SHE Standard 07

Model Distribution Safety Rules

2022 Issue 3
INTRODUCTION

Energy Networks Association (ENA) Electricity Member Companies are committed to sharing best practice and working with the Regulators to successfully manage the risks to health and safety within the Electricity Industry. Where all ENA Electricity Member Companies agree to follow a similar approach to manage a specific risk the intention will be to formalise a common standard. This will be communicated to HSE for their information and will provide operational inspectors with an understanding of the minimum standards they should expect when visiting an ENA Electricity Member Company.

NOTE: This document is a reformatted version of ENA SHE Notes of Guidance 010. The content has been revised. The last edition of this document was issued in 2016.

These are Model Distribution Safety Rules (MDSR). These have been prepared following extensive consultation with ENA Electricity Member Companies who are users of these MDSR. It is recognised that such Companies base their own Company Safety Rules on these MDSR and do not necessarily issue these MDSR to staff. Please ensure that you check with the Distribution Network Operator’s or Distribution System Operator’s own rules before carrying out any work activity on their network. Compliance with the requirements of this document Shall not be taken as meeting all health and safety legal duties. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written consent of ENA.
BACKGROUND NOTES TO THE MODEL DISTRIBUTION SAFETY RULES

ENA SHE Standard 07:

These MDSR have been prepared following extensive consultation with Member Companies who are users of these MDSR. It is recognised that such Companies base their own Company Safety Rules on these MDSR and do not necessarily issue these MDSR to staff.

These MDSR are based on the ENA SHE Notes of Guidance 010 MDSR 2005 (last amended in 2010, converted into a SHE Standard in 2014 and subsequently reviewed in 2016). These have been reviewed and reformatted into a new SHE Standard template and details of the latest revisions can be found in the accompanying document: ENA SHE 007 – Issue 3 Revision – Final Submissions v4.1 Final Issued. Amendments are also underlined.

RISK ASSESSMENT (qualitative – utilising ALARP)

These MDSR have been designed and developed over many years utilising the competence and experience of Operational Electrical Engineers, Managers and other such professionals.

Governance and management of these MDSR is provided by the Energy Networks Association on behalf of member Electricity Companies. This structured management approach is essential for the continuous improvement and proper control of these MDSR.

Whilst it is a fact that operator competence, discipline and compliance with these MDSR (and any associated procedures) as a minimum is required to facilitate safe working; it is also true that these MDSR are, so far as reasonably practicable, considered to be a safe system of work for people to use when working or operating on or near the Electrical Transmission and Distribution Systems. The risk assessment shown below supports this conclusion:

Assumptions (existing Control Measures)

- Operators stop and ask for help if they are unsure;
- Operator compliance, discipline and competence;
- Operational roles, responsibilities and authorisations in place;
- Effective communication of rules and associated procedures (of any kind);
- Transmission and Distribution System assets are fit for purpose;
- These MDSR form only part of Member Companies SHE Management Systems and as such additional complimentary and supporting arrangements are in place to cover the remaining requirements of the SHE Management Systems chosen by Member Companies.

Event

The risk of a person or persons being injured whilst operating within these MDSR.

Likelihood

Whilst considering the number of people working within the Electricity Supply Industry within the UK and their every-day potential exposure to the System and the assumptions listed above the likelihood is considered to be ‘Extremely Remote’.
Exposure

Conservative view taken – considering a busy operator facing exposure to the Transmission or Distribution System for approx. 8 hours of their working day = 25% on the ALARP calculator.

Most Likely Consequence

Conservative view taken – dependent on activity and therefore the most likely outcome is considered to be one person incurring a ‘severe injury’.
RECEIPT

RETURN TO SYSTEM OPERATIONS

ENA MODEL DISTRIBUTION SAFETY RULES

2022 Edition

I acknowledge receipt of this copy:

Signature..........................................................................................

Please print name and company clearly below:

Name..........................................................................................

Company....................................................................................

Date ........ / ........ / .........
ENA MODEL DISTRIBUTION SAFETY RULES

2022 Edition

Issued to:

Signature............................................................................................................

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Company...........................................................................................................

Date .......... /......... /.........
REVISIONS

Any further revisions to the MDSR will be numbered and the appropriate page(s) will be identified by the number of the revision and the year revised. A new “Revisions” page will be produced to cover further revisions. Latest amendments will be underlined within the document. The latest revisions can be found in the accompanying document; ENA SHE 007 – Issue 3 Revision – Final Submissions v4.1 Final Issued.
FOREWORD

These MDSR provide a set of generic rules that Electricity Companies may use as the foundation of their safety management system for operations on their networks (defined as System in these Rules). They were originally written using experience gained over many years of operating electricity networks and are now regularly reviewed in the light of recent events and the introduction of updated equipment and new technology. Where practical, revisions have been included as a result of pro-active risk assessments of new circumstances in addition to lessons learned reactively.

The MDSR is a copyrighted document and they have been produced and approved by the Safety, Health and Environment Committee of Energy Networks Association.

These MDSR are written to fulfil a number of extremely important roles:

- By documenting generic safe systems of work, these MDSR, in conjunction with Approved procedures produced following risk assessments by individual companies of their own circumstances, fulfil a variety of legal obligations placed on Electricity Companies by legislation such as the Health and Safety at Work (etc) Act 1974 and the Management of Health and Safety at Work Regulations 1999;

- They provide a common framework that allows co-operation and safe movement of staff and contractors to operate or work on, or in the vicinity of, electrical distribution and transmission Systems throughout the country;

- They allow best practicable safety standards in relation to electrical distribution and transmission Systems to be known and shared throughout the industry; and

- Most importantly, they provide guidance to staff and contractors working in the industry to ensure that they are able to work safely and reduce the risk of serious injury to themselves and their colleagues when operating or working on, or in the vicinity of, electrical distribution and transmission Systems.

These MDSR are considered to be a good practice safe system of work within the UK when considering the requirements of the Electricity at Work Regulations 1989 (as amended). These Rules align with the requirements of BS EN 50110 at the time of revision.
# CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FOREWORD</strong></td>
<td>8</td>
</tr>
<tr>
<td>POLICY</td>
<td>14</td>
</tr>
<tr>
<td><strong>SAFETY RULES:</strong></td>
<td>15</td>
</tr>
<tr>
<td><strong>SECTION 1 - GENERAL PROVISIONS</strong></td>
<td></td>
</tr>
<tr>
<td>1.1 <strong>Scope and Application of the MDSR</strong></td>
<td>15</td>
</tr>
<tr>
<td>1.2 <strong>Other Safety Rules, Related Documents and Procedures</strong></td>
<td>15</td>
</tr>
<tr>
<td>1.3 <strong>Information, Instruction and Training</strong></td>
<td>16</td>
</tr>
<tr>
<td>1.4 <strong>Issue of MDSR</strong></td>
<td>16</td>
</tr>
<tr>
<td>1.5 <strong>Variation of MDSR</strong></td>
<td>16</td>
</tr>
<tr>
<td>1.6 <strong>Special Procedures</strong></td>
<td>16</td>
</tr>
<tr>
<td>1.7 <strong>Objections</strong></td>
<td>17</td>
</tr>
<tr>
<td>1.8 <strong>Reporting of Accidents and Dangerous Occurrences</strong></td>
<td>17</td>
</tr>
<tr>
<td>1.9 <strong>Duties</strong></td>
<td>17</td>
</tr>
<tr>
<td>1.10 <strong>Use and Wearing of Safety Equipment and Protective Clothing</strong></td>
<td>17</td>
</tr>
<tr>
<td>1.11 <strong>Treatment for Electric Shock</strong></td>
<td>18</td>
</tr>
<tr>
<td><strong>SECTION 2 - DEFINITIONS</strong></td>
<td>19</td>
</tr>
<tr>
<td><strong>SECTION 3 - GENERAL SAFETY PRECAUTIONS</strong></td>
<td>24</td>
</tr>
<tr>
<td>3.1 <strong>Access to and Work in Operational Premises, Underground Chambers and Confined Spaces</strong></td>
<td>24</td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>3.2</td>
<td>Access to and Work in Fire Protected Areas</td>
</tr>
<tr>
<td>3.3</td>
<td>Climbing, etc. of Poles, Towers and High Structures</td>
</tr>
<tr>
<td>3.4</td>
<td>Access to High Voltage Apparatus and Conductors</td>
</tr>
<tr>
<td>3.5</td>
<td>High Voltage Switching</td>
</tr>
<tr>
<td>3.6</td>
<td>Records</td>
</tr>
<tr>
<td>3.7</td>
<td>Failure of Supply</td>
</tr>
<tr>
<td>3.8</td>
<td>Use of Voltage Testing Devices</td>
</tr>
<tr>
<td>3.9</td>
<td>Excavation near Live Cables</td>
</tr>
<tr>
<td>3.10</td>
<td>Use of Mobile Plant and Equipment Near Overhead Lines</td>
</tr>
</tbody>
</table>

**SECTION 4 - SAFETY PRECAUTIONS FOR WORK ON OR NEAR HIGH VOLTAGE SYSTEMS**

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>General Requirements</td>
<td>29</td>
</tr>
<tr>
<td>4.2</td>
<td>Isolation of Apparatus and Conductors</td>
<td>30</td>
</tr>
<tr>
<td>4.3</td>
<td>Earthing</td>
<td>31</td>
</tr>
<tr>
<td>4.4</td>
<td>Approach to Exposed Live High Voltage Conductors or Insulators Supporting Them</td>
<td>33</td>
</tr>
<tr>
<td>4.5</td>
<td>Work in Substations and Switching Stations Containing Exposed Live High Voltage Conductors</td>
<td>35</td>
</tr>
<tr>
<td>4.6</td>
<td>Permits-to-Work</td>
<td>37</td>
</tr>
<tr>
<td>4.7</td>
<td>Sanctions-for-Test</td>
<td>38</td>
</tr>
<tr>
<td>4.8</td>
<td>Limitations-of-Access</td>
<td>39</td>
</tr>
</tbody>
</table>
## SECTION 5 - PROCEDURES FOR WORK ON PARTICULAR ITEMS OF PLANT, APPARATUS OR CONDUCTORS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>General Safety Precautions</td>
<td>40</td>
</tr>
<tr>
<td>5.2</td>
<td>Remotely and Automatically Controlled Equipment</td>
<td>41</td>
</tr>
<tr>
<td>5.3</td>
<td>Withdrawable Apparatus</td>
<td>41</td>
</tr>
<tr>
<td>5.4</td>
<td>Busbar Spouts, Busbars and Busbar Connections of Multi-Panel Switchboard</td>
<td>41</td>
</tr>
<tr>
<td>5.5</td>
<td>Feeder Spouts and Connections, Voltage Transformer Spouts and Connections and Single Panel Busbar Spouts and Connections</td>
<td>43</td>
</tr>
<tr>
<td>5.6</td>
<td>High Voltage Apparatus and Plant Operated by or Containing Compressed Air or Other Gases or Operated by Hydraulic Power</td>
<td>45</td>
</tr>
<tr>
<td>5.7</td>
<td>Transformers</td>
<td>46</td>
</tr>
<tr>
<td>5.8</td>
<td>High Voltage Static Capacitors</td>
<td>47</td>
</tr>
<tr>
<td>5.9</td>
<td>High Voltage Cables</td>
<td>47</td>
</tr>
<tr>
<td>5.10</td>
<td>High Voltage Overhead Lines – General</td>
<td>48</td>
</tr>
<tr>
<td>5.11</td>
<td>Single or Multiple Circuit High Voltage Overhead Lines Without Keyed Flag Brackets and With All Conductors Dead</td>
<td>51</td>
</tr>
<tr>
<td>5.12</td>
<td>Double Circuit High Voltage Overhead Lines without Keyed Flag Brackets and With One Circuit Live</td>
<td>52</td>
</tr>
<tr>
<td>5.13</td>
<td>Single Circuit High Voltage Overhead Lines With Keyed Flag Brackets</td>
<td>53</td>
</tr>
<tr>
<td>5.14</td>
<td>Double Circuit High Voltage Overhead Lines With Keyed Flag Brackets and With One Circuit Live</td>
<td>53</td>
</tr>
<tr>
<td>5.15</td>
<td>High Voltage Overhead Lines With More than Two Circuits with One or More Circuits Live</td>
<td>54</td>
</tr>
</tbody>
</table>
SECTION 6 - SAFETY PRECAUTIONS FOR HIGH VOLTAGE LIVE LINE WORK ON HIGH VOLTAGE OVERHEAD LINES

6.1 Authorisation
6.2 Live Line Tools and Equipment
6.3 General Safety Precautions

SECTION 7 - SAFETY PRECAUTIONS FOR THE TESTING OF HIGH VOLTAGE APPARATUS

7.1 General
7.2 Work under the Terms of a Sanction-for-Test
7.3 Testing of High Voltage Apparatus

SECTION 8 - SAFETY PRECAUTIONS AND PROCEDURES FOR WORK ON LOW VOLTAGE SYSTEMS

8.1 General
8.2 General Requirements for Work on Dead Low Voltage Apparatus and Conductors
8.3 Additional Precautions for Work on Dead Low Voltage Cables
8.4 Additional Precautions for Work on Dead Low Voltage Overhead Lines
8.5 Work on Live Low Voltage Apparatus and Conductors
8.6 Additional Precautions for Work on Live Low Voltage Cables
8.7 Additional Precautions for Work on Live Low Voltage Overhead Lines
8.8 Application of High Voltage Rules to Work on Low Voltage Apparatus and Conductors 64
8.9 Testing and Adjustment on Low Voltage Apparatus 64

SECTION 9 - RESPONSIBILITIES OF PERSONS
9.1 General 65
9.2 Competent Persons 66
9.3 Authorised Persons 67
9.4 Senior Authorised Persons 68
9.5 Control Engineers 69

APPENDICES
A Model Form of Permit-to-Work 70
B Model Form of Sanction-for-Test 73
C Model Form of Limitation-of-Access 76
D Working and Access Clearances 78
E Revisions 86
POLICY

P1

Electricity Company’s Systems and associated Plant and Apparatus for the distribution of electrical energy, at voltages up to and including 400 kV, are designed such that they may be operated safely when Approved operational procedures are followed correctly. However, when Switching for operational purposes, or when work such as maintenance, testing and repair has to be carried out or when, particularly, Systems and associated Plant and Apparatus have to be taken temporarily out of normal operational use, it is necessary for the MDSR and related documents and procedures to be applied, so as to ensure the health and safety of all who are liable to be affected by any Danger that might arise. The MDSR, as read with related documents and procedures, are based on the principle that they should state what should be done to ensure that specified work or activity may be carried out without Danger so far as is reasonably practicable. The Dangers that can arise are two-fold:

(i) inherent Dangers from distribution Systems, Plant and Apparatus, which are covered by the MDSR; and

(ii) general Dangers associated with the work as it proceeds including, in addition to the work process, Dangers from access and egress, the place of work and the working environment (these Dangers may be of a different kind, and under different control, from the inherent Dangers in (i) above and may not be specifically covered by the MDSR).

P2

In the implementation of the MDSR, related documents and procedures, specified methods of work, and other forms of local instruction, management Shall allocate responsibility for the achievement of health and safety from the inherent Dangers mentioned in (i) above during the various stages of work or activity. Management Shall also carry out a suitable and sufficient risk assessment, issue instructions and allocate responsibility for dealing with the general Dangers mentioned in (ii) above where such Dangers are not already specifically covered in these MDSR or associated Approved Procedures or Codes of Practice.

P3

It is Electricity Company policy that the persons in charge of the various stages of the work or activity Shall have the appropriate competence and written authority and Shall understand the MDSR, related documents and procedures, the methods of work and any local instructions. Such persons Shall understand the Dangers that might arise and the precautions to be taken over the whole period of the work or activity. Electricity Company policy requires that all persons at work are adequately instructed and supervised and are competent to avoid Danger, according to the circumstances of the work they are doing. It is also Electricity Company policy that the relevant legal requirements, the MDSR and other required health and safety precautions are observed at all times.
MODEL DISTRIBUTION SAFETY RULES

SECTION 1

GENERAL PROVISIONS

1.1 SCOPE AND APPLICATION OF THE MODEL DISTRIBUTION SAFETY RULES

These MDSR apply to distribution and transmission Systems up to and including 400 kV and to associated Plant and Apparatus under the ownership or control of the Electricity Company under whose authority they have been issued. They, or equivalent Safety Rules, Shall normally be the only Rules applicable to such Systems, Plant and Apparatus and Shall be applied, in accordance with management instructions, together with related documents and procedures, for the whole course of the work for which they are intended.

1.2 OTHER SAFETY RULES, RELATED DOCUMENTS AND PROCEDURES

In addition, or as an alternative, to the application of these MDSR and related documents and procedures, other rules, documents and procedures issued by the Electricity Company, or by other authorities, Shall be complied with in accordance with management instructions. Whereas the Appendices to these MDSR are not, in themselves, individual Distribution Safety Rules, they Shall be read in conjunction with the Rules to which they relate. As such, the Appendices form important supporting information for the implementation of the MDSR.

It Shall be appreciated that Electricity Company Systems have interfaces with other Systems, e.g. Customer owned Systems, Independent Distribution Network Operator Systems, Transmission Network Operator Systems, other Distribution Network Operator Systems, etc. It is common and possible for interfacing Systems to have different ownership and, therefore, each Electricity Company Shall ensure effective communication, collaboration and coordination of interface activities to help avoid Danger.

Where an appropriate written agreement exists between an Electricity Company and a Third-Party, the employees of that Third-Party may carry out work and operate on the Transmission and / or Distribution Systems under the control and ownership of the respective Electricity Company. The employees of the Third-Party may carry out work and operate in accordance with other rules and procedures, provided that this approach complies fully with the detail of the written agreement between the Electricity Company and the Third-Party.

Safety precautions required across control / ownership boundaries Shall be carried out and documented in accordance with Approved procedures. Such procedures Shall be agreed between the controller / owner of the other System and the Electricity Company and Shall be made known to the staff concerned. In all cases these MDSR and related documents and procedures Shall be used as a guide to safe working.
1.3 INFORMATION, INSTRUCTION AND TRAINING

Arrangements Shall be made by the Electricity Company to ensure:

(i) that all employees concerned are adequately informed as to:-

- the risks to their health and safety as identified by risk assessment;
- the preventative and protective measures to be taken;
- the procedures to be followed in the event of serious and imminent Danger;
- the risks arising from the activities of any other employer and/or employee.

(ii) that adequate levels of supervision of its employees and those under its control are provided.

(iii) that all employees concerned are adequately informed and instructed as to the Systems, Plant and Apparatus which are affected by a particular operation or work (whether or not they are owned or operated by the Electricity Company) and which legal requirements, Safety Rules, related documents and procedures Shall apply;

(iv) that other persons who are not employees, but who are carrying out work or operations on behalf of the Electricity Company and might be exposed to Danger during their operations or work, also receive adequate information and instruction;

(v) that the capabilities of employees are taken into account in allocating tasks; and

(vi) that employees are provided with adequate health and safety training and re-training.

1.4 ISSUE OF MODEL DISTRIBUTION SAFETY RULES

A copy of these MDSR, and, as appropriate, related documents and procedures Shall be issued to such employees of the Electricity Company and such other persons as the Designated Engineer may determine. Such employees and other persons Shall sign a receipt for a copy of these MDSR, related documents and procedures (and any amendments there to) and Shall keep them in good condition and have them available for reference as necessary when work is being carried out under these MDSR.

1.5 VARIATION OF MODEL DISTRIBUTION SAFETY RULES

Individual Member Companies may vary the MDSR as required to suit their individual circumstances. Such variations Shall be Approved by the individual company’s Designated Engineer.

1.6 SPECIAL PROCEDURES

Work on or testing of Apparatus, Conductors or Plant to which these MDSR cannot be applied, or for special reasons should not be applied, Shall be carried out in accordance with an Approved procedure. Such a procedure Shall ensure that the safety requirements of these MDSR are satisfied in some other way.
1.7 OBJECTIONS

When any person receives instructions regarding the operation of, or work upon the Electricity Company’s Systems, and associated Plant and Apparatus, they Shall report any objections on safety grounds to the carrying out of such instructions to the Persons issuing them, who Shall then have the matter investigated and, if necessary, referred to a higher authority for a decision before proceeding.

1.8 REPORTING OF ACCIDENTS AND DANGEROUS OCCURRENCES

Persons Shall comply with any Electricity Company procedures for the statutory reporting of accidents and dangerous occurrences. In addition, all electrical accidents, electrical dangerous occurrences and such other accidents and dangerous occurrences involving the Electricity Company’s High Voltage Systems or associated Plant and Apparatus, Shall be reported immediately to the appropriate Control Engineer in accordance with Approved procedures. In the case of accidents and dangerous occurrences involving Low Voltage Systems or associated Plant or Apparatus, these Shall be reported immediately in accordance with Approved procedures.

1.9 DUTIES

Electricity Companies as employers, have a duty to comply with the provisions of the Health and Safety at Work etc. Act 1974, the Electricity at Work Regulations 1989, and other relevant statutory provisions. Additionally, authoritative guidance is available from the Health and Safety Executive and other sources.

Electricity Companies’ employees also have a duty to comply with the provisions of the Health and Safety at Work etc. Act 1974, the Electricity at Work Regulations 1989 and with other relevant statutory provisions.

In addition to these statutory duties and any other duties separately allocated to them, all Persons who may be concerned with the operation of, or work upon, distribution and transmission Systems and associated Plant and Apparatus Shall be conversant with, and comply with, those MDSR relevant to their duties and related documents and procedures. Ignorance of legal requirements, or of Safety Rules and related documents and procedures, Shall not be accepted as an excuse for neglect of such duties.

If any Person has any doubt as to any of these duties they Shall report the matter to a higher authority for advice before proceeding with work, i.e. if you are not sure, stop and ask for help.

1.10 USE AND WEARING OF SAFETY EQUIPMENT AND PROTECTIVE CLOTHING

Where any work under these MDSR and related documents and procedures takes place, appropriate safety equipment and protective clothing of an Approved type Shall be issued and used in accordance with management instructions. At all times employees are expected to wear sensible clothing and footwear having regard to the work being carried out.
1.11 TREATMENT FOR ELECTRIC SHOCK

All persons who may be concerned with the operation of, or work upon, the Electricity Company's Systems, and associated Plant and Apparatus, Shall be trained in and be conversant with the treatment of electric shock.
SECTION 2
DEFINITIONS

APPARATUS
Any item of electrical machinery or equipment in which Conductors are used, or supported, or of which they form part.

APPROVED
Sanctioned by the Designated Engineer in order to satisfy, in a specified manner, the requirements of any or all of these MDSR.

DESIGNATED ENGINEER
The person appointed by the Electricity Company to be responsible for the application of these MDSR.

CONDUCTOR
An electrical conductor arranged to be electrically connected to a System.

CONTROL ENGINEER
A Control Engineer or an appropriate "Control Person" recognised by the Electricity Company being one of the following:

DISTRIBUTION CONTROL ENGINEER
In the case of a centrally controlled System the Control Engineer at the Electricity Company's Control Centre;

FIELD CONTROL ENGINEER
In the case of a locally controlled System the engineer specifically deputed to exercise the function of control of such a System, in accordance with an Approved procedure.

DANGER
A risk to health or of bodily injury.

DEAD
At or about zero voltage and disconnected from any Live System.

EARTHING

EARTH
The conductive mass of the Earth, whose electric potential at any point is conventionally taken as zero.

EARTHED
Connected to Earth through switchgear with an adequately rated earthing capacity or by Approved earthing leads.
CIRCUIT MAIN EARTH
Earthing equipment of Approved type applied before the issue of, and at a position recorded in a Safety Document.

ADDITIONAL EARTH
Earthing equipment of Approved type which is applied after the issue of a Safety Document (for example an Earth applied at a point of work).

ELECTRICITY COMPANY
Those licence holders, Transmission Network Operators, Distribution Network Operators, Independent Network Operators, etc; who are members of the ENA and have signified their intention to use these MDSR.

HIGH VOLTAGE LIVE LINE WORK
Work in an Approved manner on the Conductors or Apparatus of a High Voltage overhead line with the Conductors Live.

ISOLATED
Disconnected from associated Plant, Apparatus and Conductors by an Isolating Device in the isolating position, or by adequate physical separation, or sufficient gap.

ISOLATING DEVICE
A device for rendering Plant and Apparatus Isolated.

KEY SAFE
A device of an Approved type for the secure retention of keys.

LIVE
Electrically charged.

NOTICES

CAUTION NOTICE
A notice in Approved form prohibiting unauthorised interference, with such additional Approved words as the Electricity Company may determine.

DANGER NOTICE
A notice in Approved form reading "Danger" with such additional Approved words as the Electricity Company may determine.

PERSON, being one of the following:

COMPETENT PERSON
A Person recognised by the Electricity Company as having sufficient technical knowledge and experience to enable them to avoid Danger and who may be nominated to receive and clear specified Safety Documents and Shall be appointed in writing.
AUTHORISED PERSON
An experienced Competent Person with appropriate technical knowledge and ability who has been appointed in writing by the Electricity Company to carry out specified duties which may include authority to issue and cancel Limitations-of-Access and/or to receive Sanctions-for-Test.

SENIOR AUTHORISED PERSON
An Authorised Person who has been appointed in writing by the Electricity Company to carry out specified duties, including the issue and cancellation of Safety Documents.

PLANT
Mechanical plant including all machinery and equipment not elsewhere defined as Apparatus.

SAFETY DISTANCE AND WORKING AND ACCESS CLEARANCE

SAFETY DISTANCE
The distance from the nearest High Voltage exposed Conductor not Earthed or from an insulator supporting a High Voltage Conductor, which must be maintained to avoid Danger. (See Diagram 1 in Rule 4.4.1.).

WORKING AND ACCESS CLEARANCE
The distance to be maintained from the nearest Live exposed High Voltage Conductor as specified in these MDSR to ensure observance of the Safety Distance for work on or near Systems.

SAFETY DOCUMENTS being one of the following:

LIMITATION-OF-ACCESS
A Safety Document of a format indicated in these MDSR which defines the limits and nature of work which may be carried out when verbal instructions are not considered sufficient for that purpose, and where a Permit-to-Work or Sanction-for-Test is not applicable.

PERMIT-TO-WORK
A Safety Document of a format indicated in these MDSR specifying the High Voltage Apparatus which has been made safe to work on and the work which is to be carried out.

SANCTION-FOR-TEST
A Safety Document of a format indicated in these MDSR specifying the High Voltage Apparatus which has been made safe for the testing described in the Safety Document to proceed and the conditions under which the testing is carried out.

NOTE: Model Safety Documents are reproduced in Appendices A, B and C.

SAFETY LOCK
A lock used exclusively for Approved purposes (such as for locking-off the points at which the circuit can be energised) that lock being different from all other standard locks used on Systems.
SUPERVISION, being one of the following:

IMMEDIATE SUPERVISION
Supervision by a Person (having adequate technical knowledge, experience and competence) who is continuously available at the location where work or testing is in progress, and who attends the work area as is necessary for the safe performance of the work or testing.

PERSONAL SUPERVISION
Supervision by a Person (having adequate technical knowledge, experience and competence) such that they are at all times during the course of the work or testing, continuously observing and in the presence of the person(s) being supervised, with the ability and competence to directly intervene.

Supervision at ground level provided for person(s) positioned at height is considered to be Personal Supervision when the supervisor at ground level maintains verbal and visual communication with the person(s) being supervised.

SWITCHING
The operation of circuit-breakers, isolators, disconnectors, fuses or other methods of making or breaking an electrical circuit and/or the application and removal of Circuit Main Earths.

SYSTEM
An electrical system in which Conductors and Apparatus are electrically connected to a common source of supply.

VOLTAGE CATEGORIES
Based on the Electricity Safety, Quality and Continuity Regulations 2002 (as amended)

LOW VOLTAGE (LV)
A voltage not exceeding 1000 volts AC or 1500 volts DC.

HIGH VOLTAGE (HV)
A voltage exceeding 1000 volts AC or 1500 volts DC.

WORKING PARTY
Either the persons under the Supervision of a Competent or Authorised Person (who Shall themselves be a member of the working party) or a Competent or Authorised Person when working alone.

SHALL
Where 'Shall' is used in these MDSR with no qualification, this indicates a mandatory requirement with no discretion permitted and no judgement to be made.

This can be qualified by either 'where practicable' or 'reasonably practicable'.

Where 'Shall' is qualified only by the word 'practicable' a slightly less strict standard is imposed. It means that where it is possible to achieve in the light of current knowledge and invention, but bearing in mind the hazards associated with the work to be undertaken, then the requirement must be met. One is not allowed to avoid the requirement on the grounds of difficulty, inconvenience or cost.
When ‘Shall, where reasonably practicable’ is used to qualify a requirement then a judgement must be made as to what is reasonable, taking into account the magnitude of the risk on one hand and the cost, time and trouble, or effort necessary for averting the risk on the other hand.

**GENERAL SAFETY**
The control and management of risks posed by hazards in the working environment which are not covered by the MDSR.

**DISTRIBUTED ENERGY RESOURCES**
Small scale electricity generation, flexible demand or storage units (typically in the range of 3 kW to 50 MW) located within the electricity distribution network and connected to the System. These can be owned and operated by licence holders or Third-Parties and are connected to the System through agreement with the distribution licence holder.
SECTION 3

GENERAL SAFETY PRECAUTIONS

3 GENERAL SAFETY

In addition to all other requirements specified in these MDSR the safety of persons at work Shall also be achieved by maintaining at all times General Safety at and in the vicinity of the place of work. Before work or testing commences the Person in charge of the Working Party Shall ensure that safety precautions are taken to establish General Safety at and in the vicinity of the workplace. This Person Shall ensure that at all times during the work or testing that General Safety arrangements are maintained and that other work areas are not adversely affected by the activities for which they are responsible. The discharging of responsibilities for General Safety will be achieved as part of the normal pattern of management delegation and control by ensuring that all activities are carried out in accordance with appropriate instructions and guidance.

3.1 ACCESS TO AND WORK IN OPERATIONAL PREMISES, UNDERGROUND CHAMBERS, CONFINED SPACES AND VESSELS CONTAINING OIL OR OTHER FLAMMABLE OR TOXIC SUBSTANCES

3.1.1 No person Shall, without proper authority, enter or have access to any operational premises such as any control room, substation, switching station or underground chamber belonging to, or wholly under the control of the Electricity Company.

3.1.2. Access to confined spaces such as underground chambers, cable tunnels and indoor substations with restricted access or egress Shall be gained in accordance with an Approved procedure.

3.1.3. Access to vessels recently emptied of flammable or toxic substances, Shall only be allowed in accordance with an Approved procedure which includes provision to expel all dangerous vapours and substances.

3.1.4. Work involving the application of heat or the use of exposed flames, in the vicinity of open vessels containing or having recently contained flammable substances, Shall be prohibited until all practicable steps have been taken, in accordance with an Approved procedure, to prevent Danger.
3.2 ACCESS TO AND WORK IN FIRE PROTECTED AREAS

3.2.1 AUTOMATIC CONTROL
Unless alternative Approved procedures apply because of special circumstances, then before access to, work or other activities are carried out in any enclosure protected by automatic fire extinguishing equipment:

(a) the automatic control Shall be rendered inoperative and the equipment left on manual control and locked where practicable. A Caution Notice Shall be attached;

(b) precautions taken to render the automatic control inoperative and the conditions under which it may be restored Shall be noted on any Safety Document or written instruction issued for access, work or other activity in the protected enclosure; and

(c) the automatic control Shall be restored immediately after the persons engaged on the work or other activity have withdrawn from the protected enclosure.

3.2.2 PORTABLE FIRE EXTINGUISHERS
Only Approved portable fire extinguishers Shall be available and used in the vicinity of Live Apparatus and Conductors. In the handling of fire extinguishers, the appropriate Safety Distances specified in Rule 4.4 Shall be maintained. After the discharge of portable fire extinguishers in an enclosed space, personnel Shall leave the space until the precautions set out in Rule 3.2.3 have been taken.

3.2.3 GENERAL
After any explosion or fire, or after the discharge of fire extinguishers in an enclosed space, either the space Shall be adequately ventilated before entry of personnel or Approved breathing apparatus and, where necessary, Approved safety harnesses Shall be worn by persons specially trained in their use. Such breathing apparatus and safety harnesses Shall be worn in any case of doubt.

3.3 ACCESS TO OR WORKING ON POLES, TOWERS AND HIGH STRUCTURES

3.3.1 Before any pole is accessed or worked on, it Shall be tested in an Approved manner. No pole badly impaired by decay or damage or whose stability is in doubt Shall be accessed or worked on until it has been supported by Approved means. The pole Shall then either be climbed by only one person at a time or access to the top of such pole Shall be by Approved means independent of the pole.

3.3.2 All Persons gaining access to and during work on towers, poles and high structures Shall make proper use of Approved safety equipment and Shall be in visual range of another Person, in a position to immediately render effective assistance, where necessary. All Persons concerned Shall be fully conversant with Approved rescue procedures. Unaccompanied access is allowed for Switching or testing when it is of limited duration and is covered by an Approved procedure.

3.3.3 Gates and devices to prevent climbing of towers, gantries and structures that support High Voltage Conductors Shall always be kept secured in an Approved manner and access Shall be controlled by an Authorised Person or Competent Person in receipt of an appropriate Safety Document or to an Approved procedure.
3.4 ACCESS TO HIGH VOLTAGE APPARATUS AND CONDUCTORS

3.4.1 HIGH VOLTAGE STRUCTURES AND OUTDOOR COMPOUNDS
Guards on access ladders, barriers, or doors and gates on or in outdoor compounds preventing access to Live High Voltage Conductors Shall be kept secured in an Approved manner and access Shall be in accordance with Approved procedures.

3.4.2 HIGH VOLTAGE CHAMBERS, CUBICLES AND CELLS
Barriers, doors or gates preventing access to totally enclosed chambers, cubicles and cells containing Live High Voltage Conductors Shall, where the facility exists, be kept locked and the keys Shall be accessible only to an Authorised Person.

3.4.3 SPOUT SHUTTERS ON HIGH VOLTAGE SWITCHGEAR
All spout shutters not required for immediate work or operation Shall, if the spouts are not otherwise made inaccessible, be locked shut and the keys Shall only be accessible to an Authorised Person.

3.5 HIGH VOLTAGE SWITCHING

3.5.1 No High Voltage Switching Shall be carried out other than by an Authorised Person or by a Competent Person acting under the Personal Supervision of an Authorised Person. No such Switching Shall be carried out without the authority of the appropriate Control Engineer, except in cases of emergency, or other Approved cases, which may include Switching by remote control by a Control Engineer.

3.5.2 When a Control Engineer gives authority for High Voltage Switching to be carried out they Shall communicate directly with the Person who is to carry out the Switching. Where, for special reasons, direct communication is not possible, an Approved procedure Shall be followed. Any Person who is to carry out High Voltage Switching Shall have an Approved record of the Switching instruction available at the point of Switching.

3.5.3 Before any High Voltage Switching is carried out on any System which might affect another System, the Control Engineer authorising the Switching Shall communicate with the Control Engineer of the other System and the Switching Shall be agreed between them and recorded by all Control Engineers concerned.

3.5.4 Where High Voltage Switching is to be carried out for the purpose of issuing a Safety Document and there are two or more control functions involved then, in the absence of a standing agreement for such matters, the Control Engineers concerned Shall agree on the Person who Shall be in control of the part of the System to be Isolated and who Shall be responsible for giving consent to the issuing of a Safety Document. Such agreement between the Control Engineers Shall be recorded by each Control Engineer.
3.5.5 Where there are special requirements to be complied with before, during or after High Voltage Switching operations, Approved procedures Shall apply and special provision Shall be made to ensure that the Control Engineers, the operators and others affected are aware of their responsibilities.

3.5.6 High Voltage Switching with the Control Engineer’s authority Shall be carried out without unnecessary delay. Completed Switching operations Shall be confirmed to the Control Engineer as agreed and without unnecessary delay, by an Approved means.

Emergency Switching (in accordance with Rule 3.5.1) Shall be reported to the Distribution Control Engineer without unnecessary delay. The circumstances necessitating such Switching Shall be explained at that time.

3.5.7 All switchgear operations Shall, so far as reasonably practicable, be planned and completed in accordance with the following hierarchy:

(i) Remotely via remote control facilities;
(ii) Remotely on site via control panels in a different room to the switchgear being operated;
(iii) Remotely via a control panel in the same room as the switchgear being operated;
(iv) Remotely via an Approved umbilical device or similar; or
(v) Via the operating facilities on the switchgear.

Switchgear (including associated equipment) which is to be operated locally on site Shall be visually inspected immediately before any Switching operation to check its condition is satisfactory. The switch to be operated Shall be visually checked to ensure that it is in the expected position prior to operating.

Following the intended operation, switchgear Shall be visually checked to ensure the anticipated position has been achieved and it has operated fully and correctly.

When switchgear shows any signs of distress, its condition Shall be reported immediately to the Control Engineer and it Shall be examined before a decision is made about further operation.

3.5.8 When operating switchgear mounted on a pole or other structure from ground level, the operator Shall wear Approved Personal Protective Equipment (PPE) and use such other equipment as may be Approved.

3.5.9 It is forbidden to undertake Switching by signal or pre-arranged understanding after an agreed interval of time.
3.6 RECORDS

3.6.1 MESSAGES
Messages by telephone or otherwise, relating to the operation of any High Voltage System, Shall be recorded by Approved means. Every such message Shall be read back to the sender to ensure that it has been accurately received, or confirmed back to the sender to ensure that it has been accurately received in accordance with an Approved procedure.

3.6.2 RECORDING OF SWITCHING
The Control Engineer Shall ensure that a record is made of the time and particulars of all High Voltage Switching including any carried out by the Control Engineer by remote control.

3.7 FAILURE OF SUPPLY
A failure of supply, from whatever cause, to or from any part of the High Voltage System Shall be immediately reported to the Distribution Control Engineer. During failures of supply all Apparatus and Conductors Shall be regarded as being Live unless Isolated and proved Dead by Approved means.

3.8 USE OF VOLTAGE TEST DEVICES
Where voltage testing devices are used they Shall be of Approved type and such use Shall be in accordance with Approved procedures. Such devices Shall be tested in an Approved manner immediately before and after use or, where this is not reasonably practicable; they Shall be tested in accordance with Approved procedures.

3.9 EXCAVATION NEAR LIVE CABLES
All damaged cables or cables with exposed Conductors Shall be treated as Live until identified and proved Dead by an Approved procedure.

When excavation work is carried out in proximity to Live cables by the Electricity Company or its contractors, the work Shall be done in accordance with an Approved procedure.

3.10 USE OF MOBILE PLANT AND EQUIPMENT NEAR OVERHEAD LINES
When an Electricity Company or its Contractors are working adjacent to overhead lines with mobile Plant and equipment which is capable of reaching within the Safety Distance of a Live High Voltage Conductor, or touching a Live LV Conductor the work Shall be done in accordance with an Approved procedure.
SECTION 4

SAFETY PRECAUTIONS FOR WORK ON OR NEAR HIGH VOLTAGE SYSTEMS

4.1 GENERAL REQUIREMENTS

All High Voltage Apparatus and Conductors, including those that are damaged or have faulted, Shall be treated as Live unless they have been made safe in accordance with Rule 4.1.1.

4.1.1 Subject to the exceptions stated below and those expressly permitted by individual Rules, no person Shall undertake any repair, maintenance, cleaning, alteration or such work, on or within the Safety Distance of an exposed Conductor or on any part of a High Voltage System unless such parts of the System are:

(a) Dead;

(b) Isolated and all practicable steps taken to lock off from all points of supply, including voltage and auxiliary transformers, common neutral earthing equipment and other sources from which the Apparatus and Conductors may become Live, and Caution Notices fixed at all points of isolation;

(c) connected to Earth by Approved means at all points of disconnection of High Voltage supply from the System or between such points and the point(s) of work;

(d) screened where necessary to prevent Danger and Danger Notices attached to Apparatus containing Live Conductors and attached adjacent to other Live Conductors;

(e) identified at the point of work by Approved means; and

(f) released for work and the measures taken under this Rule are formally communicated to the Working Party, using an Approved procedure which involves the issue of appropriate Safety Documents which Shall not be issued unless the issuer and the recipient are fully conversant with the precise parts of the Systems, Apparatus and Conductors to be worked upon, the nature and also the extent of the work to be done and the safety precautions to be taken.

It is the duty of the Person issuing the appropriate Safety Document to ensure compliance with the foregoing provisions in the correct sequence.

EXCEPTIONS

(i) Work such as cleaning and painting of Earthed metal enclosures, connections or disconnections of circuits to or from Live High Voltage Systems, Live line testing and Live insulator washing may be carried out but only in accordance with Approved procedures;

(ii) High Voltage Live Line Work on High Voltage overhead lines may be carried out but only in accordance with Section 6 of these MDSR;
(iii) Where the design of Apparatus precludes strict compliance with all the requirements of Rule 4.1.1 the work Shall be carried out in accordance with an Approved procedure or to the specific written instruction of a Senior Authorised Person, and after agreement with the Distribution Control Engineer, to ensure that safety is achieved in another way. Such work Shall be carried out under the Personal Supervision of a Senior Authorised Person;

(iv) Where work will proceed at a single point on an overhead line, and where that work will not interfere with the continuity of the Conductors, one Circuit Main Earth applied at the point of work is acceptable; and

(v) Where work is carried out on a High Voltage overhead System and where it is not reasonably practicable to isolate all connected consumers in accordance with Rule 4.1.1(b), an Additional Earth Shall be provided and maintained between that consumer and the point of work unless a Circuit Main Earth is provided in that position.

4.2 ISOLATION OF APPARATUS AND CONDUCTORS

4.2.1 No isolation or reconnection of High Voltage Apparatus or Conductors Shall be initiated except with the sanction of the Control Engineer.

4.2.2 SAFETY LOCKS
   (a) Where a locking facility exists Safety Locks Shall be used to lock open all switchgear at points where the circuit on which work is to be carried out could be energised. The keys for such locks Shall be kept in a Key Safe, in the possession of a Senior Authorised Person or in accordance with an Approved procedure.

   (b) Details of the isolation referred to in Rule 4.2.1 and deposit of Safety Lock keys associated with the isolation, Shall be recorded at centres specified in Approved procedures.

4.2.3 FUSES OR LINKS
When the circuit on which work is to be carried out is controlled only by fuses or links, the fuses, links (and carriers) Shall be removed and kept in a safe place which may include custody by the Person responsible for issuing the Safety Document. Where the removal could increase the risk of third-party interference or inadvertent contact with Live Conductors, consideration Shall be given to insertion of Approved blanking devices. Where such removal is not practicable, Approved procedures to ensure safety Shall be followed.

4.2.4 CAUTION NOTICES
Caution Notices Shall be fixed at all points of isolation and secured with a Safety Lock where reasonably practicable.
4.3 EARTHING

4.3.1 When High Voltage Apparatus and Conductors are to be discharged and Earthed in accordance with Rule 4.1.1(c) it Shall be done:

(a) where reasonably practicable by the use of a circuit-breaker or earthing switch provided for the purpose to make the earthing connection. When the circuit-breaker is used, the trip feature Shall normally be rendered inoperative before closing, unless this is not practicable when it Shall be done afterwards. After closing, the circuit-breaker or earthing switch Shall be locked in the Earthed position, so that it remains inoperative while it is the Circuit Main Earth; or

(b) where (a) is not reasonably practicable or not applicable, the High Voltage Apparatus and Conductors Shall be checked by means of an Approved voltage testing device or other Approved means to verify that they are not Live, and may then be discharged and Earthed by an earthing lead applied by means of an Approved earthing pole or other Approved appliance.

(c) in addition to the requirements in sections (a) and (b) above the first Earth applied to, and the last Earth removed from a circuit Shall where reasonably practicable be achieved using a circuit-breaker or earthing switch provided for that purpose. It is not normally considered reasonably practicable to disrupt electricity supplies in order to meet these requirements.

4.3.2 EARTHING LEADS AND CONNECTIONS

Earthing leads and associated clamps Shall be of an Approved type and of adequate capacity for the duty at the point of application. They Shall be adequately maintained and always examined immediately prior to use.

4.3.3 PROCEDURE FOR THE USE OF EARTHING LEADS

Subject to Rule 4.3.1 the general procedure to be followed when using earthing leads Shall be as follows:

(a) the circuit Shall be verified that it is not Live and, where practicable, checked by means of an Approved voltage testing device or other Approved means;

(b) earthing leads Shall be connected to Earth before being connected to the phase Conductors. They Shall be connected to the phases by means of an Approved earthing pole or other Approved appliance. Care Shall be taken to ensure that good contact is made and that earthing leads are clearly visible;

(c) all phases Shall be Earthed, even if work is to be carried out only on one phase;

(d) earthing leads Shall not be applied in any cell or compartment in which there is any exposed metal Live at High Voltage which might be a source of Danger. Earthing leads Shall be applied in such a manner that they remain clearly visible so far as reasonably practicable;

(e) when earthing leads are being removed each one Shall be disconnected from its phase Conductor by means of an Approved earthing pole or other Approved appliance before it is removed from the Earth connection;
(f) for the purpose of earthing on spout contacts of metal-enclosed switchgear, only Approved appliances Shall be used. The insertion of the hand or any tool into contact spouts for this purpose is forbidden;

4.3.4 CIRCUIT MAIN EARTHS

(a) Operation
   No High Voltage earthing switch Shall be operated or Circuit Main Earth connected or disconnected except with the consent of the Control Engineer (or under the terms of a Sanction-for-Test or under 5.1.2 or 5.5.4(i)). Where a locking facility exists, Circuit Main Earths Shall be secured by an Approved lock.

(b) Recording of Circuit Main Earths
   Completed earthing operations Shall be confirmed to the Control Engineer as agreed and without unnecessary delay. The location of each Circuit Main Earth Shall be recorded on the Safety Document.

(c) The Control Engineer Shall record in their log the time of application and the location of each Circuit Main Earth connection and the time of its removal except under the terms of a Sanction-for-Test or Rules 5.1.2 or 5.5.4 (i).

4.3.5 ADDITIONAL EARTHS

(a) Additional Earths applied after the issue of a Permit-to-Work or Sanction-for-Test may only be attached or removed by the recipient of the Safety Document or a Competent Person under their Personal Supervision.

(b) When the recipient of a Permit-to-Work clears and returns the Permit-to-Work to a Senior Authorised Person the recipient clearing the Permit-to-Work Shall ensure that the Senior Authorised Person is aware of the position of any Additional Earths that have not been removed.
4.4 APPROACH TO EXPOSED LIVE HIGH VOLTAGE CONDUCTORS OR INSULATORS SUPPORTING THEM

4.4.1 SAFETY DISTANCES

(a) The Safety Distances (designated ‘X’ in Table 1 and Diagram 1 below) Shall be maintained at the respective System voltages between any part of a person or object and the nearest exposed Live High Voltage Conductor.

(b) A distance of 300mm Shall also be maintained, at all System voltages, from the portion of insulators supporting Live High Voltage Conductors which is outside the appropriate Safety Distance from the Conductors.

Table 1 - Safety Distances

<table>
<thead>
<tr>
<th>Nominal System Voltage</th>
<th>Safety Distance ‘X’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to and including</td>
<td></td>
</tr>
<tr>
<td>33kV but not exceeding</td>
<td>0.8m</td>
</tr>
<tr>
<td>66kV but not exceeding</td>
<td>1.0m</td>
</tr>
<tr>
<td>132kV but not exceeding</td>
<td>1.4m</td>
</tr>
<tr>
<td>275kV but not exceeding</td>
<td>2.4m</td>
</tr>
<tr>
<td>400kV but not exceeding</td>
<td>3.1m</td>
</tr>
</tbody>
</table>

NOTE: Safety Distances for High Voltage Direct Current Systems and High Voltage traction load supplies can be different to the distances provided above. Where applicable, Electricity Companies Shall provide these details in an Approved procedure.

SAFETY DISTANCE ‘X’ (FROM LIVE HIGH VOLTAGE CONDUCTORS)

Diagram 1
4.4.2 APPROACH OF PERSONS

(a) Subject to the provisions of Rule 4.4.2 (b), and 4.4.2 (c), no person Shall allow any part of their body to approach exposed High Voltage Conductors, or insulators supporting such Conductors, within the Safety Distances specified in Rule 4.4.1 unless the Conductors have been made safe for work and a Safety Document issued as required by Rule 4.1.1.

(b) When a Person is applying an Approved voltage testing device to High Voltage Conductors contained within the open spouts of metal-enclosed switchgear, it is allowable for those parts of the body required to perform the task to approach within the Safety Distances specified in Rule 4.4.1 subject to Approved procedures. Approved insulating gloves Shall be worn.

(c) When High Voltage Live Line Work is being carried out in accordance with Approved Hot Glove Procedures, it is allowable for the body to approach within the Safety Distances specified in Rule 4.4.1.

4.4.3 OBJECTS BEING HANDLED

(a) When exposed High Voltage Conductors are not Isolated the only objects which Shall be caused to approach them, or insulators supporting them, within the Safety Distances specified in Rule 4.4.1 Shall be those Approved for High Voltage Live Line Work and Approved voltage testing devices.

(b) When exposed Conductors are Isolated but not proved Dead, the only objects which Shall be caused to approach them, or insulators supporting them, within the Safety Distances specified in Rule 4.4.1 Shall be insulated devices Approved for High Voltage Live Line Work and Approved voltage testing devices.

4.4.4 WORKING AND ACCESS CLEARANCES

Working and Access Clearances for use by Persons are specified in Appendix D.

Taking account of the nature and location of the work, the hazards and the presence of persons, a Senior Authorised Person may determine alternative, fit for purpose, Working and Access Clearances whilst ensuring the Safety Distances specified in Rule 4.4.1. are maintained both in respect of those persons present and the objects being handled.

4.5 WORK IN SUBSTATIONS AND SWITCHING STATIONS CONTAINING EXPOSED LIVE HIGH VOLTAGE CONDUCTORS

4.5.1 WORK AREA

(a) When work is to be carried out in a substation or switching station in which there are exposed Live High Voltage Conductors, the work area Shall be properly identified by a Senior Authorised Person. The work area Shall be defined as far as possible by the use of Approved barriers, chains or by other Approved means. These Shall be so arranged that the specified Working and Access Clearances, from the nearest exposed Live Conductor or supporting insulator to ground level or platform or access way which may be required to be used, are established.

(b) The work area to be defined at ground level Shall only be that in which the work is to be carried out.
(c) If the work cannot be carried out without leaving ground level or a platform or access way, the Working and Access Clearances Shall also be obtained from the nearest exposed Live High Voltage Conductor to the points from which work is actually carried out. In such cases access Shall only be by means of an Approved ladder or other Approved means in accordance with Rules 4.5.4 and 4.5.5. The climbing of structures to gain access is forbidden. In the case of terminal poles, or towers in substations, access Shall be in accordance with an Approved procedure.

(d) If the work is such that the specified Working and Access Clearances are not sufficient to avoid Danger other suitable arrangements Shall be made.

(e) The Approved barriers or chains Shall be clearly visible and Shall not be supported by any structure carrying electrical Apparatus or Conductors and Shall not carry any notice. At ground level the section so defined Shall be clearly distinguished in accordance with an Approved procedure. Danger Notices Shall be attached to adjoining Apparatus containing Live Conductors or adjacent Conductor supports at the limits of the work area.

4.5.2 ACCESS TO THE WORK AREA
Where necessary to prevent Danger the access and egress ways to and from the work area Shall be clearly defined in an Approved manner.

4.5.3 WORKING AND ACCESS CLEARANCES
The Working and Access Clearances required at the work area under Rule 4.5.1 Shall be as specified in Rule 4.4.4. (See also Appendix D – Diagram 4.)
4.5.4 USE OF PORTABLE LADDERS AND LONG OBJECTS WHERE THERE ARE EXPOSED LIVE CONDUCTORS

NOTE: For the purpose of this Rule, Long Objects are any tool or object which, by virtue of movement or improper use, might infringe the Safety Distance.

(a) Portable ladders Shall be of Approved type and of no greater length than is required for the work involved.

(b) Portable ladders and other long objects Shall not be used without the permission of a Senior Authorised Person, who Shall define the conditions of use to the Authorised Person in charge of the work. The movement and erection of such ladders and objects Shall then be carried out only under the Personal Supervision of the Authorised Person in charge of the work, and when moved at ground level they Shall be carried only in a horizontal position and as near to the ground as reasonably practicable.

(c) Portable ladders provided to allow access to fixed ladders which terminate above ground level, and to provide access in other Approved cases, Shall be padlocked in position or otherwise secured by an Authorised Person while work is being carried out.

(d) All portable ladders within substations or switching stations Shall be securely locked to a suitable anchorage when not in use.

4.5.5 THE MOVEMENT AND USE OF CRANES, SCAFFOLDS, MOBILE ELEVATED WORK PLATFORMS AND OTHER EQUIPMENT

(a) When cranes, scaffolds, Mobile Elevated Work Platforms and other equipment and materials transported by vehicles or otherwise are taken into or out of a substation the route to be followed Shall be agreed by a Senior Authorised Person. The cranes or other equipment Shall be connected to the substation earthing System as soon as reasonably practicable.

(b) The limits of operation of such equipment Shall be defined by a Senior Authorised Person to an Authorised Person who Shall be in charge of the work and thereafter the equipment Shall be erected or moved only within these limits under the Personal Supervision of the Authorised Person.

4.5.6 DANGER NOTICES, BARRIERS AND SCREENS

Danger Notices, barriers and screens Shall be fixed or moved only by, or under the Personal Supervision of a Senior Authorised Person.

4.5.7 ADVERSE WEATHER CONDITIONS

In the event or near approach of a lightning storm, work on exposed Conductors in outdoor substations or outdoor switching stations, or on Apparatus directly connected to exposed Conductors, Shall cease immediately where necessary to prevent Danger.
4.6 PERMITS-TO-WORK

4.6.1 AUTHORITY FOR ISSUE
(a) A Permit-to-Work Shall be issued by a Senior Authorised Person before any work is carried out on any Apparatus or Conductor.

(b) Permits-to-Work Shall only be issued with the authority of the Control Engineer, who Shall maintain an Approved record of the issue and cancellation of each Permit-to-Work.

4.6.2 PROCEDURE FOR ISSUE AND RECEIPT
(a) A Permit-to-Work Shall be explained and issued to the Person in direct charge of the work, who after reading its contents and confirming that they understand it, and are conversant with the nature and extent of the work to be done, Shall sign its receipt and its duplicate. The recipient Shall confirm their understanding by explaining the safe working area, the work to be carried out, and precautions required. The recipient Shall also ensure that the Permit-to-Work is effectively explained to the other members of the Working Party in accordance with an Approved procedure.

(b) The recipient of a Permit-to-Work Shall be a Competent Person who Shall retain the Permit-to-Work in their possession at all times whilst work is being carried out.

(c) Where more than one Working Party is involved, a Permit-to-Work Shall be issued to the Competent Person in direct charge of each Working Party and these Shall, where necessary, be cross-referenced one with another.

4.6.3 PROCEDURE FOR CLEARANCE AND CANCELLATION
(a) A Permit-to-Work Shall be cleared and cancelled:

(i) when work on the Apparatus or Conductor for which it was issued has been completed;

(ii) when it is necessary to issue a Sanction-for-Test in which case all Permits-to-Work that are associated with the Apparatus and Conductors to be tested Shall be cleared and cancelled or cleared and suspended in accordance with Rule 4.6.4;

(iii) when it is necessary to change the Person in charge of the work detailed on the Permit-to-Work; unless the document is transferred in accordance with Rule 4.6.5; or

(iv) at the discretion of a Senior Authorised Person when it is necessary to interrupt or suspend the work detailed on the Permit-to-Work.

(b) The recipient Shall sign the clearance and return the Permit-to-Work to a Senior Authorised Person who Shall cancel it and inform the Control Engineer. In all cases the recipient Shall indicate in the clearance section whether Additional Earths have been “removed” or “accounted for”, whether the work is "complete" or "incomplete" and that all gear and tools "have" or "have not" been removed.

(c) Where more than one Permit-to-Work has been issued for work on High Voltage Apparatus or Conductors associated with the same Circuit Main Earths, the Control Engineer Shall ensure that all such Permits-to-Work have been cancelled before the Circuit Main Earths are removed.
4.6.4 PROCEDURE FOR TEMPORARY WITHDRAWAL OR SUSPENSION
Where there is a requirement for a Permit-to-Work to be temporarily withdrawn or suspended this shall be in accordance with an Approved procedure.

4.6.5 PROCEDURE FOR TRANSFER
Where there is a requirement for a Permit-to-Work to be transferred between appropriately Competent Persons this shall be done in accordance with an Approved procedure.

4.6.6 MINOR TESTING UNDER A PERMIT-TO-WORK
Where there is a requirement for minor testing under a Permit-to-Work, this shall be in accordance with an Approved procedure.

4.7 SANCTIONS-FOR-TEST

4.7.1 AUTHORITY FOR ISSUE
(a) A Sanction-for-Test shall be issued by the Senior Authorised Person initiating the testing under these MDSR before any testing is carried out on any Apparatus or Conductor.

(b) A Sanction-for-Test shall only be issued with the authority of the Control Engineer, who shall maintain an Approved record of the issue and cancellation of each Sanction-for-Test.

4.7.2 PROCEDURE FOR ISSUE AND RECEIPT
(a) A Sanction-for-Test shall be explained and issued to the Authorised Person in direct charge of the testing, who after reading its contents and confirming that they understand it, and are conversant with the nature and extent of the testing to be done, shall sign its receipt and its duplicate. The recipient shall confirm their understanding by explaining the Apparatus to be tested, the testing to be carried out, and precautions required. The recipient shall also ensure that the Sanction-for-Test is effectively explained to the other members of the testing party in accordance with an Approved procedure.

(b) The recipient of a Sanction-for-Test shall be an Authorised Person who shall retain the Sanction-for-Test in their possession at all times whilst testing is being carried out.

4.7.3 PROCEDURE FOR CLEARANCES AND CANCELLATIONS
When testing on Apparatus for which a Sanction-for-Test has been issued is suspended or completed the recipient shall sign the clearance and return the Sanction-for-Test to a Senior Authorised Person who shall cancel it and inform the Control Engineer.

4.7.4 PROCEDURE FOR TEMPORARY WITHDRAWAL OR SUSPENSION
Where there is a requirement for a Sanction-for-Test to be temporarily withdrawn or suspended this shall be in accordance with an Approved procedure.

4.7.5 MINOR WORK UNDER A SANCTION-FOR-TEST
Where there is a requirement for minor work under a Sanction-for-Test, this shall be in accordance with an Approved procedure.
4.8 LIMITATIONS-OF-ACCESS

4.8.1 AUTHORITY FOR ISSUE
(a) A Limitation-of-Access Shall be issued by a Senior Authorised Person or an Authorised Person specially authorised to do so when it is considered necessary to have written instructions to avoid Danger and when a Permit-to-Work or a Sanction-for-Test is not applicable.

(b) In particular, a Limitation-of-Access may be issued for the following types of activity when there is Danger:

(i) work in proximity to, but outside the Working and Access Clearance from, exposed Live High Voltage Conductors;

(ii) work on Plant operated by or containing compressed air or other gases; or

(iii) such other access or work as specified by an Approved procedure.

4.8.2 PROCEDURE FOR ISSUE AND RECEIPT
(a) A Limitation-of-Access Shall be explained and issued to the Person in direct charge of the work who after reading its contents and confirming that they understand it, and are conversant with the nature and extent of the work to be done, Shall sign its receipt and its duplicate. The recipient Shall confirm their understanding by explaining the work to be carried out, and precautions required. The recipient Shall also ensure that the Limitation-of-Access is effectively explained to the other members of the Working Party in accordance with an Approved procedure.

(b) The recipient of a Limitation-of-Access Shall be a Competent Person who Shall retain the Limitation-of-Access in their possession at all times whilst work is being carried out.

(c) Where more than one Working Party is involved, a Limitation-of-Access Shall be issued to the Competent Person in direct charge of each Working Party.

4.8.3 PROCEDURE FOR CLEARANCE AND CANCELLATION
A Limitation-of-Access Shall be cleared by the recipient signing the clearance and then returning the Limitation-of-Access for cancellation to a Senior Authorised Person or Authorised Person specially authorised to do so.
SECTION 5
PROCEDURES FOR WORK ON PARTICULAR ITEMS OF PLANT, APPARATUS OR CONDUCTORS

5.1 GENERAL SAFETY PRECAUTIONS

5.1.1 The safety precautions detailed in Section 4 for work on or near High Voltage Systems Shall apply.

5.1.2 ZONE OF WORK
When, in order to work on particular items of Plant, Apparatus or Conductors, a section of the System larger than the zone of work is Isolated and Earthed (as, for example, in the case of work on ring main units) the Safety Rules specified in Section 5 relating to isolation and earthing and the requirements for Personal Supervision by the Senior Authorised Person, for such work may be waived in Approved circumstances provided that:

(a) before the waiver the normal requirements of Rule 4.1.1 are applied in full;

(b) all High Voltage Apparatus and Conductors within the zone of work are connected to the Circuit Main Earths at the time when the specified Apparatus or Conductors are released for work or testing by the issue of a Safety Document; and

(c) an Approved procedure applies.

In these circumstances, the recipient of the Safety Document may, in the course of work or testing, disconnect from the Circuit Main Earths as required, any Apparatus or Conductors within the zone of work.

The Senior Authorised Person Shall, at the time of issue of the Safety Document, demonstrate to the recipient by Approved means that the Apparatus or Conductors are Dead.

The Apparatus and Conductors Shall be reconnected to the Circuit Main Earths before the Safety Document is cleared, unless the Circuit Main Earths, the Apparatus or the Conductors have been permanently removed from the System.

Precautions Shall be taken to avoid Danger from potential differences arising from remote Earth points, by bonding and earthing Conductors in an Approved manner at a point as near as possible to the point of work.
5.2 REMOTELY AND AUTOMATICALLY CONTROLLED EQUIPMENT

Before work is carried out on remotely or automatically controlled equipment such as circuit-breakers, isolators, tap changing gear or air compressors, all remote control and automatic features Shall first be rendered inoperative and, where the facility exists, Safety Locked off and Caution Notices posted. Whilst such work is in progress, no work Shall be carried out on the controlling equipment and associated wiring or relays, except by an Authorised Person or Competent Person acting under their Personal Supervision. In this case the Distribution Control Engineer Shall be informed but no work of this kind Shall be carried out if it could restore the remote control or automatic features.

5.3 WITHDRAWABLE APPARATUS

5.3.1 When withdrawable High Voltage Apparatus has been disconnected from all supplies and removed from its normal housing, its Conductors Shall be discharged to Earth, but need not remain connected to Earth. Where a risk assessment shows there is no Danger from stored electrical energy, it is not necessary to discharge the withdrawable Apparatus. Care Shall also be taken to risk assess and safely control any other types of stored energy potentially present in the withdrawable Apparatus.

5.3.2 All spout shutters not required to be opened for immediate work or operation Shall where practicable be locked shut or otherwise made inaccessible.

5.3.3 Work, at the location, on withdrawable High Voltage Apparatus that has been disconnected in accordance with Rule 5.3.1 Shall be carried out under a Limitation-of-Access.

5.4 BUSBAR SPOUTS, BUSBARS AND BUSBAR CONNECTIONS OF MULTI-PANEL SWITCHBOARDS

5.4.1 ISOLATION

When work is to be carried out on busbar spouts, busbars and busbar connections, all of the following isolation procedures Shall be carried out:

(a) the section of the busbar on which work is to be carried out Shall be Isolated from all points of supply from which it can be made Live;

(b) the isolating arrangements Shall be locked so that they cannot be operated and, where practicable, the shutters of Live spouts locked shut. Where duplicate circuit-breakers or switches in one tank or on-load selectors are installed, and it is not possible to isolate them from all points of supply, then all circuit-breakers or switches that can be closed on to the busbars on which work is to be carried out Shall have their mechanisms locked in the open position and the closing mechanism Shall be made inoperative;

(c) Caution Notices Shall be attached at all points where the busbars can be made Live; and

(d) Danger Notices Shall be attached on or adjacent to Apparatus containing Live Conductors at the limits of the zone of work.
5.4.2 EARTHING
(a) Where practicable the section of busbar on which work is to be carried out Shall be checked by means of an Approved voltage testing device to verify that it is not Live. The checking with the voltage testing device Shall be carried out on the panel at which the Circuit Main Earth is to be applied.

(b) Circuit Main Earths of an Approved type Shall be applied at a panel, other than that at which work is to be undertaken, on the Isolated section of busbars. The insertion of the hand or any tool into contact spouts for this purpose is forbidden.

5.4.3 A Permit-to-Work or Sanction-for-Test Shall be issued in accordance with Rules 4.6 or 4.7.

5.4.4 WORK
Before obtaining the receipt signature on the Permit-to-Work the Senior Authorised Person who is issuing the Permit-to-Work Shall, at the point of work, satisfy themselves that the recipient is aware of the location of all adjacent Live High Voltage Apparatus and of the safety precautions to be taken by the recipient. Immediately after the Senior Authorised Person has obtained the receipt signature on the Permit-to-Work and before any work is carried out, then:

(i) where work is to be carried out on busbar spouts it Shall be carried out under the Personal Supervision of the Senior Authorised Person who Shall identify the busbar spouts to be worked on and where necessary provide access by removing any locks applied to such spout shutters. They Shall then prove that each spout is Dead by means of an Approved voltage testing device or other Approved means before any work is undertaken on the spout;

(ii) where work is to be carried out on busbars or busbar connections the Senior Authorised Person Shall identify in an Approved manner where access is to be made. Access Shall then be made, by the removal of the appropriate cover plates, under the Personal Supervision of the Senior Authorised Person who, until they are satisfied that no further access is required to complete the work and that they have taken such action to prove, where practicable, that each busbar or busbar connection in the working area is Dead by means of testing with an Approved voltage testing device or other Approved means. No further access Shall be made to other parts of the switchboard during the course of the work.
5.5 FEEDER SPOUTS AND CONNECTIONS, VOLTAGE TRANSFORMER SPOUTS AND CONNECTIONS AND SINGLE PANEL BUSBAR SPOUTS AND CONNECTIONS

5.5.1 ISOLATION
When work is to be carried out on feeder and voltage transformer spouts or connections, or on the busbar spouts or connections of a single panel, the following procedures Shall be carried out:

(a) the spouts or connections on which work is to be carried out Shall be Isolated from all points of supply from which they can be made Live;

(b) the isolating arrangements Shall be locked so that they cannot be operated and the shutters of Live spouts Shall be locked shut;

(c) Caution Notices Shall be attached at all points where the circuit can be made Live; and

(d) Danger Notices Shall be attached, where applicable, on or adjacent to the Apparatus containing Live Conductors at the limits of the zone of work.

5.5.2 EARTHING

(a) Where practicable the spout contacts or connections Shall be checked by means of an Approved voltage testing device to verify that they are not Live.

(b) The circuit Shall be Earthed with Approved earthing equipment at the point of work and, where reasonably practicable, at all points of isolation from the supply. Any special appliances used for the purposes of earthing metal-enclosed switchgear Shall also be Approved but the insertion of the hand or any tool into contact spouts for this purpose is forbidden.

(c) Where the spouts are connected to an overhead line circuit, a Circuit Main Earth or Additional Earth Shall be applied at a point nearest to the point of work where access to the Conductors can safely be obtained.

5.5.3 A Permit-to-Work or Sanction-for-Test Shall be issued in accordance with Rules 4.6 or 4.7. Where the work to be done requires removal of the Circuit Main Earths at the point of work the Permit-to-Work Shall state how this is permitted under Rule 5.5.4(i).
5.5.4 WORK
Before obtaining the receipt signature on the Permit-to-Work, the Senior Authorised Person who is issuing the Permit-to-Work Shall, at the point of work, satisfy themselves that the recipient is aware of the location of adjacent Live High Voltage Apparatus and of the safety precautions to be taken by the recipient. Immediately after the Senior Authorised Person has obtained the receipt signature on the Permit-to-Work, and before any work is carried out, then:

(i) where the work is to be carried out on the feeder, voltage transformer or busbar spouts on a single panel unit, it Shall be carried out under the Personal Supervision of a Senior Authorised Person who, notwithstanding the requirements of Rule 4.3.4.(a) may, where necessary, remove the Circuit Main Earths at the point of work and provide access by removing any locks applied to such spout shutters. They Shall then prove that each spout is Dead by means of an Approved voltage testing device or other Approved means before any work is undertaken on the spout. On completion of the work, the Circuit Main Earths Shall be re-applied, if necessary, before the Permit-to-Work is cancelled. If the only earthing devices that can be applied to the circuit are those applied to the spouts and are Circuit Main Earths then, while the work is in progress no other work Shall be carried out to the circuit connected to those spouts.

(ii) where work is to be carried out on feeder or voltage transformer connections or single panel busbars or connections the Senior Authorised Person Shall identify in an Approved manner where access is to be made. Access Shall then be made by the removal of the appropriate cover plates under the Personal Supervision of the Senior Authorised Person, who Shall continue to provide Personal Supervision until they are satisfied that no further access is required to complete the work and that they have taken such action to prove, where practicable, that each connection or busbar in the working area is Dead by means of testing with an Approved voltage testing device or other Approved means. No further access Shall be made to other parts of the switchboard during the course of the work.
5.6 HIGH VOLTAGE APPARATUS AND PLANT OPERATED BY OR CONTAINING COMPRessed AIR OR OTHER GASES OR OPERATED BY HYDRAULIC POWER

5.6.1 COMPRESSED AIR
All of the following precautions Shall be taken before any work other than operating adjustments is carried out:

(a) if the work area includes the compressor plant, then the supply to the prime mover of the compressor Shall be switched off and any such switch and/or control handle operating the switch Safety Locked in the off or neutral position as appropriate, and a Caution Notice Shall be attached at each such position;

(b) all valves positioned between the part of the System to remain in service and the work area Shall be closed and locked in the closed position by Safety Locks, and a Caution Notice Shall be attached at each position. In addition, the supply to any such valve that is power operated Shall be rendered inoperative and where the facility exists the power supply Safety Locked in the off position;

(c) the compressed air in any work area Shall be released before work commences, and Approved methods Shall be used to ensure that the equipment or pipes concerned Shall remain open to atmosphere for the duration of the work; and

(d) all keys for Safety Locks fitted under the provisions of this Rule Shall be placed in a Key Safe, in the possession of a Senior Authorised Person or in accordance with an Approved procedure.

5.6.2 OPERATING ADJUSTMENTS
Notwithstanding the requirement of Rule 5.6.1, operating adjustments on equipment operated by or containing compressed air, which require the normal air supply, Shall be carried out under the Personal Supervision of an Authorised Person.

5.6.3 EQUIPMENT CONTAINING SF₆ OR OTHER DIELECTRIC GAS
Access to or work on equipment containing SF₆ or other dielectric gas Shall be carried out in accordance with an Approved procedure.

5.6.4 Where the additional safety precautions required for work on associated Apparatus are not detailed on a Permit-to-Work, then in addition a Limitation-of-Access Shall, where necessary, be used in accordance with Rule 4.8.
5.7 TRANSFORMERS

5.7.1 ISOLATION

(a) When work within the terms of Rule 4.1 is to be carried out on the connections to or the windings of a transformer, the switchgear or fuse gear controlling all windings Shall be opened or the windings or connections Isolated by other Approved means from Live Conductors.

(b) Additionally, to prevent the possibility of the transformer being made Live by back-feed all Low Voltage fuses or links on associated voltage and auxiliary transformers Shall be withdrawn or the voltage and auxiliary transformers Isolated. The fuse and link carriers Shall be locked where reasonably practicable.

(c) The transformer Shall be Isolated from all common neutral earthing equipment from which it might become Live. Except for the isolation of transformers supplying traction loads, which Shall be in accordance with an Approved procedure, this does not require the disconnection of solidly Earthed neutrals or neutral equipment connected solely to the transformer on which work is to be done.

(d) Where work is to be carried out on a High Voltage to Low Voltage transformer and the Low Voltage windings of the transformer are controlled by a switch or isolator, the switch or isolator Shall, be secured open in an Approved manner.

(e) In other cases, arrangements Shall be made to ensure that the Low Voltage windings are Isolated from all sources of Low Voltage supply.

(f) Before any withdrawable voltage transformer is Isolated or re-connected the associated High Voltage connections Shall, where reasonably practicable, be made Dead. If it is suspected that a voltage transformer is faulty the associated busbars or feeder connections Shall be made Dead before it is Isolated.

(g) Caution Notices Shall be attached at all points of isolation including at Low Voltage.

(h) All keys for Safety Locks fitted under the provisions of this Rule Shall be placed in a Key Safe, in the possession of a Senior Authorised Person or in accordance with an Approved procedure.

5.7.2 EARTHING

The transformer Shall be Earthed in accordance with Rules 4.1.1 (c).

5.7.3 Before a Permit-to-Work or Sanction-for-Test is issued the Senior Authorised Person Shall, so far as reasonably practicable, at the point of work, identify the transformer to be worked on, in accordance with Rules 4.1.1 (e).

5.7.4 A Permit-to-Work or Sanction-for-Test Shall be issued in accordance with Rules 4.6 or 4.7.
5.8 HIGH VOLTAGE STATIC CAPACITORS

5.8.1 ISOLATION
Static capacitors Shall, in accordance with Rule 4.1.1, be Isolated from all Live Conductors, locked off where practicable and Caution Notices fixed.

5.8.2 EARTHING
After the Circuit Main Earths have been applied to the instructions of the Control Engineer, the following earthing operations Shall be carried out under the Personal Supervision of a Senior Authorised Person in the following sequence:

(i) apply Approved capacitor earthing devices to the capacitor frames;

(ii) apply Approved capacitor earthing devices to the common connections of each group of capacitors. (See Rule 5.8.4(b.).)

5.8.3 A Permit-to-Work or Sanction-for-Test Shall then be issued in accordance with Rules 4.6 or 4.7.

5.8.4 WORK
(a) Approved Additional Earths Shall then be applied to the capacitor units at the point of work. These Additional Earths Shall be applied or removed only under the Personal Supervision of a Senior Authorised Person.

(b) Capacitor units Shall be short-circuited and remain short-circuited when removed from the circuit or in cases where earthing in accordance with Rule 5.8.2(ii) is impracticable.

5.9 HIGH VOLTAGE CABLES

5.9.1 All cables Shall be treated as Live (especially cables which are either damaged, or have exposed Conductors), until proved Dead by an Approved procedure. No Person Shall touch the insulation which covers any Conductor subject to High Voltage unless the Conductor has been made safe in accordance with Rule 4.1.1.

5.9.2 Before issuing a Permit-to-Work for work on a High Voltage cable, the Senior Authorised Person, in addition to the procedure of Rule 4.1.1 Shall, at the point of work, in accordance with an Approved procedure identify the cable to be worked on, then by use of an Approved spiking procedure or other Approved means prove it Dead. The Distribution Control Engineer Shall be informed before and immediately after any cable is spiked.

5.9.3 Where work is to be carried out on the insulated sheath system of a High Voltage cable route, additional precautions to prevent Danger from any sheath voltages Shall be taken in accordance with Approved procedures.
5.9.4 Where work is to be carried out on any cable or ancillary equipment associated with a High Voltage cable route which might be subjected to induced voltages from other Live circuits in their proximity, then such work Shall only be carried out in accordance with Approved procedures. (See also Rule 8.3.2)

5.9.5 A Permit-to-Work or Sanction-for-Test Shall be issued in accordance with Rules 4.6 or 4.7.

5.10 HIGH VOLTAGE OVERHEAD LINES - GENERAL

Before issuing a Permit-to-Work for work on a High Voltage overhead line, in accordance with Rule 4.1.1, the Conductors Shall be bonded together and connected to Earth. Where Earthed metalwork is present, it Shall be bonded to the Earthed Conductors.

No Person Shall access any pole, tower or structure subject to a Safety Document unless:

(i) they have confirmed that the poles, towers or supports are those detailed on the Safety Document;

(ii) they have also identified the pole, tower or support by any additional means where provided e.g. circuit designation colours;

(iii) the circuit as defined within the Safety Document at the intended point of work can be seen from ground to be connected to Earth with Approved earthing equipment. If not, then before work commences an Additional Earth Shall be applied in accordance with 5.10.3; and

(iv) they are instructed to do so by the recipient of the Safety Document. All instructions given by the recipient Shall be in the presence of the Person who is accompanying the climber who Shall remain in visual contact for the duration of the work.

LINES IN PROXIMITY

If there are other overhead lines in proximity to the one to be worked on, the issuer and recipient of the Safety Document Shall ensure that the climber and the Person accompanying the climber are warned of the additional Danger.

5.10.1 SAFE ACCESS

Access arrangements Shall be in accordance with Rule 3.3.

(a) Where ladders are used they Shall be of an Approved type.

(b) Caution Notices, Danger Notices, barriers and screens Shall be fixed or moved only under the Personal Supervision of an Authorised Person.

(c) No Person Shall, at a point more than 3.7 metres from ground level, touch any unearthed pole or structure supporting Live High Voltage Apparatus unless adequate precautions have been taken to prevent Danger from leakage currents in accordance with an Approved procedure.
5.10.2 USE OF CIRCUIT COLOURS, NUMBERS OR SYMBOLS
When circuit colours, numbers or symbols are used as part of the identity of a circuit the following rules Shall apply:

(a) The Senior Authorised Person Shall inform and agree the circuit colours, numbers or symbols with the Control Engineer;

(b) The Senior Authorised Person Shall write the circuit colours, numbers or symbols in the Safety Document. The recipient of the Safety Document Shall check that they are the correct colours, numbers or symbols and initial the statement of circuit colours, numbers or symbols in the presence of the Senior Authorised Person issuing the Safety Document. The Senior Authorised Person Shall provide the recipient of the Safety Document with sufficient numbers of wristlets; and

(c) Each Person who will work on Apparatus for which a Safety Document bearing circuit colours or symbols has been issued Shall be provided with a wristlet or Identification tag marked with the circuit colours or symbols and Shall wear it in such a manner that it will be readily visible to the user during the whole period they are engaged on the work. On conclusion of the work the wristlets or Identification tags Shall be returned by the recipient of the Safety Document to the Senior Authorised Person.

5.10.3 ADDITIONAL EARTHS
(a) When required, and before work commences on a High Voltage overhead line, Additional Earths Shall be applied at or as near as practicable to the points of work in accordance with an Approved procedure. All Conductors Shall be bonded together and connected to Earth. Where Earthed metalwork is present it Shall be bonded to the Earthed Conductors.

(b) The number and position of Additional Earths applied after a Permit-to-Work is issued Shall normally be the responsibility of the recipient of the Permit-to-Work. Where special precautions have to be taken the point of application of Additional Earths Shall be specified by the Senior Authorised Person in accordance with an Approved procedure.

(c) Where line Conductors are to be disconnected, Approved earthing devices Shall be applied on each side of the intended break before the Conductors are disconnected. Where Conductors are to be reconnected across an existing break, Approved earthing devices Shall be applied on each side of the break before the Conductors are reconnected.

(d) Additional Earths may only be applied by the recipient of a Permit-to-Work or Sanction-for-Test or by a Competent Person under their Personal Supervision.

(e) The Additional Earths Shall remain in position during the progress of the work and may only be removed by a Competent Person after all other members of the Working Party have descended the pole or tower on completion of the work.

(f) When painting towers the Additional Earths and pennants may be removed by a Competent Person in sequence as work proceeds down the tower.
(g) **Additional Earths** used by a *Working Party* Shall be issued by and Shall be returned to the recipient of the **Permit-to-Work** who Shall ascertain that all the **Additional Earths** issued have been returned, or accounted for, before the **Permit-to-Work** is cleared. When the recipient of a **Permit-to-Work** clears and returns the **Permit-to-Work** to a **Senior Authorised Person**, the recipient clearing the **Permit-to-Work** Shall ensure that the **Senior Authorised Person** is aware of the position of any **Additional Earths** that have not been removed.

5.10.4 **SUSPENSION OF WORK**

If a *Working Party* leaves a line at any time then, before work is restarted, the **Competent Person** in receipt of the **Permit-to-Work** Shall re-identify the line in accordance with Rule 5.11.1, Shall verify that all **Earths** adjacent to the point of work are still in position and Shall re-instruct the *Working Party* on the work covered by the **Permit-to-Work**.

5.10.5 **WORK ON OVERHEAD LINES CARRYING LIVE HIGH VOLTAGE CONDUCTORS**

5.10.5.1 **HIGH VOLTAGE LIVE LINE WORK ON OVERHEAD LINES**

*High Voltage Live Line Work*, connections to or disconnections from a **High Voltage** overhead line or **Live** line testing may be carried out with the **Conductors Live**, but only in accordance with Section 6 of these MDSR.

5.10.5.2 **ACCESS TO POLES OR TOWERS BY A COMPETENT PERSON**

General access below any **Conductor** may be permitted to a **Competent Person** on any pole or tower supporting **Live High Voltage Conductors** provided that the requirements of Rules 4.4 and 5.10.1 are observed. Where appropriate, a marker or markers Shall be placed on the pole or tower as an indication of the safe **Working and Access Clearance** (see also Appendix D – Diagrams 2 and 3).

5.10.6 **WORK ON UPPER PORTIONS OF TOWERS CARRYING LIVE CONDUCTORS**

(a) When work is to be carried out on towers with all **Conductors Live**, above the position specified in Rule 5.10.5.2, the zone of work and / or route for climbing Shall be established by a **Senior Authorised Person** and a **Limitation-of-Access** Shall be issued and the **Control Engineer** notified.

(b) Where reasonably practicable work Shall be carried out from within the body of the tower, where the design of the tower permits. Work and climbing on the outside faces of a tower Shall be in accordance with an **Approved** procedure. No part of a **Person’s** body or tool that is being carried or used Shall at any time encroach the **Safety Distance** surrounding a **Live Conductor**.

(c) **Danger Notices**, barriers and screens Shall be fixed or moved only in accordance with an **Approved** Procedure.
5.10.7 RUNNING OUT OR LOWERING OF OVERHEAD CONDUCTORS
When any overhead line Conductor is to be raised or lowered or otherwise held on temporary supports/connections, Approved procedures Shall be followed to ensure that no Danger is caused at locations such as road/railway crossings, etc. where other persons might be present.

Where the overhead line Conductors pass over or under, or are in close proximity to a High Voltage overhead line, a Senior Authorised Person Shall determine whether the overhead line is to be made Dead or whether other Approved procedures are to be applied to adequately avoid Danger. When the High Voltage overhead line is to be made Dead the requirements of Rule 4.1.1 Shall apply and a Permit-to-Work Shall be issued.

When other Approved procedures are to be applied the work Shall either be supervised by a Senior Authorised Person or a Limitation-of-Access Shall be issued. In all instances the Control Engineer responsible for the existing overhead line Shall be informed of the work and where appropriate, auto-reclosing facilities on the circuit concerned Shall be temporarily suspended.

5.10.8 WORK ON AUXILIARY CABLES SUSPENDED ON A CATENARY BELOW HIGH VOLTAGE OVERHEAD LINES
Where work is to be carried out on auxiliary cables suspended on a catenary below a Live High Voltage overhead line, the same clearances as specified in Rule 4.4.4 Shall be observed and the work Shall not be carried out at a distance of more than 3m from a supporting pole or tower, unless the High Voltage overhead line is made safe in accordance with Rule 4.1.1.

5.10.9 ADVERSE WEATHER CONDITIONS
(a) On the near approach of a lightning storm all work on overhead lines Shall cease immediately where necessary to prevent Danger and the Control Engineer Shall be informed.

(b) No person Shall patrol an overhead line alone across country during the hours of darkness or when visibility is dangerously impaired by fog or snow, or when snow drifts or similar hazards exist.

(c) If overhead lines are to be patrolled during the hours of darkness, suitable lighting equipment Shall be used.

5.11 SINGLE OR MULTIPLE CIRCUIT HIGH VOLTAGE OVERHEAD LINES WITHOUT KEYED FLAG BRACKETS AND WITH ALL CONDUCTORS DEAD
5.11.1 PREPARATION FOR A PERMIT-TO-WORK
The Senior Authorised Person, in addition to the procedures of Rules 4.1.1 and 5.10 Shall ensure that the line to be worked upon is identified in an Approved manner at the point of work and, where practicable, they Shall ensure that the line is checked by means of an Approved voltage testing device or other Approved means to verify that the line is not Live. If from the point of work the Conductor can be seen to be Earthed, the use of a voltage testing device may be dispensed with.

5.11.2 A Permit-to-Work Shall be issued.
5.12 DOUBLE CIRCUIT HIGH VOLTAGE OVERHEAD LINES WITHOUT KEYED FLAG BRACKETS AND WITH ONE CIRCUIT LIVE

5.12.1 PREPARATION FOR A PERMIT-TO-WORK
(a) Where work is to be carried out on double circuit overhead lines with one circuit Live the following precautions in addition to the provision of Rule 5.11 Shall be taken.

(b) The Senior Authorised Person in charge Shall ensure that at the point of work the circuit to be worked upon is identified in an Approved manner.

(c) Where work is to be done on terminal, tee-off or large angle poles or towers of a double circuit line with one circuit Live, Danger might occur due to reduced clearances. The work Shall be done under the Personal Supervision of a Senior Authorised Person at ground level unless special precautions are taken in accordance with an Approved procedure.

5.12.2 A Permit-to-Work Shall be issued.

5.12.3 WORK
(a) Before commencing work and during the course of the work, the requirements of Rule 5.10.3 Shall be complied with to avoid Danger from steelwork being Live or becoming Live.

(b) A green flag Shall be affixed near ground level on the Dead circuit side of the pole or tower under the Immediate Supervision of the Senior Authorised Person. Similarly, a Danger Notice Shall be affixed on the Live circuit side. Before any Person is allowed access, a Competent Person or Competent Persons at the point of work Shall climb the pole or tower on the Dead side, check that the overhead line is not Live using an Approved voltage testing device or other Approved means, and Shall connect to Earth all three Conductors on that side. Red pennants or Danger Notices Shall be affixed by a Competent Person to the crossarms drawing attention to the Danger of the Live circuit and, in the case of lattice steel towers, Shall be affixed at the junction of the tower with the crossarms carrying the Live circuit.

(c) The Conductors Shall remain Earthed and the green flags, Danger Notices and the red pennants Shall remain in position throughout the progress of the work. All Earths, Danger Notices and pennants Shall be removed by a Competent Person or Competent Persons only after all other members of the Working Party have descended the pole or tower on completion of the work.
5.13 SINGLE CIRCUIT HIGH VOLTAGE OVERHEAD LINES WITH KEYED FLAG BRACKETS

5.13.1 In addition to the requirements of Rules 4.1.1 and 5.10 the following Rules Shall also apply.

5.13.2 The recipient of the Permit-to-Work who is also in charge of the Working Party Shall personally identify at the point(s) of work the circuit to be worked upon by reference to the route identification, the circuit colours and pole or tower number(s).

5.13.3 The recipient of the Permit-to-Work Shall be provided with green flag(s) that fit the keyed flag bracket(s) for the circuit on the pole or tower on which work is to be done, and Shall place the green flag in position on the pole or tower before allowing any Person to climb the pole or tower. The recipient of the Permit-to-Work or the Competent Person who is to apply the Additional Earths Shall then climb the pole or tower and apply Additional Earths in accordance with Rule 5.10.3.

5.14 DOUBLE CIRCUIT HIGH VOLTAGE OVERHEAD LINES WITH KEYED FLAG BRACKETS AND WITH ONE CIRCUIT LIVE

5.14.1 In addition to the requirements of Rules 5.10 and 5.13, the following Rules Shall also apply.

5.14.2 The recipient of the Permit-to-Work or the Competent Person who is to apply the Additional Earths Shall then climb the pole or tower on the side indicated by the green flag, applying Additional Earths in accordance with Rule 5.10.3 and then affix red pennants to the crossarms supporting the circuit not being worked on. The red pennants Shall be positioned at the junction of the crossarms and the pole or tower body. The Person doing this Shall be under Personal Supervision of the document recipient or another Competent Person who is a member of the Working Party from ground level. Pennants Shall be removed by a Competent Person only after all other members of the Working Party have descended the pole or tower on completion of work.

5.14.3 When work is to be done on terminal, tee-off or large angle poles or towers of a double circuit line with one circuit Live, Danger might occur due to reduced clearances. The work Shall be done under the Personal Supervision of a Senior Authorised Person at ground level unless special precautions are taken in accordance with an Approved procedure.
5.15 HIGH VOLTAGE OVERHEAD LINES WITH MORE THAN TWO CIRCUITS WITH ONE OR MORE CIRCUITS LIVE

5.15.1 When work is to be done on multiple circuit High Voltage overhead lines with one or more circuits Live Rules 4.1.1, 5.15.2, 5.15.3 and 5.15.4, in addition to either Rules 5.10 and 5.12 or 5.13 and 5.14 Shall apply.

5.15.2 PREPARATION OF A PERMIT-TO-WORK
The Senior Authorised Person in charge of the work Shall at the point of work identify the circuit to be worked on.

5.15.3 A Permit-To-Work Shall be issued after the zone of work has been checked and the precautions to be observed have been verified with the Person in receipt of the Permit-to-Work.

5.15.4 WORK
Work on one circuit of multiple circuit lines with one or more other circuits still Live Shall not be carried out except under the following conditions:

(a) separate means of access Shall be provided to the circuit to be worked on;

(b) the Conductors of each circuit Shall be either adequately screened to prevent Danger or the Working and Access Clearances from the nearest point of work to the remaining Live circuits Shall be those specified in Rule 4.4.4; and

(c) Rule 5.12 Shall apply where appropriate. The fixing of green flags or red pennants and Additional Earth connections Shall be carried out under the Personal Supervision of a Senior Authorised Person from ground level.
SECTION 6
SAFETY PRECAUTIONS FOR HIGH VOLTAGE LIVE LINE WORK ON HIGH VOLTAGE OVERHEAD LINES

6.1 AUTHORISATION

6.1.1 No High Voltage Live Line Work Shall be carried out except in accordance with Approved procedures.

6.1.2 All staff engaged on High Voltage Live Line Work Shall have received appropriate training and Shall possess written authorisation from the Electricity Company to undertake High Voltage Line Work.

6.1.3 High Voltage Live Line Work Shall only be undertaken under the Personal Supervision of an Authorised Person who Shall have received training in the procedures and is authorised in writing by the Electricity Company to act in this capacity. They Shall be present throughout the whole of the High Voltage Live Line Work.

6.1.4 Only Approved tools and equipment Shall be used for High Voltage Live Line Work.

6.2 LIVE LINE TOOLS AND EQUIPMENT

6.2.1 Live line tools and equipment Shall be kept in a clean and dry condition and before use Shall be inspected by the Authorised Person referred to in Rule 6.1.3 to ensure that they are clean and dry and in sound condition. If any live line tool or piece of equipment is suspected to be defective it Shall not be used.

6.2.2 With the exception of Approved Hot Glove Procedures; where Approved procedures for High Voltage Live Line Work are based specifically on the use of insulating rods, a clear mark Shall be maintained on every live line tool and piece of equipment, where appropriate, indicating the limit of the safe handling position which Shall be not less than the following:

<table>
<thead>
<tr>
<th>Nominal System Voltage</th>
<th>Minimum Effective Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not exceeding 11kV</td>
<td>0.9m</td>
</tr>
<tr>
<td>Exceeding 11kV but not exceeding 33kV</td>
<td>1.1m</td>
</tr>
<tr>
<td>Exceeding 33kV but not exceeding 66kV</td>
<td>1.3m</td>
</tr>
<tr>
<td>Exceeding 66kV but not exceeding 132kV</td>
<td>1.7m</td>
</tr>
</tbody>
</table>

NOTE: Safe handling limits above 132kV are to be determined by individual company Approved procedures.
6.3 GENERAL SAFETY PRECAUTIONS

6.3.1 Subject to the conditions allowed by this Section 6 for High Voltage Live Line Work, the safety precautions detailed in Section 4 for work on or near High Voltage Systems Shall apply.

6.3.2 High Voltage Live Line Work Shall not take place on any section of High Voltage overhead line where the failure of any component, Conductor or tool could energise an associated or adjacent overhead line which is Dead and Earthed and subject to a Permit-to-Work or Sanction-for-Test.

6.3.3 Work Shall not commence until the Authorised Person in charge of the High Voltage Live Line Work has advised the Control Engineer of the nature and location of the work to be carried out.

If the circuit on which work is being carried out becomes Dead owing to the operation of protective equipment or for any other reason, the Control Engineer Shall not sanction the circuit to be re-energised without reference to the Authorised Person in charge of the High Voltage Live Line Work. Auto-reclose and protection equipment controlling the line Shall be managed in accordance with an Approved procedure.

6.3.4 No High Voltage Live Line Work Shall commence in unfavourable weather. If in the course of work unfavourable weather develops, work Shall be suspended.

6.3.5 If it is necessary to suspend High Voltage Live Line Work for any reason, the line and equipment Shall be left in a safe condition and the Control Engineer informed.

6.3.6 Before work commences, all Conductors and associated pole top, line and tower fittings, steelwork and insulators Shall be thoroughly examined at the point of work for signs of incipient failure, through binoculars if necessary, so as to minimise the possibility of failure of these parts during High Voltage Live Line Work. The examination Shall extend to include the adjacent spans and pole or tower on both sides of the point of work.

6.3.7 Before displacing Live Conductors adequate precautions Shall be taken to avoid Danger and to ensure safety including that of members of the public. Safe Working and Access Clearances, in accordance with Approved procedures Shall also be maintained between the line and other Apparatus and objects.

6.3.8 With the exception of Approved Hot Glove Procedures; no vehicle, or person other than a member of the team doing the work, Shall be allowed in the near vicinity of the point of work while work is in progress without the sanction of the Authorised Person in charge of the High Voltage Live Line Work. Where mobile platforms etc. are used for access, the limits of movement of the platform Shall be established by the Authorised Person in charge of the High Voltage Live Line Work and strictly controlled so as to ensure that no metalwork, or any part of the platform, places any person in a position of Danger.
6.3.9 Before any pole is climbed it Shall be tested in an Approved manner. No pole badly impaired by decay or damage or whose stability is in doubt Shall be climbed until it has been supported by Approved means. The pole Shall then either be climbed by only one Person at a time, or access to the top of such pole Shall be by Approved means independent of the pole.

6.3.10 Before any pole is climbed and during the course of High Voltage Live Line Work the Authorised Person in charge Shall take all reasonably practicable steps to avoid Danger from steelwork being Live or becoming Live, in accordance with Approved procedures.

6.3.11 With the exception of Approved Hot Glove Procedures; where Approved procedures for High Voltage Live Line Work are based specifically on the use of insulating rods, no Person Shall climb, move or work in such a position as to bring any part of their body, clothing or any working tool (other than insulated High Voltage Live Line Work tools or equipment Approved for those procedures) within the Working and Access Clearances referred to in Rule 4.4.4 from Live exposed High Voltage Apparatus and, where appropriate, a marker or markers Shall be placed on the pole or tower as an indication. (See also Appendix D Diagrams 5 and 6).

6.3.12 On completion of the High Voltage Live Line Work, the Control Engineer Shall be informed when all Persons and tools have been withdrawn from the point of work.
SECTION 7

SAFETY PRECAUTIONS FOR THE TESTING OF HIGH VOLTAGE APPARATUS

7.1 GENERAL

Testing of High Voltage Apparatus might involve a change of state from a condition of Dead to Live Conductor, possibly involving the issue and cancellation of a Permit-to-Work prior to the issue of a Sanction-for-Test. It is the duty of the issuer of the Sanction-for-Test to avoid Danger during the testing by undertaking a risk assessment and identifying appropriate control measures that Shall be implemented by the Person carrying out the testing. This should take into account the types of test being carried out, the location of the Apparatus being tested and its accessibility to Electricity Company staff, contractors, members of the public, etc. To allow reasonable flexibility during testing and, at the same time, to ensure the maintenance of appropriate safety standards, the following Rules of this Section require that an Authorised Person Shall assume special responsibility in this respect.

7.2 WORK UNDER THE TERMS OF A SANCTION-FOR-TEST

Any Apparatus which has been Isolated and Earthed for testing under the terms of a Sanction-for-Test Shall not be connected to the System until such Apparatus has passed the Approved tests and then connected only with the sanction of the Control Engineer. The recipient of the Sanction-for-Test Shall be responsible for co-ordinating all testing operations on the Isolated equipment and for ensuring safety during the tests. They may, without further reference to the Control Engineer, remove and replace Circuit Main Earths as necessary and carry out tests including making Live the Apparatus concerned from a testing supply. The recipient of the Sanction-for-Test Shall either make the tests personally or such tests Shall be carried out under their Personal Supervision so as to ensure safety at all times. The re-application of Circuit Main Earths at the end of testing might not be necessary. If an Approved procedure applies, the Circuit Main Earths may be left removed and reported to the Control Engineer as exceptions on the Sanction-for-Test. Otherwise, each Circuit Main Earth removed by the recipient of the Sanction-for-Test Shall be replaced before the signing of the clearance section of the Sanction-for-Test.

7.3 TESTING OF HIGH VOLTAGE APPARATUS

7.3.1 When any High Voltage Apparatus is to be subjected to test voltage before being connected or reconnected to the High Voltage System, the Authorised Person responsible for applying the test voltage Shall ensure that such Apparatus and the associated test equipment, leads and connections are adequately guarded to prevent Danger. Danger Notices Shall be attached in conspicuous positions during the period the Apparatus might be subject to voltage. All cables and capacitors Shall be discharged before and after the application of test voltage.

7.3.2 Temporary Conductors used for testing purposes Shall be of an adequate size and be easily visible.
7.3.3 Test connections **Shall** not be applied in a cell or compartment in which there is any exposed metal **Live** at **High Voltage**. This Rule does not preclude the use of **Approved** voltage testing devices or other **Approved** devices for testing and phasing out circuits in an **Approved** manner.

7.3.4 The requirements of Rule 4.4 **Shall** be observed in respect of access or work in the proximity of **Live** test leads and connections and in respect of testing in the vicinity of **Live Conductors**.
SECTION 8

SAFETY PRECAUTIONS AND PROCEDURES APPLICABLE TO LOW VOLTAGE SYSTEMS

8.1 GENERAL

8.1.1 The term Low Voltage System and this section of the MDSR applies to the Electricity Company’s distributing System operating at Low Voltage.

8.1.2 When work or testing is carried out on or near Low Voltage Apparatus and Conductors, precautions Shall be taken to prevent Danger from burn injury due to electrical arc and from electric shock, if the Conductors are exposed. These precautions are necessary to prevent Danger to Competent Persons and, so far as reasonably practicable, Danger to Third-Parties, i.e. persons that may not have sufficient technical knowledge and/or experience to enable them to maintain safety from the System.

If the Conductors are covered with insulation and screening, the adequacy of these materials to prevent Danger Shall be assessed by a Competent Person with regard to the nature of the work or testing. Where necessary the precautions appropriate to work on or near exposed Conductors Shall be applied. Danger may arise in the following circumstances:

(a) a Person incorrectly identifies Apparatus and Conductors which have been made Dead with those which remain Live;

(b) Dead Apparatus and Conductors are accidentally or inadvertently made Live, either from the System or via generators and/or other Distributed Energy Resources on the consumer’s side of the interface with the System;

(c) a Person accidentally or inadvertently makes contact with adjacent Live Conductors; or

(d) inadequate precautions are taken during Live work or testing.

8.1.3 The term 'Earthed' when applied to Low Voltage Systems means the bonding of all the phase Conductors (including any switch or Earth wire) to the neutral Conductor by means of an Approved device or Approved leads.

8.1.4 Control and operation of Low Voltage Systems Shall be in accordance with an Approved procedure. Only Persons appointed in accordance with an Approved procedure Shall have authority to carry out activities such as Switching and the Live testing of Low Voltage Systems.

8.1.5 Work on, or testing of Low Voltage Apparatus and Conductors Shall only be carried out by a Competent Person. Where working arrangements so require, Approved procedures for the control of work, including the issue of a Safety Document, Shall apply.

8.1.6 Where work or testing involves the initial connection, or the re-arrangement of Conductors to a consumer, supply Shall not be commenced or recommenced to that consumer until checks to ensure correct polarity, rotation and earthing arrangements are in compliance with an Approved procedure.
8.1.7 No Low Voltage overhead line Shall be erected or dismantled under a Live High Voltage overhead line without the authority of a Senior Authorised Person who Shall ensure that when necessary, for example because of insufficient clearance, the High Voltage line is made Dead and a Permit-to-Work issued. The Permit-to-Work Shall detail the Low Voltage work to be carried out. When a Low Voltage overhead line Conductor is to be raised or lowered or otherwise held on temporary supports/connections Approved procedures Shall be followed to ensure that no Danger is caused at locations such as road/rail crossing etc. where other persons may be present.

8.1.8 When work or testing on the Low Voltage System is planned, precautions Shall be taken to safeguard the integrity of the Low Voltage System and in the process prevent, so far as reasonably practicable, Danger to Third-Parties, i.e. persons that may not have sufficient technical knowledge and/or experience to enable them to maintain safety from the System.

8.2 GENERAL REQUIREMENTS FOR WORK ON DEAD LOW VOLTAGE APPARATUS AND CONDUCTORS

8.2.1 When work is to be carried out on Dead Low Voltage Apparatus the Conductors Shall be Isolated from all sources of supply from the System. Where the Isolating Devices are lockable, Safety Locks Shall be applied. If components such as fuses and links are removable they Shall be removed. Caution Notices Shall be securely fixed at all points of isolation. Keys and removed components Shall be kept in a secure place.

8.2.2 The Conductors Shall be Earthed where an earthing device or earthing leads are Approved for use on the Conductors concerned.

8.2.3 Except when work on a Low Voltage System is being carried out as part of Approved High Voltage Live Line Work, the following requirements Shall apply:

(a) if the work requires a point of isolation to be established on a High Voltage System, a Safety Document Shall be issued with the consent of the Control Engineer of the High Voltage System;

(b) if the work requires a High Voltage System to be made Dead, Isolated and Earthed, a Permit-to-Work Shall be issued; or

(c) if the work is being done in conjunction with work on the High Voltage System which has been made Dead, Isolated and Earthed, then unless the Low Voltage work is included on the Permit-to-Work issued for the High Voltage work, a separate Safety Document for the Low Voltage work Shall be issued, with the consent of the Control Engineer of the High Voltage System.

8.2.4 Suitable precautions Shall be taken by Approved screening or other Approved means to avoid Danger from inadvertent contact with adjacent Live Conductors including, where necessary, the fixing of Danger Notices to Apparatus containing Live Conductors, adjacent to other Live Conductors and at the limits of the zone of work.
8.2.5 Where Conductors may become Live due to the operation of a consumer’s generator, or embedded Distributed Energy Resources; one or more of the following precautions Shall be taken to prevent Danger:

(a) the Conductors Shall be Isolated from the consumer’s System;

(b) the Conductors Shall be Earthed or an Earth provided between the point of work and the consumer’s System;

(c) the work Shall be carried out in accordance with Rule 8.5 and Rules 8.6 or 8.7 as appropriate.

8.2.6 Before work is commenced, the Apparatus and Conductors Shall be identified and proved Dead at the point of work by means of an Approved voltage testing device. Whilst work is in progress, any Live working methods that can reasonably be applied to minimise the risk of Danger from the Conductors being accidentally or inadvertently made Live Shall be used.

8.3 ADDITIONAL PRECAUTIONS FOR WORK ON DEAD LOW VOLTAGE CABLES

8.3.1 The cable to be worked on Shall be identified in accordance with an Approved procedure which Shall include the following:

(a) all damaged cables Shall be treated as Live until identified and proved Dead by an Approved procedure;

(b) unless the point of work can be physically traced from a point where the Conductors are accessible and have been proved Dead at that point, it will normally be necessary to open the cable as if it is Live and test each Conductor with an Approved voltage testing device; or

(c) if the cable has been damaged or is faulty, this test Shall be made at a safe distance from the suspected point of damage / fault, unless an Approved procedure has specific provisions which allow testing at the point of damage. The cable Shall then be physically traced from the point of test to the suspect point of damage / fault. Appropriate precautions Shall be taken to avoid Danger from electric shock and explosive arcing until the point of damage / fault is located and the cable made Dead.

8.3.2 When work is to be carried out on an auxiliary cable which may be subject to induced voltage from a High Voltage circuit, additional precautions to prevent Danger from these voltages Shall be taken in accordance with Approved procedures.

8.4 ADDITIONAL PRECAUTIONS FOR WORK ON DEAD LOW VOLTAGE OVERHEAD LINES

8.4.1 Bare open-wire Low Voltage Conductors Shall be Earthed using Approved earthing leads. Where insulated but unscreened Conductors are present, the requirements for Live working Shall be observed until the Conductors have been proved Dead.

8.4.2 Any un earthed steelwork such as an offset bracket or the upper portion of a stay above the insulator Shall be treated as Live until it or the Conductors have been proved Dead.
8.5 WORK ON LIVE LOW VOLTAGE APPARATUS AND CONDUCTORS

8.5.1 No Low Voltage Live work Shall be carried out except in accordance with an Approved procedure. This Approved procedure Shall adequately prevent Danger from electric shock and inadvertent short-circuiting of the Conductors.

8.5.2 Where Live work is to be carried out under an Approved procedure, the Competent Person in charge of the Working Party Shall make an assessment of the site conditions. Live work Shall only be commenced where site conditions enable the work to be carried out safely. If the site conditions become unfavourable Live working Shall be suspended. In particular the following requirements Shall be assessed:

(a) the Apparatus to be worked upon Shall be visually inspected to see that it is in a satisfactory condition;

(b) there Shall be adequate working space and safe means of egress;

(c) the working space and the Apparatus to be worked on Shall be adequately illuminated; and

(d) if the work is outdoors the weather conditions Shall not be unduly adverse.

All Persons who carry out Live working Shall be Competent Persons and Shall have received appropriate training in the particular Approved procedure. They Shall be adequately instructed by the Competent Person in charge of the Working Party.

8.5.3 Only tools and equipment Approved for that purpose Shall be used for work on, or the testing of, Live Low Voltage Apparatus and Conductors.

8.5.4 No person Shall carry out work which involves, or is equivalent to, the manipulation of bare Live Conductors unless accompanied by another Person who Shall be available to render or obtain assistance in an emergency.

8.6 ADDITIONAL PRECAUTIONS FOR WORK ON LIVE LOW VOLTAGE CABLES

8.6.1 The cable to be worked on Shall be identified by an Approved means. All metalwork adjacent to the point of work Shall be adequately shrouded with Approved insulating material to prevent inadvertent contact. The metallic sheaths of cables Shall be bonded to each other with an Approved insulated Conductor before jointing and before cutting to ensure continuity of the electrical circuit through the sheath.

8.6.2 Unless alternative Approved procedures allow, during all work, including the change of cut-outs, only one Conductor Shall be bared at a time and as a minimum Approved insulating gloves Shall be used.
8.7 ADDITIONAL PRECAUTIONS FOR WORK ON LIVE LOW VOLTAGE OVERHEAD LINES

8.7.1 Where work is carried out on Live overhead lines, any unearthed steelwork such as an offset bracket or the upper portion of a stay above the insulator Shall be proved Dead using an Approved voltage testing device.

8.7.2 When work is carried out on insulated but unscreened Low Voltage Conductors Approved insulating gloves Shall be worn and Approved insulated tools used to prevent Danger that may arise if the insulation has deteriorated or is damaged.

8.8 APPLICATION OF HIGH VOLTAGE RULES TO WORK ON LOW VOLTAGE APPARATUS AND CONDUCTORS

8.8.1 Where MDSR applicable to work on High Voltage Systems, Apparatus and Conductors are applied to Low Voltage Systems, Apparatus and Conductors, this Shall be in accordance with Approved procedures.

8.9 TESTING AND ADJUSTMENT OF LIVE LOW VOLTAGE APPARATUS

8.9.1 Testing and adjustment, including functional testing, may be made with Low voltage Apparatus Live provided that Approved insulated tools and instruments are used.

8.9.2 If the testing or adjustment requires covers to be removed so that terminals or connections that are Live, or can be made Live, are exposed or temporarily disconnected, then precautions Shall be taken to prevent unauthorised access to or interference with the Apparatus. Such precautions Shall include, where necessary, Personal Supervision and/or erection of suitable barriers or screening and the display of Danger Notices.

8.9.3 If the Conductors are to be made Dead in order to avoid Danger, then the requirements of Safety Rules 8.2, 8.3 and 8.4 Shall be applied.
SECTION 9

RESPONSIBILITIES OF PERSONS

9.1 GENERAL

9.1.1 It is the duty of all Persons who may be concerned with the control, operation, work or testing, on or in the near vicinity of Apparatus and Plant to which these MDSR apply, to implement the MDSR and to comply with them and with related Codes and Procedures. Ignorance of the relevant legal requirements, MDSR and Codes or Procedures Shall not be accepted as an excuse for neglect of duty.

9.1.2 The responsibilities placed upon Persons may include all or part of those detailed in this section, depending on the role of the Persons.

9.1.3 Any written authorisation given to Persons to perform their designated role in implementing the MDSR Shall indicate the class of operation and / or work permitted and the section of System to which the authorisation applies.

9.1.4 Persons involved in achieving safety from the inherent Dangers of the System to allow work or testing to commence on Apparatus and Plant and its subsequent restoration to service, will be concerned in separate broadly identifiable areas of responsibility, as follows:

(i) control - including (before work commences) instructing actions to implement precautions and sanctioning the issue of Safety Documents and (after completion of work) acknowledging cancellation of Safety Documents and instructing actions to restore Apparatus and Plant to service;

(ii) making safe or restoration of Apparatus and Plant - including (before work commences) taking action to make Apparatus and Plant safe for work and issuing Safety Documents and (after completion of work) cancelling Safety Documents and taking action to restore Apparatus and Plant to service; and

(iii) work - which includes receipt of a Safety Document, execution of the required work to its completion or termination and clearance of the Safety Document.
9.2 COMPETENT PERSONS

9.2.1 The responsibilities of Competent Persons include those specified below. Competent Persons Shall ensure that their responsibilities are implemented. Competent Persons who may be nominated to be responsible for the Supervision of a Working Party, Shall be appointed in writing.

9.2.2 Competent Persons Shall comply with these MDSR when carrying out work whether instructions are issued orally or in writing.

9.2.3 Competent Persons Shall use safe methods of work, safe means of access and the personal protective equipment and clothing provided for their safety.

9.2.4 Competent Persons when responsible for the Supervision of a Working Party Shall:

(i) Be responsible for establishing and maintaining the General Safety of the Working Party.

(ii) be fully conversant with the nature and the extent of the work to be done;

(iii) read the contents and confirm to the Person issuing any Safety Document that they are fully understood;

(iv) during the course of the work, adhere to, and instruct others under their charge to adhere to, any conditions, instructions or limits specified on any Safety Document;

(v) retain any Safety Document and (where appropriate) keys in safe custody and correctly implement any Electricity Company procedure to achieve this;

(vi) provide Immediate or Personal Supervision as required; and

(vii) warn all persons as quickly as possible to withdraw from and not work on the Apparatus and Plant concerned until further notice, if during the course of work a hazard arises or is suspected, which could result in Danger. The situation Shall be reported immediately by the Competent Person to a Senior Authorised Person or Control Engineer.

9.2.5 Competent Persons Shall not start or restart work under a Safety Document issued to another Competent Person without the permission of that other Competent Person.

9.2.6 Competent Persons clearing a Safety Document Shall do so only after all persons working under the Safety Document have been withdrawn from, and warned not to work on, the Apparatus and Plant concerned. Where appropriate, they Shall ensure that all tools, gear and loose material have been removed, guards and access doors replaced and the workplace left tidy. Where appropriate they Shall also return, or account for, the correct number of Additional Earths, circuit identification flags and wristlets and associated keys and documents.
9.3 AUTHORISED PERSONS

9.3.1 In addition to responsibilities as Competent Persons, Authorised Persons Shall have some, or all of the following responsibilities within the limits imposed by their Certificates of Authorisation.

9.3.2 When participating in achieving safety from the inherent Dangers of the System, Authorised Persons Shall correctly implement specified procedures before work commences, including all of the following:

(i) the keeping of a proper record of all verbal messages passed by telephone or otherwise, relating to the operation of the High Voltage System;

(ii) the reading back to the sender of every such message relating to the operation of the High Voltage System to ensure that the message has been accurately received; and

(iii) carrying out operations instructed by the Control Engineer without unnecessary delay, the implementation of the instructions to be reported back to the Control Engineer as soon as possible after completion.

9.3.3 As the recipient of a Sanction-for-Test an Authorised Person is responsible for all of the following:

(i) meeting the particular requirement of Section 7 of these MDSR;

(ii) being present during the testing, being responsible for co-ordinating all testing operations on the Isolated equipment and for ensuring safety during the tests. Such tests may include making Live the Apparatus and Plant from a testing supply; and

(iii) carrying out the temporary removal and re-application of Earths as necessary without further reference to the Control Engineer.

9.3.4 When given the authority to issue and cancel a Limitation-of-Access, to ensure:

(i) that the recipient of the Limitation-of-Access understands the nature and extent of the work to be undertaken and the safety precautions to be taken; and

(ii) where applicable, the authority of the Control Engineer has been obtained for the issue of the Safety Document.
9.4 SENIOR AUTHORISED PERSONS

9.4.1 In addition to responsibilities as Authorised Persons, Senior Authorised Persons Shall have some or all of the following responsibilities.

9.4.2 Correctly implementing Approved procedures to ensure that all precautions to achieve safety from the inherent Dangers or the System are completed, including:

(i) confirming through the Control Engineer that safety precautions at all locations are complete; and
(ii) meeting the requirements of the relevant sections of these MDSR.

9.4.3 Prior to the issue of a Safety Document, deciding where appropriate:

(i) whether Additional Earths are required, and if so, the number and points of application;
(ii) whether any action is required to contain or dissipate stored energy;
(iii) whether any additional precautions are necessary;
(iv) whether Personal Supervision is required, and also ensuring that:
(v) safety from the inherent Dangers of the System has been achieved and will be maintained when the requirements of the Safety Document are completely implemented;
(vi) the contents of the Safety Document to be issued are correct and unambiguous; and
(vii) the authority of the Control Engineer has been obtained for the issue of a Permit-to-Work or Sanction-for-Test.

9.4.4 When issuing a Safety Document:

(i) fully explaining the contents of the Safety Document to the recipient and ensuring that the recipient understands the nature and extent of the work or testing to be done and the safety precautions to be taken; and
(ii) issuing the Safety Document together with (as appropriate) any keys, circuit identification flags and wristlets and noting all Additional Earths, and documenting where additional precautions have to be taken.
9.4.5 When cancelling a Safety Document:

(i) ensuring that the requirements of the clearance section have been completed correctly;

(ii) checking that all items issued with the Safety Document have been returned or accounted for;

(iii) checking the operational state of the Apparatus and Plant; and

(iv) informing the Control Engineer of the cancellation of the document and confirming the operational state of the Apparatus and Plant.

9.4.6 When a Senior Authorised Person is in control of a System then their responsibilities Shall extend to embody those of a Control Engineer as set out in Rule 9.5 whilst they have control of that System.

9.5 CONTROL ENGINEERS

9.5.1 The responsibilities of Control Engineers within their sphere of operation which arise from the implementation of these MDSR include the following:

(i) giving authority for the release of Apparatus and Plant from service;

(ii) giving authority for all High Voltage Switching except in cases of emergency or in other Approved cases;

(iii) communicating directly via Approved means with the Authorised Person who is to carry out the Switching;

(iv) consulting with Control Engineers of other Systems to agree and initiate Switching where there is interconnection across control boundaries; also agreeing responsibility for control of circuits in the Isolated state preparatory to sanctioning the issue of Safety Documents;

(v) before giving authority for the issue of a Safety Document to ensure that the necessary operations to obtain safety from the inherent Dangers of the System are carried out;

(vi) giving authority for the issue, and acknowledging cancellation of, Permits-to-Work and Sanctions-for-Test; and

(vii) maintaining an Approved record of all High Voltage Switching, application and removal of Circuit Main Earths and the issue and cancellation of Permits-to-Work, Sanctions-for-Test and, where applicable, Limitations-of-Access.
Appendix A
(Sample)

MODEL FORM OF PERMIT-TO-WORK - FRONT

THE ELECTRICITY COMPANY

DISTRIBUTION PERMIT-TO-WORK

1. ISSUE No ........................................

To ........................................................................................................................................

The following High Voltage Apparatus has been made safe in accordance with the MDSR for the work detailed on this Permit-to-Work to proceed:

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

TREAT ALL OTHER APPARATUS AS LIVE

The points of isolation are:

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

Circuit Main Earths are applied at: ...............................................................

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................

Other precautions and information required to be entered by MDSR 3.2.1(b), 4.6.2(c), 5.5.3 and 5.10.2(b) and any local instructions applicable to the work.

........................................................................................................................................
........................................................................................................................................
........................................................................................................................................
The following work to be carried out: .................................................................
..............................................................................................................................
..............................................................................................................................
..............................................................................................................................

Signed: ........................................ Print Name: .................................

Time: ............................... Date: .................................

2. RECEIPT

I accept responsibility for carrying out the work on the Apparatus detailed on this Permit-to-Work and no attempt will be made by me, or by the persons under my charge, to work on any other Apparatus.

Signed: ................................. Print Name: .................................

Time: ............................... Date: .................................
Appendix A

(Sample)

MODEL FORM OF PERMIT-TO-WORK - BACK

3. CLEARANCE

All persons under my charge have been withdrawn and warned that it is no longer safe to work on the Apparatus detailed on this Permit-to-Work, and all Additional Earths have been removed or accounted for (see MDSR 4.3.5 (b)).

The work is complete*/incomplete*

All gear and tools have*/have not* been removed

Signed: ………………………… Print Name: …………………………….

Time: …………………………… Date: ……………………………………….

* Delete words not applicable

4. CANCELLATION

This Permit-to-Work is cancelled.

Signed: ………………………… Print Name: …………………………….

Time: …………………………… Date: ……………………………………….
Appendix B

(Sample)

MODEL FORM OF SANCTION-FOR-TEST - FRONT

THE ELECTRICITY COMPANY

DISTRIBUTION SANCTION-FOR-TEST

1. ISSUE No: ........................................

To .................................................................................................................................

The following High Voltage Apparatus has been made safe in accordance with the MDSR for the testing described on this Sanction-for-Test to proceed:

.................................................................................................................................
.................................................................................................................................
.................................................................................................................................

The points of isolation are:

.................................................................................................................................
.................................................................................................................................
.................................................................................................................................

Circuit Main Earths are applied at:

.................................................................................................................................
.................................................................................................................................
.................................................................................................................................

Brief description of testing to be carried out:

.................................................................................................................................
.................................................................................................................................
.................................................................................................................................
Signed: ………………………… Print Name: ……………………………

Time: …………………………… Date: ………………………………………

2. RECEIPT

I accept responsibility for the testing described on this Sanction-for-Test and for taking the precautions necessary to prevent danger.

Signed: ………………………… Print Name: ……………………………

Time: …………………………… Date: ………………………………………
Appendix B

(Sample)

MODEL FORM OF SANCTION-FOR-TEST - BACK

3. CLEARANCE

All persons under my charge have been withdrawn and warned that it is no longer safe to carry out testing on the Apparatus detailed on this Sanction-for-Test, and all Additional Earths have been removed or accounted for (see MDSR 4.3.5 (b)).

The testing is complete*/incomplete*.

All gear and tools have*/have not* been removed.

The operational state of the Apparatus is the same as at the time of issue of this Sanction-for-Test apart from the exceptions noted below:

Exceptions (if none, state "none") …………………………………………………………….
……………………………………………………………………………………………………
……………………………………………………………………………………………………

Signed: ………………………… Print Name: ……………………………

Time: ……………………………. Date: ………………………………………

* Delete words not applicable.

4. CANCELLATION

This Sanction-for-Test is cancelled.

Signed: ………………………… Print Name: ……………………………

Time: ……………………………. Date: ………………………………………
Appendix C

(Sample)

MODEL FORM OF LIMITATION-OF-ACCESS - FRONT

THE ELECTRICITY COMPANY

DISTRIBUTION LIMITATION-OF-ACCESS

1. ISSUE No: ...........................................

To .................................................................................................................................

Permission is given to carry out the work described below:

Location ..........................................................................................................................

Access to .........................................................................................................................

........................................................................................................................................

Work to be done ..............................................................................................................

........................................................................................................................................

SAFETY PRECAUTIONS APPLICABLE

(a) Plant and Apparatus

........................................................................................................................................

........................................................................................................................................

(b) Environment

........................................................................................................................................

........................................................................................................................................

(c) Access/General

........................................................................................................................................

........................................................................................................................................

Signed: .............................. Print Name: .................................

Time: ..................................... Date: .................................
Appendix C

(Sample)

MODEL FORM OF LIMITATION-OF-ACCESS - BACK

2. RECEIPT

I accept responsibility for carrying out the work in accordance with this Limitation-of-Access and no other work will be done by me or the persons under my charge at the above location.

Signed: .......................... Print Name: ..........................

Time: .......................... Date: ..........................

3. CLEARANCE

All persons under my charge have been withdrawn and warned that it is no longer permitted to carry out the work specified on this Limitation-of-Access.

Signed: .......................... Print Name: ..........................

Time: .......................... Date: ..........................

4. CANCELLATION

This Limitation-of-Access is cancelled.

Signed: .......................... Print Name: ..........................

Time: .......................... Date: ..........................
Appendix D

WORKING AND ACCESS CLEARANCES

The Working and Access Clearances contained in the following Diagrams and tables are derived from the Safety Distances 'X' specified in Rule 4.4.1 (Table 1) with the addition of “Application Factors” appropriate to the particular work activity.

Diagram 1:

Specifies the Safety Distances for Work on Overhead Lines Carrying Live High Voltage Conductors (Rule 4.4.1 refers).

Diagrams 2 and 3:

Specify the Working and Access Clearances for work on overhead lines carrying Live High Voltage Conductors. (Rules 4.4.4 and 5.10.5.2 refer).

Diagram 4:

Specifies Working and Access Clearances for work in substations and switching stations containing exposed Live High Voltage Conductors. (Rules 4.4.4 and 4.5.3 refer).

Diagram 5 and 6:

Specify Working and Access Clearances for High Voltage Live Line Work. (Rules 4.4.4, 6.3.11 and 6.2.2 (Table 2) refer).
Safety Distances for Work on Overhead Lines Carrying Live High Voltage Conductors, (Rule 4.4.1).

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Safety Distance ‘X’</th>
</tr>
</thead>
<tbody>
<tr>
<td>11kV</td>
<td>0.8 m</td>
</tr>
<tr>
<td>33kV</td>
<td>0.8 m</td>
</tr>
<tr>
<td>66kV</td>
<td>1.0 m</td>
</tr>
<tr>
<td>132kV</td>
<td>1.4 m</td>
</tr>
<tr>
<td>275kV</td>
<td>2.4 m</td>
</tr>
<tr>
<td>400kV</td>
<td>3.1 m</td>
</tr>
</tbody>
</table>
### DIAGRAM 2 – LADDERS OR CLIMBING IRONS

**Working and Access Clearances** for work on or adjacent to structures carrying **Live High Voltage Conductors**. (Rules 4.4.4/5.10.5.2).

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Safety Distance ‘X’</th>
<th>Application Factor</th>
<th>Working and Access Clearance = ‘A’</th>
</tr>
</thead>
<tbody>
<tr>
<td>11kV</td>
<td>0.8 m</td>
<td>0.3 m</td>
<td>1.1 m</td>
</tr>
<tr>
<td>33kV</td>
<td>0.8 m</td>
<td>0.3 m</td>
<td>1.1 m</td>
</tr>
<tr>
<td>66kV</td>
<td>1.0 m</td>
<td>0.3 m</td>
<td>1.3 m</td>
</tr>
<tr>
<td>132kV</td>
<td>1.4 m</td>
<td>0.3 m</td>
<td>1.7 m</td>
</tr>
<tr>
<td>275kV</td>
<td>2.4 m</td>
<td>0.3 m</td>
<td>2.7 m</td>
</tr>
<tr>
<td>400kV</td>
<td>3.1 m</td>
<td>0.3 m</td>
<td>3.4 m</td>
</tr>
</tbody>
</table>
**DIAGRAM 3 – WORK PLATFORMS**

**Working and Access Clearances** for work on or adjacent to structures carrying **Live High Voltage Conductors**, (Rules 4.4.4/5.10.5.2).

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Safety Distance = ‘X’</th>
<th>Application Factor</th>
<th>Working and Access Clearance = ‘A’</th>
<th>Platform Clearance ‘B’ = Safety Distance ‘X’ + 2.1m*</th>
</tr>
</thead>
<tbody>
<tr>
<td>11kV</td>
<td>0.8 m</td>
<td>0.3 m</td>
<td>1.1 m</td>
<td>2.9 m</td>
</tr>
<tr>
<td>33kV</td>
<td>0.8 m</td>
<td>0.3 m</td>
<td>1.1 m</td>
<td>2.9 m</td>
</tr>
<tr>
<td>66kV</td>
<td>1.0 m</td>
<td>0.3 m</td>
<td>1.3 m</td>
<td>3.1 m</td>
</tr>
<tr>
<td>132kV</td>
<td>1.4 m</td>
<td>0.3 m</td>
<td>1.7 m</td>
<td>3.5 m</td>
</tr>
<tr>
<td>275kV</td>
<td>2.4 m</td>
<td>0.3 m</td>
<td>2.7 m</td>
<td>4.5 m</td>
</tr>
<tr>
<td>400kV</td>
<td>3.1 m</td>
<td>0.3 m</td>
<td>3.4 m</td>
<td>5.2 m</td>
</tr>
</tbody>
</table>

* The Platform Application Safety Factor of 2.1m is an absolute minimum. The vertical **Working and Access Clearances** from a platform below a **Live Conductor Shall** be established such that the **Working and Access Clearance** “A” is always maintained below the **Conductor**. This **Shall** take into account the height of the people doing the work, the tools used and the nature of the work.
DIAGRAM 4 – SUBSTATIONS AND SWITCHING STATIONS

Working and Access Clearances for work in Substations and Switching Stations Containing Exposed Live High Voltage Conductors. (Rules 4.4.4/4.5.3).

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Safety Distance ‘X’</th>
<th>Horizontal Application Factor</th>
<th>Horizontal Working and Access Clearance ‘C’</th>
<th>Platform Clearance ‘B’ = Safety Distance ‘X’ + 2.1m*</th>
</tr>
</thead>
<tbody>
<tr>
<td>11kV</td>
<td>0.8 m</td>
<td>1.5 m</td>
<td>2.3 m</td>
<td>2.9 m</td>
</tr>
<tr>
<td>33kV</td>
<td>0.8 m</td>
<td>1.5 m</td>
<td>2.3 m</td>
<td>2.9 m</td>
</tr>
<tr>
<td>66kV</td>
<td>1.0 m</td>
<td>1.5 m</td>
<td>2.5 m</td>
<td>3.1 m</td>
</tr>
<tr>
<td>132kV</td>
<td>1.4 m</td>
<td>1.5 m</td>
<td>2.9 m</td>
<td>3.5 m</td>
</tr>
<tr>
<td>275kV</td>
<td>2.4 m</td>
<td>1.5 m</td>
<td>3.9 m</td>
<td>4.5 m</td>
</tr>
<tr>
<td>400kV</td>
<td>3.1 m</td>
<td>1.5 m</td>
<td>4.6 m</td>
<td>5.2 m</td>
</tr>
</tbody>
</table>

* The Platform Application Safety Factor of 2.1m is an absolute minimum. The vertical Working and Access Clearances from a platform below a Live Conductor Shall be established such that the Safety Distance is always maintained below the Conductor. This Shall take into account the height of the people doing the work, the tools used and the nature of the work.
Diagram 5 – HV Live Line Work Using Ladders or Climbing Iorns (Excluding Approved Hot Glove Procedures)

Working and Access Clearances for High Voltage Live Line Work. (Rules 4.4.4, 6.3.11 and 6.2.2)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Safety Distance ‘X’</th>
<th>Application Factor ‘Y’</th>
<th>Working and Access Clearance = ‘A’</th>
</tr>
</thead>
<tbody>
<tr>
<td>11kV</td>
<td>0.8 m</td>
<td>0.1 m</td>
<td>0.9 m</td>
</tr>
<tr>
<td>33kV</td>
<td>0.8 m</td>
<td>0.3 m</td>
<td>1.1 m</td>
</tr>
<tr>
<td>66kV</td>
<td>1.0 m</td>
<td>0.3 m</td>
<td>1.3 m</td>
</tr>
<tr>
<td>132kV</td>
<td>1.4 m</td>
<td>0.3 m</td>
<td>1.7 m</td>
</tr>
<tr>
<td>275kV</td>
<td>2.4 m</td>
<td>0.3 m</td>
<td>2.7 m</td>
</tr>
<tr>
<td>400kV</td>
<td>3.1 m</td>
<td>0.3 m</td>
<td>3.4 m</td>
</tr>
</tbody>
</table>
Working and Access Clearances for High Voltage Live Line Work, (Rules 4.4.4, 6.3.11 and 6.2.2)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Safety Distance ‘X’</th>
<th>Application Factor ‘Y’</th>
<th>Working and Access Clearance = ‘A’</th>
<th>Platform Clearance ‘B’ = Safety Distance ‘X’ + 2.1m*</th>
</tr>
</thead>
<tbody>
<tr>
<td>11kV</td>
<td>0.8 m</td>
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<tr>
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<td>0.3 m</td>
<td>3.4 m</td>
<td>5.2 m</td>
</tr>
</tbody>
</table>

* The Platform Application Safety Factor of 2.1m is an absolute minimum. The vertical Working and Access Clearances from a platform below a Live Conductor Shall be established such that the Working and Access Clearance “A” is always maintained below the Conductor. This Shall take into account the height of the people doing the work, the tools used and the nature of the work.
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