National Grid UK Electricity Transmission plc

NATIONAL SAFETY INSTRUCTION 33
and
Guidance

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

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
3	Jan 2021	Reformatted & minor amendments	Electricity Transmission Safety Rules Team	Head of ET Operations Matt Staley
4	Dec 2021	Reorganisation roles update.	Safety Rules Team	Director of Asset Operations Matt Staley
5	Mar 2026	Minor updates regarding Contractor management of Temporary supplies	Safety Rules Team	Director of Asset Operations Kate Grant

KEY CHANGES

Section	Amendments
Purpose & Scope 5.2, 5.4 Appendix B	Consolidation of words to manage 3rd Party Temporary Connection supplies, their cancellation and transfer of Connection Form within requestor 3rd Party or cancellation of form should a different 3rd Party require Temporary Connection supplies.

THE ADDITION / REMOVAL OF EQUIPMENT TO / FROM THE SYSTEM

CONTENTS

			Page
1	Purpose and Scope		1
2	Definitions		2
3	Documentation		3
4	HV Procedure		4
5	Earthing, LV and Mechanical Procedure		5
6	Document Completion		8
	Appendices		
	A	H.V. System Change Certificate (HVSCC) Flow chart	9
	B	System Connection Form (SCF) (Earthing, LV and Mechanical)	10
	C	System Connection Form	11
	D	Isolation Request Form (Earthing, LV and Mechanical Equipment)	12
	E	Isolation Request Form (Flow Chart)	13
	F	Authorisation Matrix for Contractors Personnel	14

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 offsite *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.

It is acceptable to transfer, the now amended, Appendix B System Connection Form to an individual employed within the same 3rd Party Company (to manage movements, extended leave, etc) for Connection supplies, etc. Should a different 3rd Party require cascade use of those Connections then that can be managed by the 2 different 3rd Parties, but should the System Connection Request originator 3rd Party leave site then the existing Appendix B System Connection Form should be **Cancelled** and a new Appendix B System Connection Form should be issued via the National Grid *Local Control Person* to the same standard as the originally issued form.

OVERVIEW

When *Plant* is brought onto an operational site the requirements of National Grid Electricity Transmission Safety Rules shall apply with regard to the movement of 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 to be co-ordinated with the requirements and the updating 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.

Commissioning	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'.
Commissioning Engineer	Responsible for defining the arrangements for achieving safety from the **System**, to manage the implementation of AMBP 101 – 'Managing Safety Interfaces' requirements (including *Operations Diagrams*) and to confirm the adequacy of the Health and Safety file on completion.
Control Person	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 *Local Control Person.*
HV System Change Certificate (HVSCC)	A certificate used to notify contractors and National Grid Operating Units when adding *Plant* 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 *Local Control Person's* copy of the document shall be the definitive document. The *Control Person's* copy of the document shall have printed names in Part 6, backed up with logged statements.
Isolation Request Form	This document is used to define, secure and maintain safety precautions across the interface of two Safety Management Systems. (See appendices D & E)
Local Control Person	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 **CP(S) 1** the *Local Control Person* shall be an **SAP 1**.
Notification of Change Certificate (NCC)	A certificate used to notify Contractors and National Grid Operating Units, of a change to the original date on an existing *HVSCC*.
Occupier	The person having control over the premises and who regulates and controls the work that is done at that **Location**.

Occupiers Representative	The person identified by the *Occupier* who shall discharge the duties and responsibilities of the *Occupier* on the premises. On National Grid operational sites this will normally be the Operations Manager. 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**.
Operations Diagram	The series of National Grid issued diagrams can be found in TP 119 – 'Transmission Operation Diagrams and Technical Data Schedules'.
Plant	Electrical and / or Mechanical items, which are not part of the **System** and disconnected from the **System.**
System Connection Form	A document used to formally authorise connection of *Plant* subject to the control of another party's Safety Management System to the **System**. (See appendix C)

3 Dangers

The **Danger(s)** to **Personnel** due to inadequate management of adding *Plant* or removing **Equipment** to / from the **System**, without the *Control Person's* knowledge are electrocution, burns, impact from release of pressure and effects on eyes arising from:

- Inadvertent infringement of **Safety Distance**
- Incorrect identification of **Equipment**
- Incorrect management of **Impressed Voltage Conditions**
- The application of **Earthing Device(s)** to **Live HV Equipment**
- Badly connected or insecure **Earthing Device(s)**
- The incorrect sequence or method of application or removal of **Earthing Device(s)**
- The application of **Earthing Device(s)** to an inadequate or defective earth system
- Inadequate permanent Earthing of **Equipment** or conductors (e.g. 'floating' sections of busbar)
- Incorrect or inadvertent operation of mechanical **Equipment**

NSI 33
4.1 to 4.5

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 the *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 the *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 the *HVSCC* shall be completed and issued for this purpose.

4.4 OHL Towers and Conductors

The same principles as 4.1, 4.2, and 4.3 shall apply to OHL conductors. When new conductors are installed on a tower, all tower access shall be made subject to Electricity Transmission 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 conductor.

Where a risk assessment defines that cross jumpering of OHL 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.

4.5 Transfer of **Equipment**

When **Equipment** is transferred to or from National Grid Electricity Transmission and the a Third Party; the Site Responsibility Schedule (Ref TP136) shall be updated and signed by all relevant parties prior to the transfer. 'Part D' of the *HVSCC* shall be used to define the **Equipment** and controlling party at the start and completion of the process.

NSI 33
4.6 to 4.8

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

A *HVSCC* is not required when **Equipment** is temporarily removed from the **System**, for workshop repair, return to manufacturers etc.

It shall not be considered subject to the Electricity Transmission Safety Rules from the time of removal from the normal position until the time of return or replacement. 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.

NSI 33
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** 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.

NSI 33
5.2

5.2 Addition of Earthing, **LV** or Mechanical *Plant* (involving Third Parties)

Agreement to any temporary or permanent physical connection between Earthing, **LV** or Mechanical *Plant* shall be sought from the Third Parties site representative, prior to the connection being established.

- The agreement to the connection shall be formally recorded via the '*System Connection Form'* in 'Appendix B'.
- 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 Parties safe system of work should be applied for work on *Plant* in the designated work area (e.g. CDM work area).
- To ensure that the work to establish the connection can be undertaken safely; an 'Appendix D - *Isolation Request Form'* or a Third Party 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 risk controls and 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 the two systems.
- When using the '*System Connection Form' Plant* does not have to be declared as **Equipment** before the Third Parties *Plant* is connected to the **System**.

It is acceptable to transfer the Appendix B System Connection form to a different individual within the named same 3rd Party Company that has originated the Connection request. Should a different 3rd Party require use of that Connection then supplies can be cascaded through the original 3rd Party Connection requestor and managed by the originator 3rd Party Connection requestor.

If the original 3rd Party Connection requestor is leaving site, then that 3rd Party Connection agreement needs to be **Cancelled** and a new Appendix B System Connection Request and agreement must be put in place with the new 3rd Party Requestor and the same due diligence and checks must be completed by the National Grid *Local Control Person*, as if it was a new System Connection request.

NSI 33
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 three options on cancellation.

- The original connection has been disconnected and the systems are no longer connected together.
- The original connection is still in place but is **Isolated** and shall not be used until the existing *System Connection Form* had been cancelled and a new *System Connection Form* has been issued by the *Local Control Person* to the new recipient company / 3rd Party individual.
- 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** or 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 risk controls and 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 Parties 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 systems.

NSI 33
6

6 Document Completion

This procedure needs to be read in conjunction with the relevant parts of TP106 'Equipment Commissioning and Decommissioning'.

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 *HVSCC* 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.

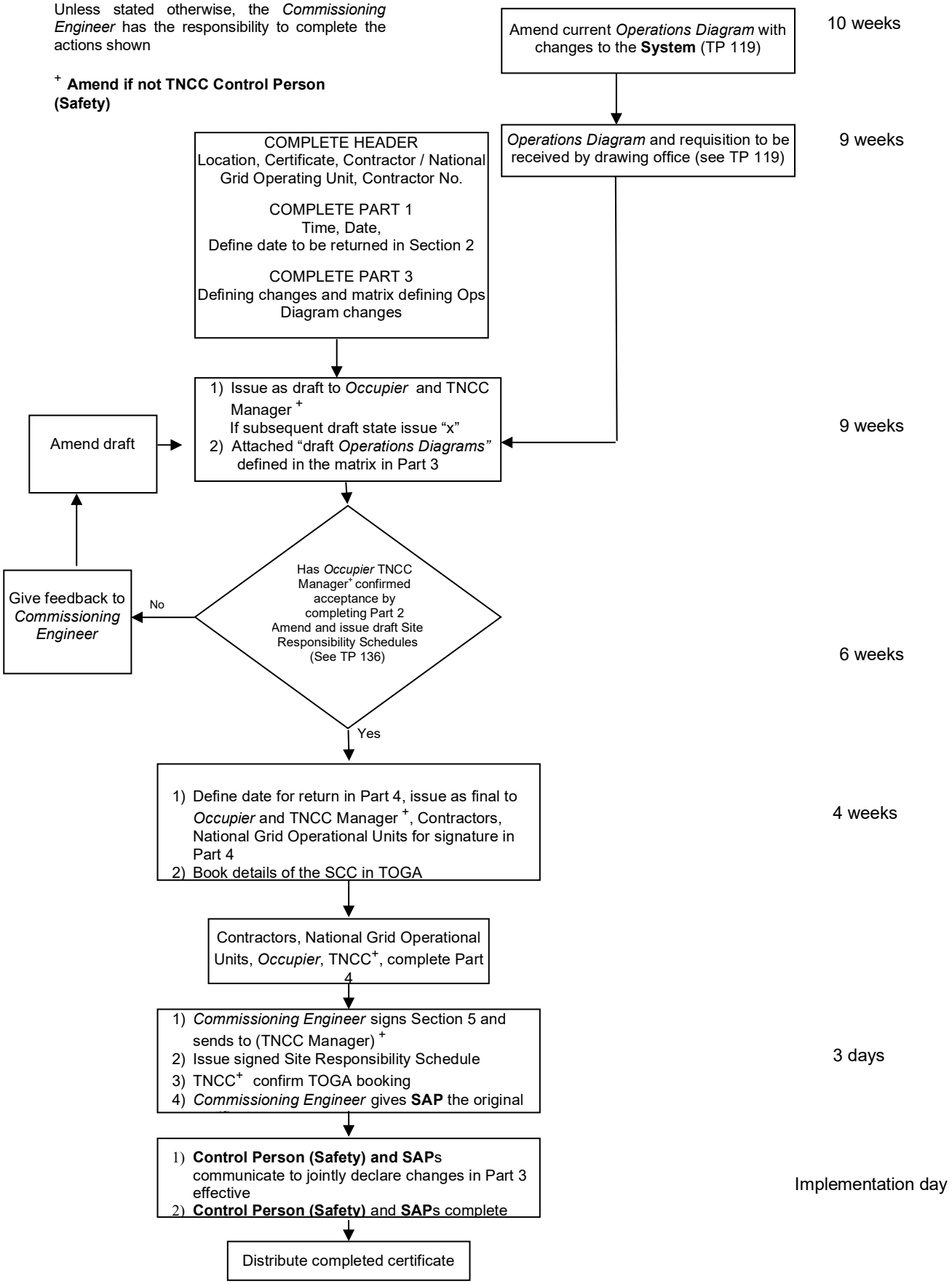
The certificates shall be numbered from a register accessed within in internal electronic folder system associated with the site / project.

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



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

This document formally authorises connection of *Plant* under the control of another Parties 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 (date)…….……..…….

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**.

Company.....**Name**.....**Signature**.....**Time**.....**Date**.....

PART 3A – TRANSFER

I agree to the connection onto the National Grid **System** as specified in Part 1 and accept, on behalf of the Company named below (same as company in Part 3 Issue), responsibility for the Management of Safety within our control. The point of connection will always be part of the National Grid **System**.

Company:	**Name:**	**Signature:**	**Time:**	**Date:**
NG *Local Control Person* Name-		**Signature-**	**Time-**	**Date-**
Transferred to same original 3rd Party only				
Company:	**Name:**	**Signature:**	Time:	Date:
NG *Local Control Person* Name:		**Signature:**	Time:	Date:
Transferred to same original 3rd Party only				
Company:	**Name:**	**Signature:**	Time:	Date:
NG *Local Control Person* Name-		**Signature:**	Time:	Date:
Transferred to same original 3rd Party only				

PART 4 – CANCELLATION

The connection specified in Part 1 shall be:- (* Delete as appropriate)

* 1. Disconnected as from ……hrs. on ……
* 2. Still Connected but **Isolated** in preparation for the transfer to a different recipient company as from ……. Hrs. on …….. via cancellation of this form and the issue of a new form
* 3. *Plant added* to the **System** under the control of the **Senior Authorised Person** acting as the *Local Control Person*

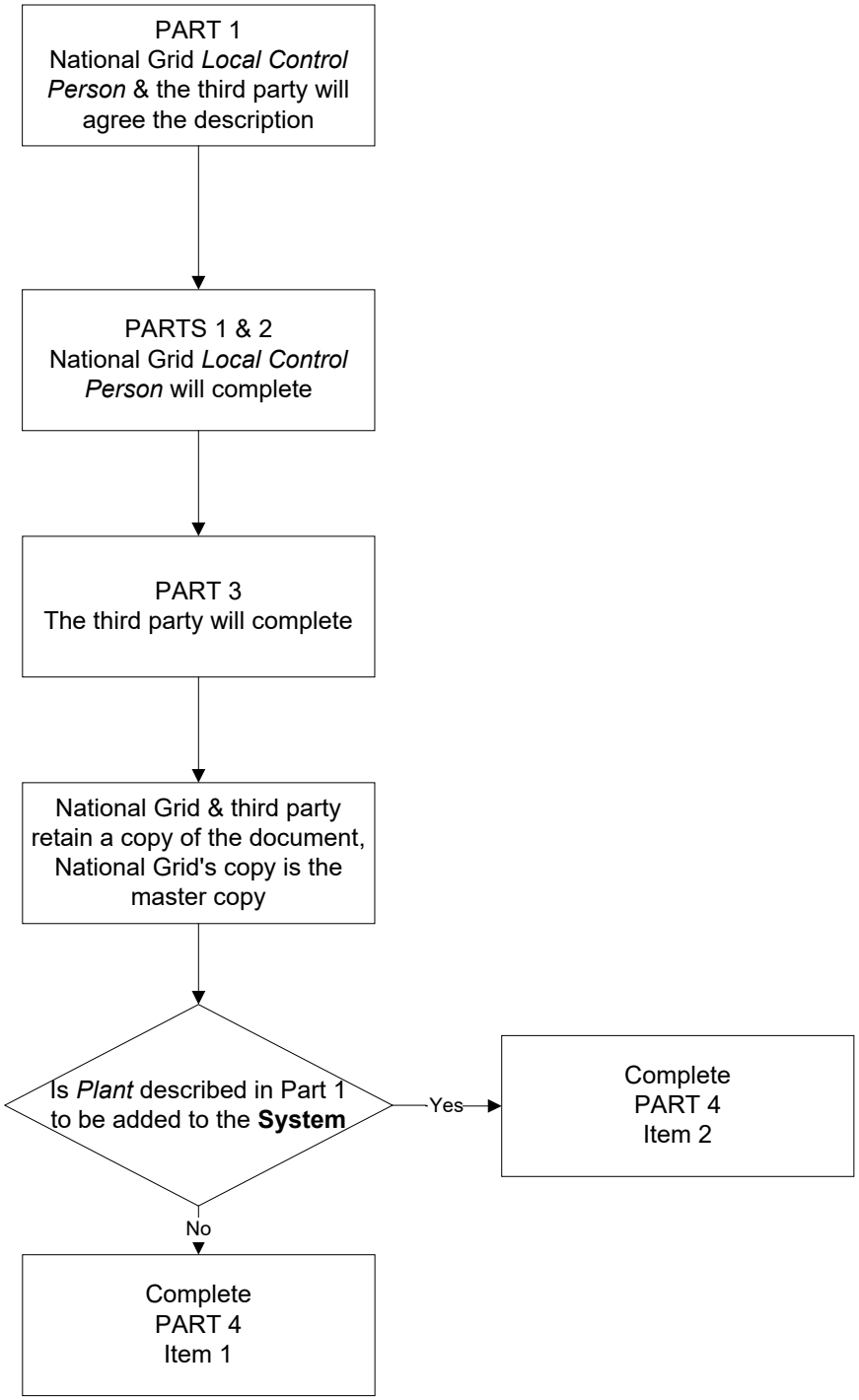
Declaration by the Company, associated with option 2

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)*

APPENDIX C
SYSTEM CONNECTION FORM



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

This certificate is used to define, 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**.

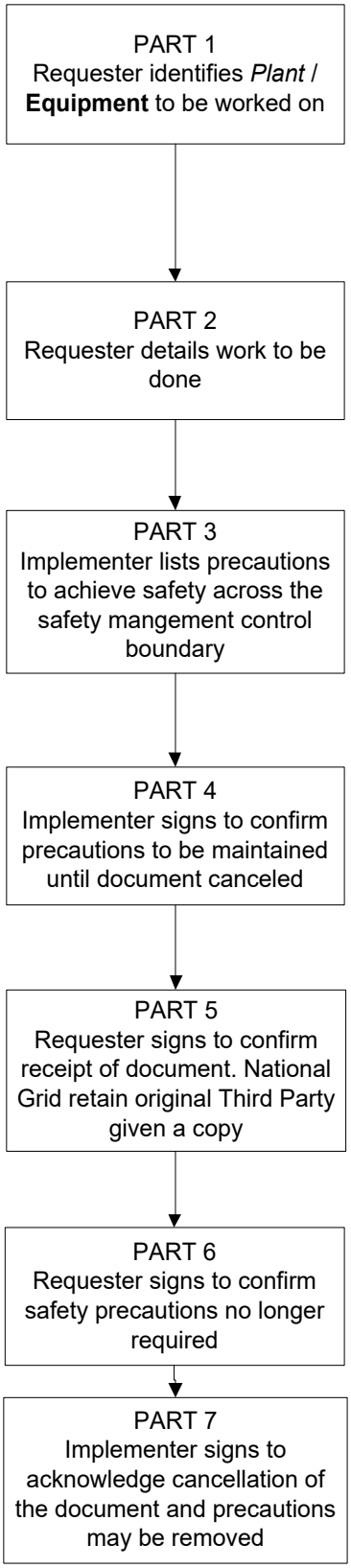
LOCATION…… NUMBER……...

Part 1	*Requester's Plant /* **Equipment*** *identification* * 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