

## 1. SCOPE

This document details PowerSystem’s principles, processes and operating regime for contestable jointing on low voltage underground networks within greenfield housing sites.

The document covers the requirements to enable approved and accredited 3<sup>rd</sup> party Contractors to undertake dead and live jointing – restricted to work activity associated with greenfield housing sites only.

## 2. ISSUE RECORD

**This is a non-controlled document**

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Issue Date	Issue No	Author	Amendment Details
19/12/2002	Issue 1	M. Everett	

## 3. ISSUE AUTHORITY

Author	Owner	Issue Authority
Mark Everett Engineering Consultant	Guy Jefferson Asset Manager	Steve Wood Network Strategy Director
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## 4. REVIEW

This document shall be subject to ongoing review throughout the live working trial.

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## 6. DEFINITIONS AND ABBREVIATIONS

### 6.1 DEFINITIONS

The following definitions shall apply throughout this document:

Accredited	Satisfying the requirements of PowerSystems at that time for persons carrying out the design and construction of Contestable Works and being Accredited to carry out Contestable Works and Accredited to carry out live working.
Adoption Agreement	The Agreement entitled Adoption Agreement incorporating the General Conditions.
Adoption	Transfer of title, ownership, operation and maintenance responsibilities as defined in the adoption agreement.
Authorised Person	A competent person who has been nominated by an appropriate officer of PowerSystems to carry out duties specified in writing.
Approved	Policy and design parameters contained within this document and its appendices or the written approval of SP Distribution Ltd / SP Manweb plc.
Commissioning Requirements	The tests that are described within this document which have to be passed prior to issue of a Make Live Certificate or a Completion Certificate.
Completion Certificate	The certificate described within this document which shall be passed prior to or following Making Live.
Contestable Works	Construction works (previously carried out by the Distributor) which can now be undertaken by approved third party Contractors under OFGEM's competition in Connections Regime.
Contractor	An Approved and Authorised third party Contractor undertaking Contestable construction works in association with greenfield housing sites.
Developer	The organisation in overall ownership of the site during it's construction.

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Good Industry Practice	The exercise of that degree of skill, diligence, prudence and foresight which would reasonably and ordinarily be expected from a skilled and experienced contractor engaged in the same type of undertaking under the same or similar circumstances.
Greenfield	A plot of land that has not been subject to any form of development.
Handover	A point where all contestable network construction is complete, ownership of all such network has been transferred to PowerSystems and the Contractor's permission to work live has been removed.
High Voltage (HV)	Refers to the 6,600 or 11,000 volt network.
Housing Site	A development consisting of domestic dwellings.
Live Working Area	The area or property within the greenfield housing site within which the Contractor may undertake live working for the purpose of carrying out and completing part of the Contestable Works.
Low Voltage (LV)	Refers to the 230 / 400 volt network.
Making Live	Means in relation to the Contestable Assets or any part thereof the connection of the Contestable Assets to the Distributor's System by the taking of any step so as to allow electricity to flow from the Distributor's System to the Contestable Assets and Making Live.
Offsite Works	Any of the Contestable Works which are to be carried out by the Contractor outside the Site and pursuant to a Street Works Licence.
Point of connection	The position at which a developer's network would connect to the existing distribution system effectively forming the point of connection at which a supply of electricity can flow between the Distributor's System and the Contestable Works.
PowerSystems	The network operator for the Distribution License Holders SP Distribution (for the Distribution service area formerly known as Scottish Power) and SP Manweb (for the Distribution service area formerly known as Manweb).
ScottishPower Safety Rules	The Safety Rules for working on the Distributor 's System.
Service	For the purpose of this documents is defined as a cable providing supply to an individual house.

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Statutory Consents	All consents, licences, permissions and approval of any kind required under any statute or subordinate legislation including planning permission, building regulation approval and Street Works Licences.
Street Works Licence	Means (a) where the Live Working Area is situated in England or Wales a licence under Section 50 of the NRSWA and (b) where the Live Working Area is located in Scotland, a permission under Section 109 of the NRSWA.
Working Day	Any day other than a Saturday, a Sunday, Christmas Day, New Year's Day, Good Friday, or a day which is a banking holiday within the meaning of the Banking and Financial Dealings Act 1971.
Week	Means the period of seven days commencing on a Monday and ending on a Sunday.

## 6.2 ABBREVIATIONS

The following abbreviations shall apply throughout this document:

CDM	The Construction (Design and Management) Regulations 1994.
NRSWA	The New Roads and Street Works Act, 1991.
PSMC	PowerSystems Management Control Centre.

## 7. RELATED DOCUMENTS

This document is one of a suite of specifications relating to this subject area and should be read in conjunction with:

- a) Electricity Association Documents:  
Engineering Recommendation G81 - Framework for design and planning, materials specification and installation and record for greenfield low voltage housing estate installations and associated, new, HV / LV distribution substations:
  - Part 1: Design and Planning
  - Part 2: Materials Specification
  - Part 3: Installation and Records
- b) The Company Internal Documents:
  - Design & planning framework for greenfield low voltage housing estate installations and associated new HV/LV distribution substations (Ref. ESDD-02-012).
  - Materials Specification framework for greenfield low voltage housing estate installations and associated new HV/LV distribution substations (Ref. EPS-03-027).
  - Installation and Records framework for greenfield low voltage housing estate installations and associated new HV/LV distribution substations (Ref. EPS-02-005).
- c) The ScottishPower Safety Rules Electrical and Mechanical 4<sup>th</sup> edition, and all supporting documentation.
- d) PowerSystems standard Adoption Agreement for greenfield housing sites.
- e) PowerSystems document, Recording of Electrical Assets by Contractors (Ref. BUPR-22-015).

## 8. DISCLAIMER

The data and guidance contained within this document remains the property of PowerSystems and may not be used for purposes other than that for which it has been supplied and may not be reproduced either wholly or in part, in any way whatsoever, nor may it be used by, or its contents divulged to, any other person whatsoever, without the prior written permission of PowerSystems.

The Company reserves the right to change the data contained within this document without notification. The Company accepts no responsibility for any inaccuracies in, or omissions from the document.

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## 9. CANDIDATE SUITABILITY

In compliance with the requirements of the Electricity at Work Regulations 1989, no persons shall be engaged in any work activity where technical knowledge and experience is necessary to prevent danger or (where appropriate) injury unless they possess such knowledge and experience, or is under such degree of supervision as may be appropriate having regard to the nature of the work.

In accordance with the Health and Safety series booklet HS(R)25 – “Memorandum of Guidance on the Electricity at Work Regulations 1989,” the question of technical knowledge or experience necessitates:

- a) Adequate knowledge of electricity.
- b) Adequate experience of electrical work.
- c) Adequate understanding of the system to be worked on and practical experience of that class of system.
- d) Understanding of the hazards which may arise during the work and the precautions which need to be taken.
- e) Ability to recognise at all times whether it is safe to work to continue.

No persons or persons without the appropriate technical knowledge and experience shall present themselves for approval under these procedures or shall attempt to use the principles, processes and operating regime as established within this document.

## 10. THE OPERATING REGIME

### 10.1 GENERAL PRINCIPLES

The operating regime is as specified in the Appendices (A to G). In addition, the following general principles shall be strictly enforced:

1. All live LV work performed under ScottishPower Safety Rules.
2. ScottishPower Live LV Working Procedures shall apply.
3. Contractors are authorised to work live at LV within the live working area only on Greenfield housing site underground networks.
4. Only Lloyds Accredited Contractors shall be allowed to undertake live work.
5. Only PowerSystems approved and ScottishPower authorised jointers shall undertake live work on the network.
6. The Contractor must ensure that PowerSystems have full rights of access to undertake all relevant work within the contestable work area as described in these procedures.
7. Contractors shall not be authorised to enter live substations.
8. PowerSystems must be informed of all live working.
9. Within the live working area Contractors shall not energise cables unnecessarily i.e. where there is no impending requirement to supply properties fed by that cable.

## 10.2 ELECTRICAL AND NON-ELECTRICAL INCIDENTS

### 10.2.1 Electrical Incidents

Electrical incidents will be immediately reported to PowerSystems (via the PSMC). Information given to PowerSystems will detail the location of the works, type of incident, injury or damage sustained. PowerSystems will co-ordinate with the Contractor such that the incident is reported to DTI / HSE as appropriate. In addition:

- a) All works to be suspended and staff removed from operational works.
- b) PowerSystems will be requested to make electrical plant safe where required.
- c) The Contractor shall comply and assist where appropriate with the PowerSystems' Incident investigation procedures.

### 10.2.2 Non-Electrical Incidents

Non-Electrical incidents will be investigated by the Contractor and the HSE where required with the report being made available to PowerSystems. Where the incident does not have implications for the Distribution System, the Contractor will investigate using its own company Safety Management System and report to HSE as appropriate.

The Contractor will inform PowerSystems that all works have been suspended due to an incident. In such circumstances, PowerSystems may choose to attend site.

## 10.3 DOCUMENTATION, WORK INSTRUCTIONS AND PACKAGE

The Contractor is responsible for the management and safety of its representatives when undertaking any live work within the site. However, to comply with good industry practice and ScottishPower Safety rules, it is recommended that the following documentation and work instructions are issued by the Contractor to its authorised jointers and are available for inspection on site:

- a) Work instructions including the site address details, instruction originator and a description of the work. This paperwork will have an order number specific to the site under construction.
- b) Location plan clearly showing the work area(s) and existing cable records.
- c) A standard PowerSystem's Commissioning results sheet detailing continuity, insulation resistance, earth loop impedance, polarity testing, cut out status / application of appropriate seals.
- d) Escalation procedure detailing all contact details required in the event of incident or dangerous occurrence.

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#### **10.4 ENERGISING (MAKING LIVE) CABLES**

It is possible that a fault could be discovered when the Contractor undertakes pre-energisation commissioning tests on a newly installed network. In such circumstances the Contractor is responsible for fault repair providing no physical connection has been made with the existing live network.

It is possible a fault may occur when attempting to make live a newly installed cable network. In such situations, if the newly installed cable network has any physical connection made to the existing live network then it shall be considered as adopted and PowerSystems shall be immediately contacted to undertake a fault repair.

If wet cables are discovered when carrying out jointing work and appear to be attributable to a fault on a previously energised (made live) main, the Contractor shall contact PowerSystems who will undertake the fault repair.

If a Contractor jointer discovers a cable expected to be live is, in-fact, dead then they shall contact PowerSystems immediately.

The contractor shall inform the Site Agent of the location of newly energised cables.

#### **10.5 THIRD PARTY DAMAGES**

Third party damages shall be dealt with in the following manner:

- a) The Contractor will remain responsible for the site until final adoption of the network.
- b) Developer's site representatives shall be instructed by the Contractor to report any damage to live cables to PowerSystems.
- c) Once newly installed network has been made live, PowerSystems will charge the relevant party for any such works where it deems costs are involved.

#### **10.6 LEAVING SITE**

When leaving site, the Contractor shall always ensure that the electrical network (either made live or with the potential to be made live) is left in a safe manner which does not expose the network or the public to undue risks.

#### **10.7 CUT-OUT REQUIREMENTS**

The following shall apply to the cut-out when installed and made live by a 3rd Party Contractor WHERE A SINGLE VISIT DOES NOT APPLY:

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#### 10.7.1 Labelling

In addition to the normal labelling requirements (PME / Non PME, live and neutral labels, etc), a permanent label shall be placed on the cut-out identifying the 3rd party contractor who installed the device and warning against tampering.

#### 10.7.2 Sealing

To provide additional security, the fuse carrier shall be secured to the cut-out case via a mechanical sealing arrangement such as a plastic cable-tie type or the more permanent high tensile steel, compression lugs.

#### 10.7.3 Fuse

If no metering has been installed then blank cartridges shall be fitted - **i.e. the fuse left out.**

#### 10.7.4 Double Pole Switch

A double pole switch shall be secured to the board in its final position taking into account the meter and consumer unit to be added later.

### 10.8 COMMISSIONING REQUIREMENTS

The commissioning requirements for LV work on Greenfield housing sites are as reflected in Appendix A.

In addition, any 230 Volt AC non system wiring within a newly constructed substation shall be installed and commissioned in accordance with the guidance detailed in BS 7671:2001 (commonly known as the IEE Wiring Regulations – Sixteenth Edition). The results of such tests shall be submitted on sheets as detailed in Appendix 6 (Model Forms for Certification and Reporting) as detailed in BS 7671.

**APPENDIX A – PRE & POST COMMISSIONING FORM**

Refer to attached sheet.

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**APPENDIX B – COMPLETION CERTIFICATE**

Refer to attached sheet.

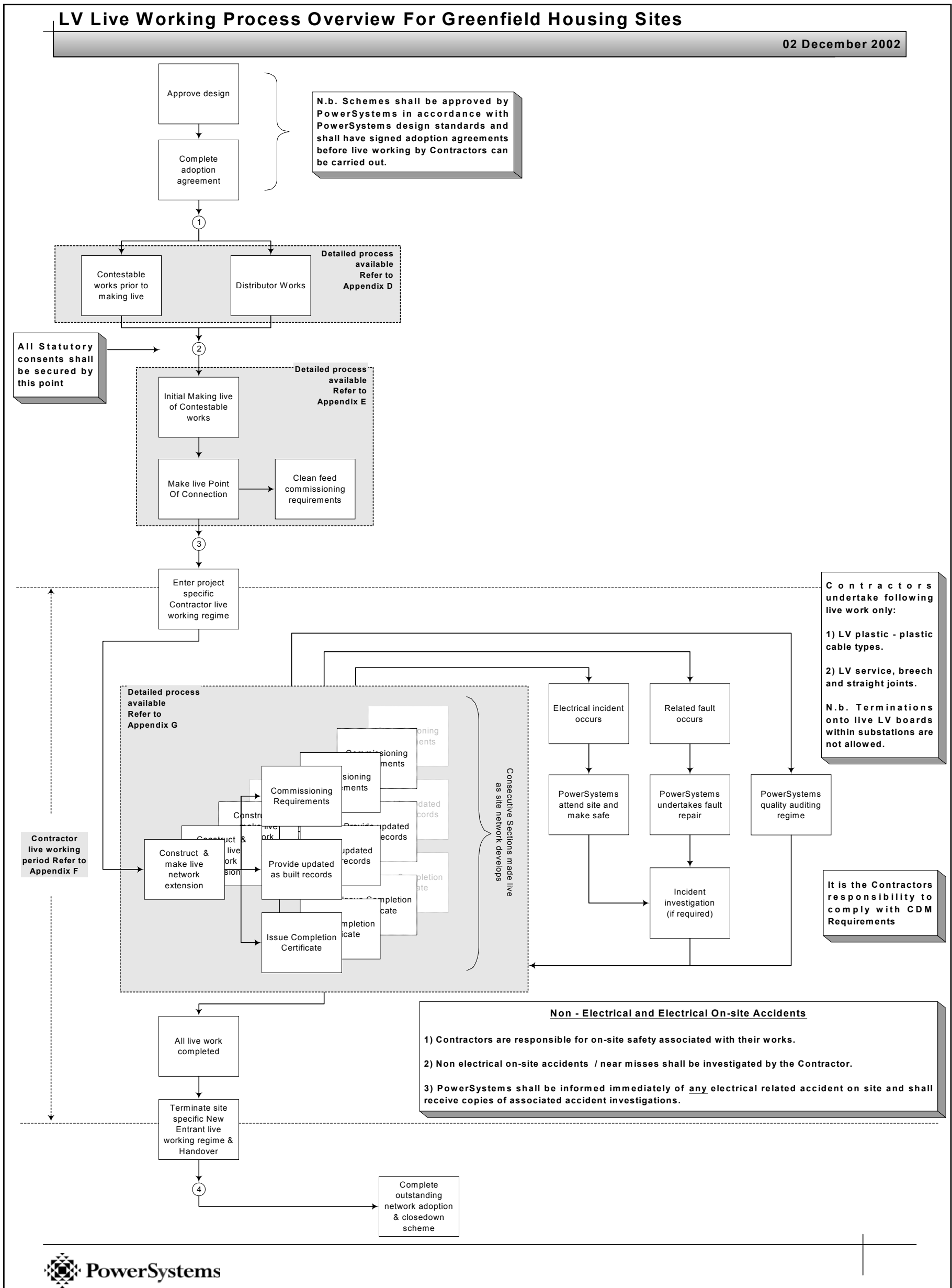
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**APPENDIX C – ENTERING / EXITING LIVE WORKING**

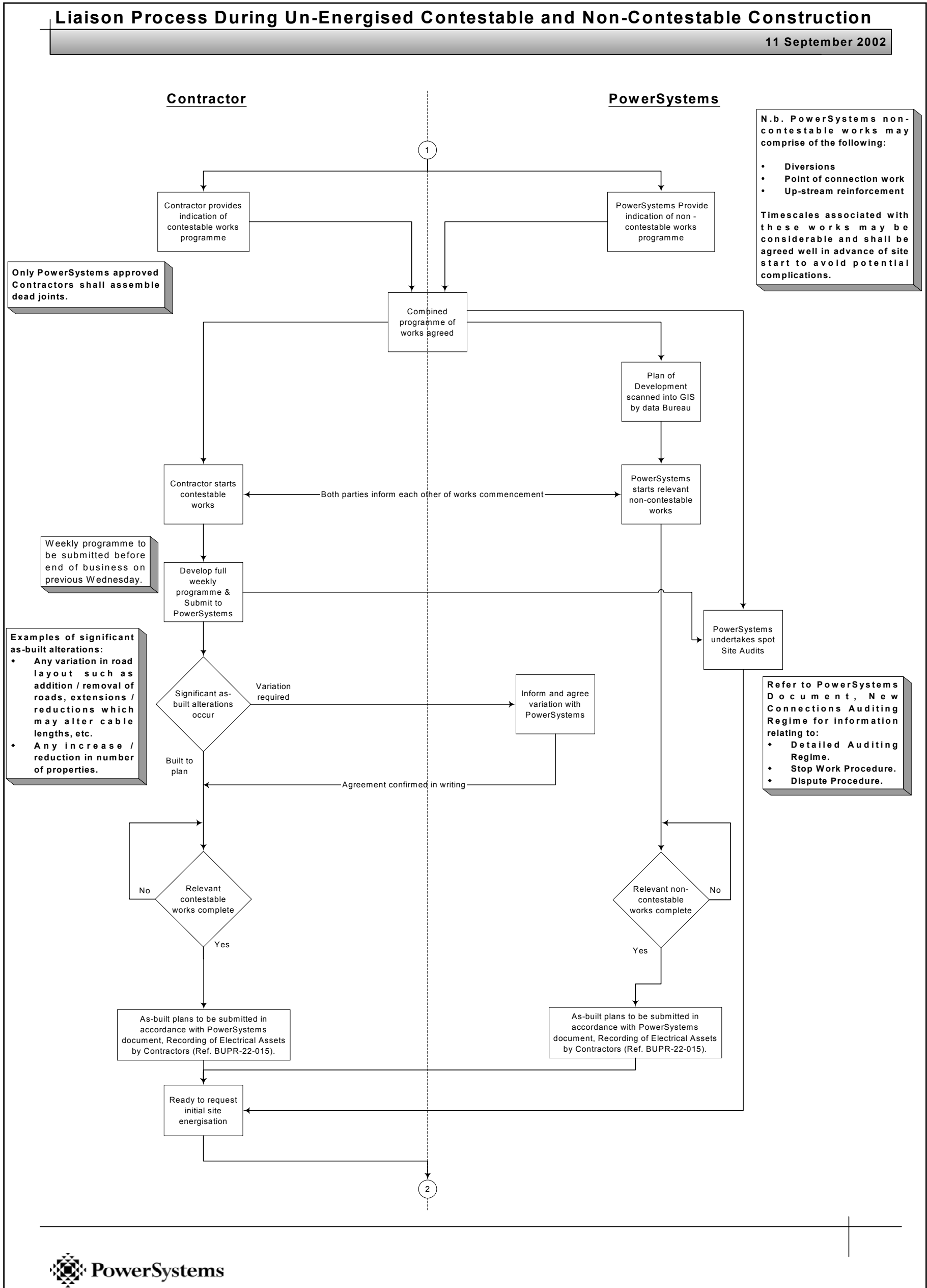
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APPENDIX D - LV LIVE WORKING PROCESS OVERVIEW FOR GREENFIELD HOUSING SITES



**APPENDIX E – LIAISON PROCESS DURING UN-ENERGISED CONTESTABLE AND NON- CONESTABLE CONTSTRUCTION**



**APPENDIX F – REQUESTING INITIAL MAKING LIVE (FROM THE POINT OF CONNECTION)**

**Requesting Initial Making Live (From the Point of Connection)**

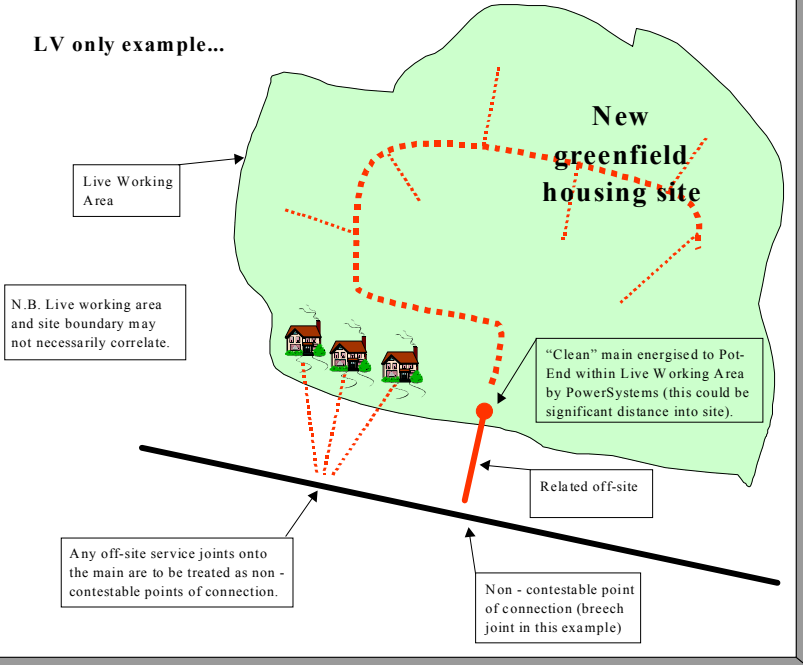
02 December 2002

**Initial Making Live:**

**General Principles 1**

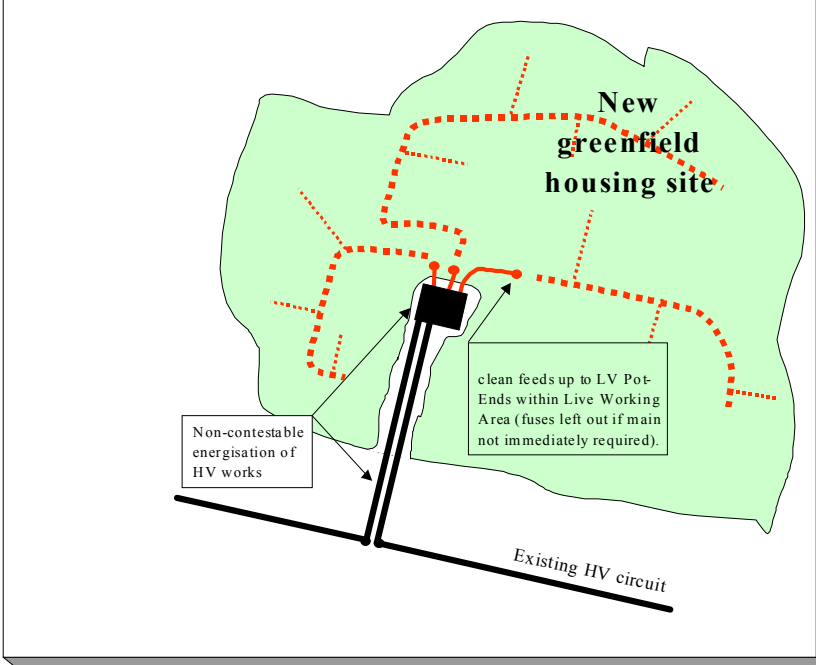
When making live newly constructed LV networks from the Point of Connection, the general approach is for PowerSystems to make live a "clean" main (i.e. one not having any services attached) up to a pot end joint within the site boundary.

**LV only example...**



**General Principles 2**

When dealing with sites including a substation, PowerSystems will energise the substation and make live the corresponding "clean" LV feeds up to nearby pot ends.

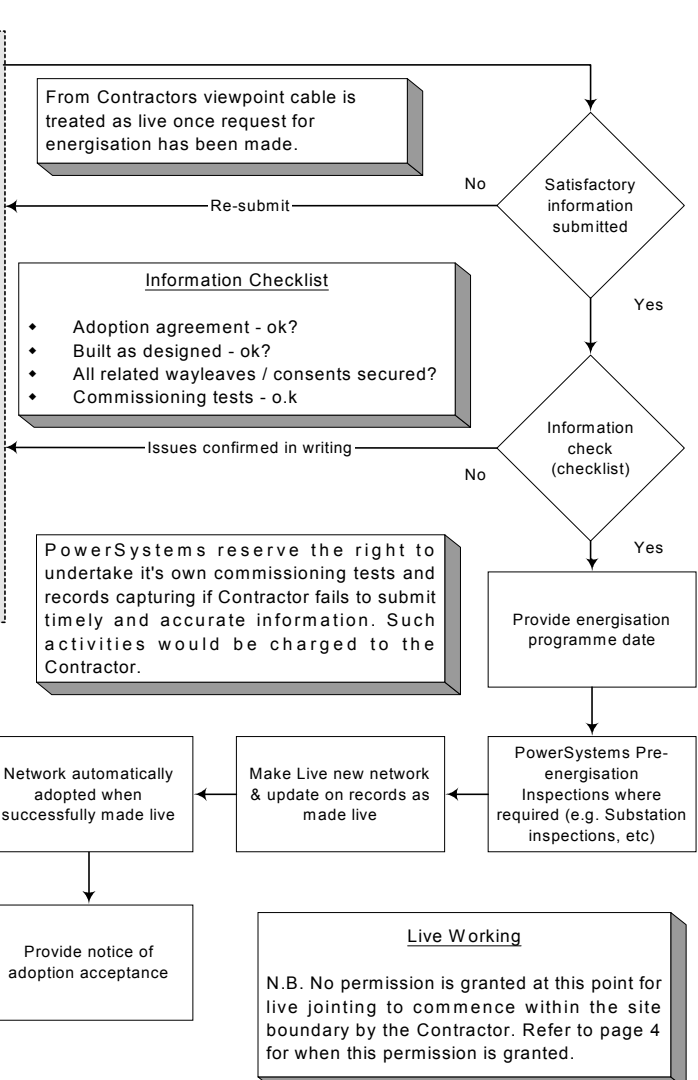
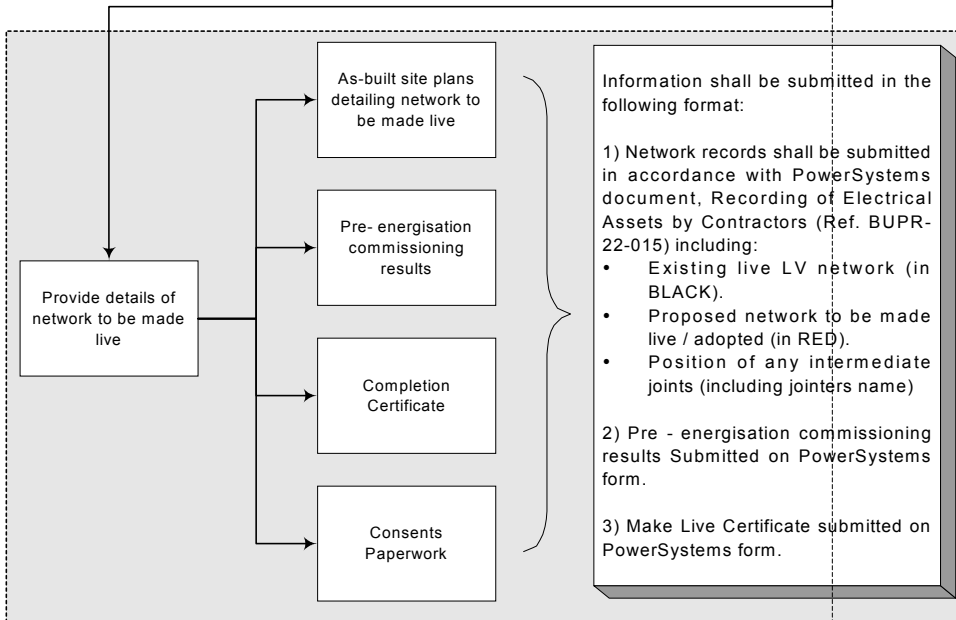


**Offsite Streetworks:**

N.B. in some circumstances, Contractors (who have the appropriate streetworks licence) may choose to undertake the offsite excavation and cable lay. The ownership and management of such streetworks shall be the sole responsibility of the Contractor (i.e are not to be considered as being under the PowerSystems NRSWA Streetworks Licence).

**Contractor**

**PowerSystems**



**1) Notification Timescales:**

A sensible approach must be taken to advance notification of initial requests to make live. Clearly, works involving the energisation of substations will require significantly more notice than simple LV breach joints. In the simple LV breach scenario a minimum of 10 working days notice shall be given by the Contractor.

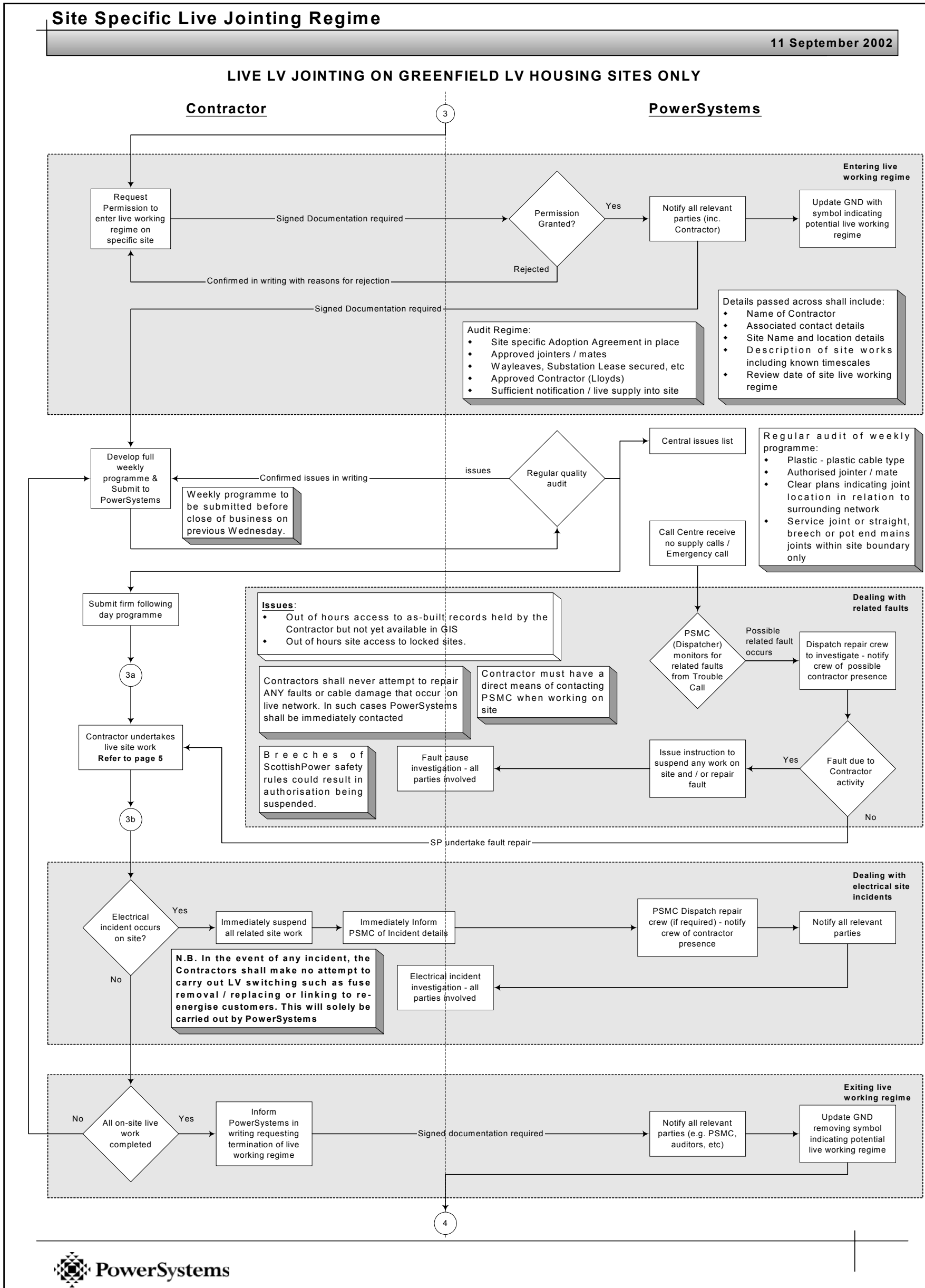
**2) Post Energisation Commissioning:**

When energising "clean" mains, it is assumed in the above example that no post energisation commissioning is required by PowerSystems (since no services will be made live). However, when making live services by undertaking offsite non-contestable works, PowerSystems would be responsible for all post energisation commissioning tests on the service cable and at the cut-out.

**3) Offsite Streetworks:**

The above process details the requirements when the Contractor has laid part / all of the offsite network. In situations where PowerSystems has exclusively installed all offsite networks then the above process is entirely under the control of PowerSystems and hence, does not require a Contractor interface.

APPENDIX G - SITE SPECIFIC LIVE JOINTING REGIME



APPENDIX H - EXPANSION OF LIVE WORK REQUIREMENTS

