the time of removal from the normal position until the time of return or replacement. E.g. circuit breakers are not subject to HV Electricity Safety Rules when in the Refurb Centre.

A *HVSCC* is not required. On-site procedures shall define how residual dangers will be managed.

4.7 Testing

Where there is a requirement for testing to be carried out there is no requirement for test leads to be declared as part of the system providing they are part of a discrete test instrument.

4.8 Time Scales

Where due to unforeseen circumstances the timescales for an *HVSCC* cannot be adhered to, all relevant parties must seek the agreement of the **Transmission Network Control Centre** Manager before Part 2 of the certificate can be completed.

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5.1

5 EARTHING, LV & MECHANICAL PROCEDURE

5.1 Addition Of Earthing, **LV** Or Mechanical *Plant Not Involving Third Parties*

Prior to any physical connection being made between Earthing, **LV** and Mechanical *Plant*, these items shall be declared by the *Local Control Person* as part of the **System** and defined as **Equipment** using one of the following options:

- The *Plant* will become part of the **System** immediately prior to first connection.
- The *Plant* will become part of the **System** immediately after cancellation of the **Safety Document** that has been issued for the purpose of *Connection* of the new **Equipment**.

Prior to the connection being established the *Local Control Person* shall ensure that site drawings and records of the **System** are updated and that all relevant individuals made aware of the changes.

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5.2

5.2 Establishing Earthing, **LV** And Mechanical *Plant Connections With A Third Party*

Prior to establishing any temporary or permanent physical connection between Earthing, **LV** or Mechanical *Plant* agreement to the connection shall be sought from the third party's site representative.

- The agreement to the connection shall be formally recorded via the '*System Connection Form*' in appendix B of this document.
- The *Local Control Person* must inform the third party site representative of any Potential hazards which will be Introduced following the establishment of the connection.
- By signing the '*System Connection Form*' the third party is agreeing to manage any potential hazards associated with work on plant under their control. The third party's safe system of work should be applied for work on plant in the designated work area (e.g.CDM).
- To ensure that the work to establish the connection can be undertaken safely an '*Isolation Request Form*' (appendix D of this document) or an equivalent document will be implemented by the third party to maintain isolation or to confirm that back energisation is not possible.
- Site Specific Risk Assessment and Method Statements shall detail the methods of work.
- The *Local Control Person* shall ensure that site drawings and records of the **System** are updated to show the connection point prior to the connection being made and that all relevant personnel made aware of the changes. In the case where the connection is of a temporary nature i.e. to facilitate testing as part of the commissioning process a hand amendment to the site diagram will be sufficient.
- The connection point becomes part of the National Grid **System** and effectively the boundary between two safety management systems.
- When using the *System Connection Form Plant* does not have to be declared as **Equipment** before the third party's *Plant* is connected to the **System**.

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5.4 to 5.7

5.4 Cancellation Of The 'System Connection Form'

The '*System Connection Form*' remains in force for the duration of the temporary connection or until the *Plant* is ready to be declared as Equipment. The '*System Connection Form*' is cancelled by completing part 4. The form outlines the two options on cancellation.

- The original connection has been disconnected and the systems are no longer connected together.
- The *Plant* previously under the control of the third party has been added to the system as Equipment now under the control of the Senior Authorised Person acting as the *Local Control Person*.

The *Local Control Person* shall ensure that site drawings and records of the System are updated to show the connection point removed or to show the **Equipment** which has been added to the **System**.

5.5 Removal Of Earthing, LV / Mechanical Equipment

Following the physical disconnection being made between Earthing, **LV** and Mechanical **Equipment**, and the rest of the **System** those items will be declared as not being part of the **System** and defined as *Plant*, using one of the following options:

- The **Equipment** will become *Plant* after the last disconnection from the **System**.
- The **Equipment** will become *Plant* immediately after cancellation of the **Safety Document** that has been issued for the purpose of disconnecting the **Equipment** from the **System**.

Site Specific Risk Assessment and Method Statements shall detail the methods of work. The *Local Control Person* shall ensure that site drawings and records of the **System** are updated and relevant personnel made aware of the changes.

5.6 System Connection Form (Appendix B)

On Earthing, **LV** and Mechanical *Plant*, prior to a connection between the **System** and a third party's system, the third party must confirm to the *Occupier's Representative* that they have a Safety Management System in place to manage any hazards introduced by the establishment of the connection.

5.7 Isolation Request Form (Appendix D)

The third party shall have a Safety Management System formally agreed with the *Occupiers Representative*, to provide isolation if requested across the boundary between the two safety management systems.

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6 Document Completion

This procedure needs to be read in conjunction with the relevant parts of TP106.

The *Commissioning Engineer* will be appointed by an appropriate manager. The *Occupiers Representative* has the responsibility to produce the relevant documents and certificates.

Where the **Control Person Safety (HV)** is not at the Transmission Network Control Centre the certificates must be amended as appropriate.

The same *HVSSC* shall be used for all related changes on the **System** that take place at the same time and locations. Changes to an *HVSCC* shall be controlled by reissuing the *HVSCC* with a new revision number. The defined changes will not become effective until Part 6 of the *HVSCC* has been completed.

Sections of the certificates shall be completed in the defined order.

The certificates shall be numbered from a register accessed via the [Intranet](#).

The forms in appendices B and D shall be uniquely sequentially numbered from a register managed by the *Commissioning Engineer*.

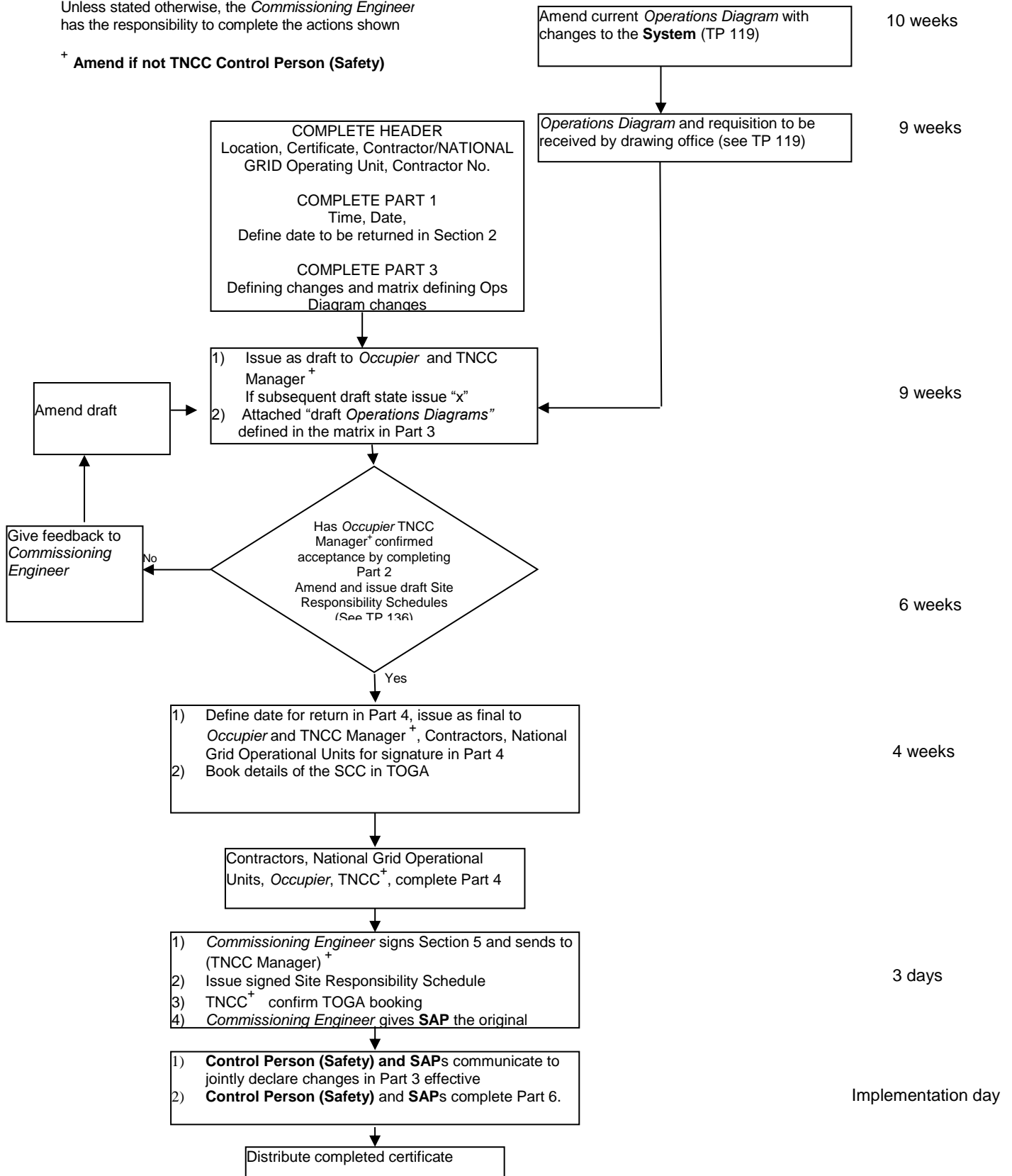
Appendix A flow chart describes the process of completing a *HVSCC*.

Appendix C flow chart describes the process for completing *System Connection Form*.

APPENDIX A H.V. SYSTEM CHANGE CERTIFICATE (HVSCC) Flow chart

Unless stated otherwise, the *Commissioning Engineer* has the responsibility to complete the actions shown

⁺ Amend if not TNCC Control Person (Safety)



APPENDIX B SYSTEM CONNECTION FORM (SCF) (EARTHING, LV AND MECHANICAL)

This document formally authorises connection of *Plant* under the control of another party's Safety Management System to the **System**

LOCATION.....

NUMBER.....

PART 1 – DESCRIPTION

Plant and where it is connected to the **System**

PART 2 – SANCTION

I agree to the connection specified in Part 1 from Hrs on

Name..... Signature..... Time..... Date.....
National Grid *Local Control Person*

PART 3 – ISSUE

I agree to the connection onto the National Grid **System** as specified in Part 1 and accept, on behalf of the Company named below, responsibility for the Management of Safety within our control. The point of connection will always be part of the National Grid **System**.

Name..... Signature..... Time..... Date.....

Company.....

PART 4 – CANCELLATION

The connection specified in Part 1 shall be:-

- * 1. Disconnected as fromhrs. on
- * 2. *Plant added* to the **System** under the control of the **Senior Authorised Person** acting as the *Local Control Person*

Declaration by the Company, associated with option 2

I confirm that all persons in my charge have been warned that the *Plant* specified in Part 1 will become part of the National Grid **System** and that no further work shall be done on or near to the **Equipment** unless it is sanctioned by a **Senior Authorised Person** in accordance with the requirements of the National Grid Electricity Safety Rules

Company

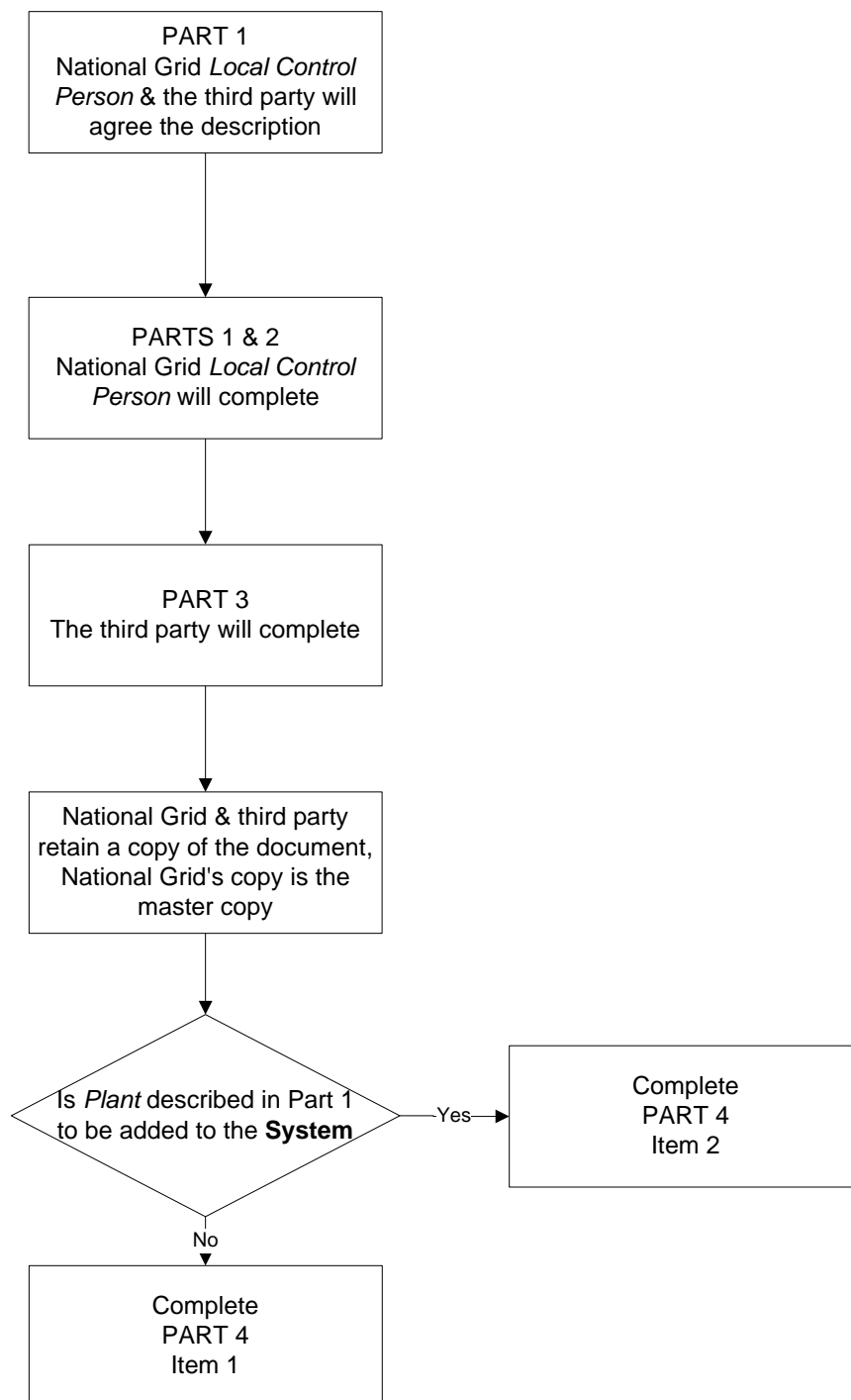
Name..... Signature..... Time..... Date.....

National Grid

Name..... Signature..... Time..... Date.....
Local Control Person

* Delete as appropriate

APPENDIX C SYSTEM CONNECTION FORM



APPENDIX D ISOLATION REQUEST FORM (EARTHING, LV AND MECHANICAL EQUIPMENT)

This certificate is used to define and secure and maintain safety precautions across the interface of two Safety Management Systems. A safety document is required prior to work commencing on the equipment. This form is not a safety document.

LOCATION.....

NUMBER.....

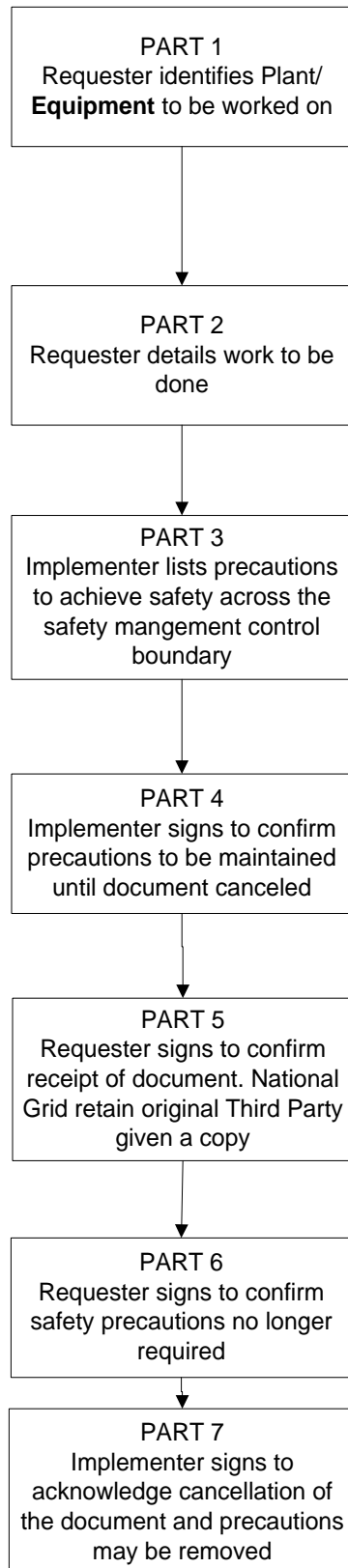
Part 1	<i>Requester's Plant/Equipment*</i> <i>identification</i> * Delete as appropriate			
Part 2	Requester's work to be done			
Part 3	Implementer's precautions to achieve Safety across the boundary between two safety management systems.			
Part 4	Implementer's confirmation that the above Safety Precautions have been established and will not be removed until this document has been cancelled.	Signature	Name	
		Company Name	Time	Date
Part 5	Requester's confirmation of receipt	Signature	Name	
		Company Name	Time	Date

CLEARANCE				
Part 6	Requester's confirmation that the above Safety Precautions in part 3 are no longer required.	Signature	Name	
		Company Name	Time	Date

CANCELLATION				
Part 7	Implementer's acknowledgement of cancellation	Signature	Name	
		Company name	Time	Date

APPENDIX E

ISOLATION REQUEST FORM (Flow Chart)



Appendix F Authorisation Matrix for Contractors Personnel

Contractors appointment under this NSI shall be limited to the following sections.

Contractor Personnel	Person	Competent Person	Authorised Person	Senior Authorised Person
Sections	N/A	N/A	N/A	N/A