IMP/002 – Policy for Security Measures at Major Operational Sites

1 Purpose

The purpose of this document is to state the company's policy for how security at a major substation is managed. It establishes the decision making process for identifying inadequate security and reduces the level of subjectivity employed. This document supports our higher level company policies ACM/111 "Safety of the Public" and ACM/110 "Health and Safety Group Statement of Philosophy and General Policy".

This document enables us to comply with our statutory duties under the following legislation:

- The Electricity Safety, Quality and Continuity Regulations 2002 paragraph 11.
- The Occupiers Liability Act 1996 paragraph 4.

Section 3.6 lists Northern Powergrid (the Company) documents that have been superseded by this and other CE Electric UK Material.

2 Scope

This document covers all major substations operating on our distribution network. This policy predominantly provides the minimum requirement for security measures at new major substations. However, where an existing substation is to be rebuilt i.e. where significant works are undertaken, the minimum requirements described in section 3.2.3 shall be adopted. The enhanced security measures as described in section 3.2.4 shall be applied to any major substation based on the risk assessment of the specific site, or where specific issues with vandalism or incidents of unauthorised access have been identified.

A major substation is defined as a grid supply point, supply point or a primary substation. The document provides guidance to the process that is to be used to establish firstly if a site requires security improvements and secondly the level of work required to provide the improvements. This document does not detail specific security improvements in terms of civil works solutions but refers to such issues in general terms. Site specific improvements shall be determined on an individual basis and approved by the relevant construction and standards departments.

This document sets the policy and identifies sources of information to the business. It enables the business to make informed design, operational and construction decisions that will mitigate the risks with inadequate security at major substations.

At the time of writing this document it is envisaged that a company policy for improving security at major substations will always be required by the Distribution business. Hence, the drafting intention is to produce a policy that is capable of standing within the company's policy portfolio for an indefinite period.

This policy document sits under the Distribution Policy Statement on Security, document reference BEQ/001.

3 Policy

3.1 Assessment of Relevant Drivers

The Company operate over 600 major substations. The company has a legal obligation under the Occupiers Liability Act (1996) and the Electricity Safety, Quality and Continuity Regulations 2002 to ensure that all reasonable steps have been taken to prevent unauthorised access to these sites. The duty of care placed upon the industry is that all risks shall be reduced to being as low as reasonably practicable (ALARP). The principle of ALARP requires the company to strike a balance between the benefit of the risk reduction against the financial investment required. This principal shall be employed when determining the extent of security improvements required at a major substation.

Any unauthorised person present at major operational sites is exposed to the risk of death or serious injury from the high voltage electrical plant. Also unauthorised access is frequently accompanied with malicious intent giving rise to vandalism of equipment and buildings.

The business drivers relating to security at major substations are:

- Legal compliance
- Safety

3.2 Key Policy Requirements

The aim of this policy is to prevent the company having a major breach of legal compliance as a result of inadequate security at major substations and to reduce the risk of death or serious injury to a member of the public.

There is a regulatory requirement for the company to maintain records of substation unauthorised access, this shall be used in the assessment and prioritisation of sites that need addressing.

All major substations shall be subject to a number of inspections throughout the course of a year, as determined by the maintenance and inspection policies. At these inspections an assessment of the site security is made e.g. adequacy of the fencing, climbing aids etc. are checked and recorded. Any defect reports relating to substation security are logged and shall be acted upon in accordance with this policy.

Substation security improvements will be done in the most cost efficient way so as to maximise the benefit return on the investment. In order to achieve this effectively and consistently across the company the following requirements need to be met:

- Consistent gathering of inspection data with regard to substation security across our distribution network.
- Comprehensive and consistent substation unauthorised access database within the company.

In order to make informed and accurate decisions on which substations require security enhancements it is imperative that inspection data held on records are up to date and accurate. As a minimum the following information will be required in order to assess a substation for adequacy of security arrangements:

- Condition of the boundary fence/wall/gates
- Condition of the statutory security fence (EHV compound)
- Presence of climbing aids
- Condition of safety notices
- Evidence of unauthorised access to the site

3.2.1 Assessment of Major Substations Security

Information gathered from the substation inspections shall be used to determine if any enhancements would be beneficial and if so the amount of work required at an individual site. The table below details the selection criteria that shall be used to determine the overall security arrangements at a site.

No.	Selection Criteria
01	**History of Unauthorised Access** The site has been subject to two or more known incidents of unauthorised access during the last twelve-month period. Priority to be assigned in order of highest number of entries each year.
02	**Condition of existing security measures** The security at the site has one or more of the following deficiencies identified at the substation inspections. • The outdoor compound perimeter fence has damaged, corroded, missing railings or the kerb has been undermined which could allow access to live equipment. • The security gate is damaged or is in a severely deteriorated condition making it difficult to open / close. • An access door has become severely deteriorated by rotting or vandalism damage and security has been compromised. • The roof of a building on the site are accessible due to the absence of or damaged anti-climbing guards.

3.2.2 Determination of Level of Security Required

3.2.2.1 Guidelines for Application

The guidelines presented below are split into two sections, Part A and Part B.

The requirements of Part A shall apply to all major substations, in line with the scope of this policy.

The requirement of Parts B shall apply as appropriate in accordance with Appendices 1 & 2.

The application of Part B to existing substations where no major work is planned shall be assessed by consideration of the following criteria:-

- The strategic importance of the site.
- The known history of trespass, vandalism and theft.
- The site's potential for trespass, vandalism and theft.

The assessment of the site's potential for trespass, vandalism and theft shall be derived from the site security risk assessment process for major substations as described in the policy for operational substation site inspections, (MNT/006). This will provide an overall risk assessment rating for that site of high, medium or low. Appendix 1 and 2 provide guidance on the measures appropriate to the risk.

3.2.3 Part A: Minimum security provision at all major substations

Part A provides details of the minimum security provisions to be applied at all major substation sites. Compliance with these provisions will ensure that statutory obligations are met and that adequate protection from perceived danger is provided.

3.2.3.1 Notices and Signs

A Property Notice giving the Company name, substation name/number and contact telephone number, and a Safety Sign shall be positioned in a conspicuous position at or near each entrance to the site. See Appendix 3. They shall be easily read without entering the site.

A Safety Sign shall be placed at all points of access to buildings or other enclosures. See Appendix 3. Additional Warning Signs shall be fitted on security / statutory fences at 6.0m centres (the middle of every third panel of palisade fences), the top of the sign being level with the top horizontal rail where fitted to a fence.

Notices and signs shall not be fixed in a way that would present a climbing aid.

All signs and notices shall comply with the design requirements set out in the Electricity Safety, Quality and Continuity Regulations 2002 part III paragraph 11.

Reference should be made to the company policy 'Labelling of Operational Assets', MNT/003 for information regarding the layout and dimensions of the above signs.

3.2.3.2 Site Boundary

The site boundary shall have, as a minimum, a physical demarcation that is sufficient to prevent vehicular access onto the site. Examples of suitable demarcation are buildings, walls, hedges, fences and ditches, any of which may be under the ownership of the company or the adjacent property owner.

All access points to the site shall be provided with a gate incorporating a locking arrangement suitable for accepting an extra high security padlock.

A gate shall not be positioned such that when it is open it could be used to assist climbing a statutory boundary.

3.2.3.3 Secure / Statutory Boundary

Site, Secure and Statutory boundaries may coincide at any particular site. In these situations the highest security classification shall take precedence. The Secure / Statutory boundary ensures compliance with regulation 11b of the Electricity Supply, Quality and Continuity Regulations, 2002, and may also be described as the 'Reg 11b' boundary.

The secure / statutory boundary should have as a minimum, a 2.4m high demarcation consisting of an unclimbable building, wall or fence. Any fence forming a secure / statutory boundary must be selected in accordance with Appendix 2 of this document and constructed in accordance with standard drawings.

At new sites with a high or very high risk of unauthorised access, wherever reasonably practicable a secure / statutory boundary should not duplicate as the site boundary. There should be a minimum of 2.00m between a secure / statutory boundary and the site boundary. If the situation of the secure / statutory boundary either forming, or falling within 2.00m of, the site boundary cannot be avoided, then the secure / statutory boundary may be enhanced by consideration of appendix 2. Consideration shall also be given to enhancing the security in this manner if there are specific issues relating to land adjacent to the existing boundary jeopardising security, for example, stacking materials against the boundary or persistent parking against the boundary providing a climbing aid into the substation.

Where a potential climbing aid exists within 2.00 m either side of a secure / statutory boundary every practical effort shall be made to remove the climbing aid. If this is not possible, the secure / statutory boundary shall be enhanced by fitting an anti-vandal climbing barrier (i.e. rotating spikes).

All ground controlled by the company and within 2.00 m of a secure / statutory boundary shall be free from bushes, trees and other vegetation that would jeopardise the security of the boundary and would make it difficult for the condition of the fence bottom and the kerb to be easily checked. Overhanging branches infringing on the 2.00 m zone shall be cut back. In cases where land adjacent to this boundary is not the property of the company, efforts should be made to ensure that a 2.00m clearance zone is maintained. This will require close liaison with local councils and other land owners.

In certain circumstances, it may be a requirement to screen the substation to improve the visual amenity for planning approval purposes. In such cases vegetation may be employed to provide such a facility, and the above requirements shall be adopted.

There shall be no fruiting trees or bushes inside a substation site.

3.2.3.4 Walls and Buildings

Walls or buildings which form a statutory boundary shall be so constructed that the face is vertical and free from all climbing aids such as projecting sills, ledges, down-pipes and any abutments that could aid climbing.

All new buildings shall be designed so that down-pipes do not present a climbing opportunity. For example the pipe could be installed in a recess in the face of the building, or be positioned inside the statutory boundary.

On existing buildings, any down-pipe that presents a climbing opportunity should wherever possible be moved inside a statutory boundary. Where this is not possible, the pipe shall be fitted with suitable anti-climbing equipment.

All new buildings shall be designed without windows.

At existing sites the windows on the statutory boundary shall be blocked up and window ledges removed to leave a smooth faced wall.

3.2.3.5 Fences and Gates

Fences and gates forming part of a secure / statutory boundary shall:

- Be designed in accordance with Appendix 1.
- Have a continuous concrete kerb (min depth 350mm) or roadway to prevent undermining.
- Have a distance not exceeding 100 mm between the concrete kerb or road and the bottom of the fence or gate.
- Have anti-vandal climbing barrier (i.e. rotating spikes) fixed 2.00 m either side of any internal angle (on Plan view). Internal angles should be avoided when designing the fence.
- Have a locking arrangement that does not present a climbing aid. Where practicable the arrangement shall prevent the raising of the drop bolts when locked in the closed position.
- Fence and gates shall be earthed in accordance with earthing design standards.

Single gates shall have a sliding locking arrangement capable of accepting a high security padlock with a 14mm diameter shackle. There shall be no protrusions beyond the face of the general palings and to avoid a potential climbing aid an additional intermediate pale shall be fixed above the locking arrangement.

Wicket gates will only be acceptable within a double gate assembly that forms part of a non-statutory boundary. Where feasible double gates in a statutory boundary will require an alternative single personnel gate for access purposes. Locking arrangements shall be all as above.

Double gates shall be secured by an internal hasp and staple locking arrangement capable of accepting a high security padlock with a 14mm diameter shackle and operable from within the boundary only. Each leaf shall have a drop-bolt capable of holding the leaf in open and closed positions that in themselves do not present potential climbing aids.

All gates shall have secure hinge pins to prevent unauthorised removal.

The locking arrangements on all gates in statutory fences shall not utilise a chain.

The use of non-standard locks (including padlocks) is prohibited for any gates or doors within the substation premises.

Where anti-vandal climbing barriers are required they shall be: -

- Fitted so that a distance no greater than 100 mm exists between the top of the fence or wall and the underside of the anti vandal climbing barrier.
- Designed where necessary to avoid overhanging land outside the company control.

3.2.3.6 Troughs and Underground Chambers

Accesses to underground chambers and tunnels shall be designed to prevent entry by unauthorised persons and will treated as a confined space.

The installation of troughs with removable covers shall be avoided outside of buildings or statutory areas. Where troughs exist outside statutory areas, suitable means shall be employed to prevent unauthorised access to compounds containing exposed EHV conductors. If the route of a trough is from an insecure to a statutory area, the potential passage shall be blocked by for example, a mesh screen or a block wall.

3.2.3.7 Buildings

There shall only be one door that can be opened from the outside into each segregated area of a substation building. A segregated area may be one room without internal communicating doors to other parts of the building, or may be several rooms connected by internal doors. The external access doors shall be secure. Other external doors shall only be capable of being opened from inside the building. Where a door is required to provide an escape route in the event of a fire, the means of securing on the inside shall be by bolts that will immediately open to pressure; these escape doors shall open outwards. Doors which are not required shall be blocked up.

Trees and shrubs which directly mask an external access door shall be removed.

An intruder detection system shall be installed at all new major substations. This system shall apply to all parts of the building and will instantaneously and automatically detect persons entering the building, regardless of the method or point of entry. Consideration shall also be given to the fitting of an intruder detection system at existing major substations as part of the company's risk management procedure.

The intruder detection system shall initiate a local audible alarm. A remote alarm shall be sent to a central monitoring point – this shall normally be the Control Centre or Customer Relations Centre.

3.2.3.8 Lighting

Exterior lighting shall be provided to illuminate all external access doors during the period from dusk to dawn. The system should be designed to either, be automatically switched on if a person approaches any of these doors, or to provide illumination at all times during the hours of darkness. Individual components of this system installed external to the building shall be vandal proof or protected against vandals, and positioned at a height to minimise possible third party interference.

Sufficient lighting shall be installed to illuminate the compound area. Individual components of the system shall be vandal proof or protected against vandals, and positioned to minimise possible third party interference. Lamp columns shall be of the collapsible type and located such as to not breach safety clearances when elevated or lowered.

3.2.3.9 Intruder Alarm – Specific Technical Requirements

The following technical requirements for intruder alarms shall be adopted for new substations and at substations where intruder detection systems are to be retrofitted due to identified increased risk exposure to unauthorised access. If circumstance dictate that any of these requirements cannot be met, then an appropriate alternative should be adopted.

The control panel for the intruder alarm system should wherever possible be located immediately inside the substation main entrance. Under no circumstances shall it be fixed in a space protected by a fixed fire fighting system.

A standardised approach shall be adopted across all major substations with respect to the use of intruder panel security codes.

The intruder alarm system installed at new (major) substations shall have a minimum two-zone operation. The entry/exit point shall be the primary zone, and other areas of the substation shall be a separate zone. Further zones may be established at some substations if considered necessary.

When a person enters the primary zone there shall be a time delay, sufficient to allow the alarm to be disarmed, before the audible and remote alarms are initiated. The equipment shall allow a choice of time delay varying from instantaneous to three minutes. Entry to zones other than the primary zone shall immediately initiate the alarms.

A bell box shall be fitted to the main building. The box shall be prominently positioned such that it cannot be reached without the aid of a ladder or from the roof of a building or could act as a climbing aid. The bell box shall have a stroboscopic light, which flashes on activation of the alarm and continues until the system is reset.

Alarm Systems shall comply with current legislation regarding the duration of the sounder being in operation.

External bell boxes shall be vandalproof, tamperproof and be manufactured from materials which are weatherproof and not subject to corrosion.

A permanent label of vandal resistant material, warning of the presence of an intruder alarm system, shall be fixed to each external door.

Further information relating to Intruder Alarm systems can be found in the current company specification for Substation Building Security.

3.2.4 Part B : Enhanced Security Measures

The application of part B shall be determined by consideration of the risk classification of the substation (as determined through the policy for operational substation site inspections MNT/006) and the substation type. The enhanced security measures shall be in accordance with the details within the following sections and appendices 1 & 2.

3.2.4.1 Notified Sites

A notified site is defined as a major substation where the risk of future unauthorised third party access has been identified. Additional safety inspections may be specified at such sites until the risk has been mitigated or the threat of unauthorised access has rescinded. Further guidance on the response to notified sites is detailed within the company's process control document 'Management of Site Specific Risk'. Copies of this document should be requested from Public Site Safety Services department, Network Integrity.

3.2.4.2 Additional Signs

Where appropriate, 'Help Prevent a Tragedy' signs shall be fitted. These signs shall be installed as indicated in Appendix 3 of this policy. Where appropriate, these signs should be fitted to the outermost boundary to the site. However, if this is impractical e.g. where the boundary is hedge, the signs should be fitted to the statutory fence equidistant between the additional warning signs.

Where fitted to a fence the top of the sign shall be level with the top horizontal rail to prevent the sign from providing a potential foothold.

Reference should be made to the company policy 'Labelling of Operational Assets', MNT/003 for information regarding the layout and dimensions of the above signs.

3.2.4.3 Electrified Fence Systems

The installation of a pulse electrified fence system may be considered. This will be placed on the inside of the secure / statutory boundary. It shall be capable of detecting and remotely reporting interference to the system. It must also be compatible with the company's centralised control monitoring system.

The system shall, where possible, initiate the same local audible alarm and remote alarm as the building intruder system. It shall also activate the compound lighting.

In order to prevent accidental contact with the electrified fence system, where the statutory boundary forms part of the site boundary or other instances that present a risk of inadvertent contact, an additional galvanised steel mesh barrier shall be securely fixed from the bottom to the top horizontal support of the rear of the palisade fence. This shall be not fitted in a way that would be a climbing aid.

Further information relating to Electrified Fence Systems can be found in the company specification for Electric Security Fences.

3.2.4.4 CCTV & PA Systems

Consideration should be given to the installation of a Close Circuit Television (CCTV) system at a site of specific strategic importance or where extreme acts of vandalism or trespass are occurring. The installation of such equipment will be considered based on specific requirements at a substation rather than as a standard across all high risk sites.

A CCTV system may be installed to provide visual remote checking of the site in the event of an alarm being received at the central monitoring point. Particular emphasis shall be put on being able to view clearly all parts of the compound and all entrance doors and gates. The quality of transmitted and recorded image shall be sufficient to enable the person responsible for monitoring the system to identify an incident of unauthorised access.

Initiation of an intruder alarm at sites with CCTV shall automatically activate the CCTV camera monitoring the particular zone from which the alarm has originated. When activated, the output from the camera should be automatically recorded. Facility should be available to manually activate any installed cameras from the remote monitoring point.

An act of a third party, physically removing the external telephone (where installed) and breaking the wire shall cause the remote operator to be aware of the presence of a person on the site.

The box containing the external telephone must not provide a foot hold that could enable an incident of unauthorised access to the site.

Cameras should be static design and provide a colour picture at a remote central monitoring point.

Camera towers shall be positioned so as not to infringe any safety clearances from operational equipment. A tower shall not be positioned within two metres of a secure/statutory boundary.

Consideration should be given to the installation of an audible address system that will enable staff or intruders at the site to be addressed from the remote monitoring point.

Permanent labels of vandal resistant material, warning of the presence of a security system shall be strategically placed. The labels shall not form climbing aids.

3.3 Assumptions

The following assumptions have been made during the preparation of this document.

- The population of major substations on both the company's networks has the same risk profile and are in a similar condition.
- The inspection data gathered across the distribution network is to a common standard so that a consistent approach to security improvements is taken.
- The capital required to improve security at major substations will be made available and be authorised.

These assumptions will be assessed during the regular review of this policy for their continued applicability.

3.4 Implementation and Monitoring the Policy

The roles and responsibilities for the implementation and monitoring of this policy are detailed in the table below:

Designation	Role
EHV Project Manager	Responsible for ensuring the compliance with the policy for security measures at major operational sites. Responsible for ensuring the implementation of additional security measures at major operational sites as required by this policy.
Maintenance Manager	Responsible for ensuring that additional safety inspections are specified at Notified sites.
Safety Manager	Responsible for monitoring compliance with the policy for security measures at major operational sites.

3.5 Control and Review of the Policy

This policy shall be proposed for review on a biennial basis or at any time when external or internal influences drive a change in policy e.g. a change in legislation.

The following responsibilities shall apply to policy control and review:

Designation	Responsibility
Publication Manager	Responsible for issuing a quarterly report to the Policy Production Manager (or representative) detailing policies scheduled for biennial review within the next 6 months
Policy Production Manager	Responsible for assessing the continued applicability of this company policy and for amending this document and communicating any changes in policy.

3.6 Superseded Documentation

The following documentation is superseded by this policy, all copies of which shall be withdrawn from circulation:

Company	Ref	Document Title	Section
YEDL	DSS 002 006	Security Provision at Primary Substations, Supply Points and Grid Supply Points, Version 1, 03/05/00	All
UK Distribution	DSS/017	Policy for Security Measures at Major Operational Sites, Version 1, 04/08/03	All

4 References

4.1 External Documentation

No.	Reference	Title	Version and date
1	Statutory Instrument 2002 No. 2665	The Electricity Safety, Quality and Continuity Regulations 2002	2002
2	Occupiers Liability Act [RSBC 1996] Chapter 337		1996

4.2 Internal Documentation

No.	Reference	Title	Version and date
1	BEQ/001	Distribution Policy Statement – Security	Version 1.1 20th June 2001
2	MNT/003	Labelling of Operational Assets	Version 1, 10th October 2003
3	MNT/005	Policy for the Inspection and Maintenance of Ground Mounted Plant	Version 1.0 1st July 2004
4	MNT/006	Policy for Operational Substation Site Inspections	Version 2.0 29th July 2004
5	Process Control Document	Management of Site Specific Risk	June 2004
6	-	Specification for Electric Security Fences	-
7	-	Specification for Substation Building Security	-

5 Definitions

Term	Definition
ACM	Access to Corporate Memorandum
ALARP	As Low As Reasonably Practical
EHV	Extra High Voltage
EHV Substation	An unmanned substation containing equipment rated in excess of 20kV.
Site	An area of land leased or owned by UK Distribution, delineated by the site boundary
Secure Boundary	Delineates a secure area from which it is intended to exclude all persons other than those authorised to gain access to that area
Statutory Boundary	Delineates a secure compound containing exposed electrical equipment to meet the requirements of Regulation 11b of the ESQC Regulations, 2002
Unclimbable	Being very difficult to climb over without the use of aids or extreme determination
Safety Sign	A statutory sign giving warning of 'Danger of Death'. The letters and symbols are black on a yellow background. The sign will comply with the requirements in Schedule 1 of the ESQC Regulations 2002.
Property Notice	A statutory sign giving the Company name, substation name/number and the address and contact telephone number where the Company may be contacted
Additional Warning Sign	A sign placed in addition to the statutory safety sign. It may be identical to the statutory safety sign and include additional text such as 'Keep Out', but must comply to Schedule 1 of the ESQC Regulations 2002.
Help Prevent a Tragedy Sign	A sign placed on the outermost perimeter of the site that requests members of the public to contact CE Electric UK (or the Police) if they witness any person inside or attempting to enter the site.
The Company	Northern Powergrid

6 Authority for Issue

1. Policy Author

I sign to confirm that I have completed and checked this policy and I am satisfied with its content

		Sign	Date
Steve McDonald	Network Investment Engineer	Steve McDonald	24/01/2005

2. Policy Sponsor

I sign to confirm that I am satisfied with all aspects of the content and preparation of this policy and submit it for approval and authorisation.

		Sign	Date
Mark Nicholson	Network Policy Manager	Mark Nicholson	24/01/2005

3. Technical Assurance

I sign to confirm that I am satisfied with all aspects of the content and preparation of this policy and submit it for approval and authorisation.

		Sign	Date
John Rodgers	Primary Engineering Projects Performance Island Lead	p.p. David Sillito	24/01/2005
Mick Hickling	Safety & Environment Performance Island Lead	Mick Hickling	27/01/2005
Mark Drye	Director of Network Services	Mark Drye	01/02/05

4. DBD Assurance

I sign to confirm that this policy has been assured for issue on to the DBD system

		Sign	Date
Sean Johnson	Safety Engineer	Sean Johnson	02/02/2005

5. Approval

Approval is given for the content of this policy

		Sign	Date
Phil Jones	Strategy & Investment Director	Phil Jones	03/02/2005

6. Authorisation

Authorisation is granted for publication of this policy

		Sign	Date
Peter McCormick	Utilities Services, Environment and Training Director	Peter McCormick	08/02/2005

Appendix 1 - Secure / Statutory Fence Selection Criteria for New or Replacement Installations

All fences to be designed and constructed in accordance with standard drawings.

	RISK LEVEL		
S/S TYPE	**LOW**	**MEDIUM**	**HIGH**
Indoor - all voltages	W Pale enclosing outdoor compound (17 pale per panel) *	W Pale enclosing outdoor compound fitted with Rotating Spikes	W Pale*** enclosing whole site fitted with Rotating Spikes
Outdoor - all voltages	W Pale (or equivalent)	W Pale fitted with rotating spikes or electric fence **	W Pale fitted with rotating spikes or electric fence **

Notes:

* Planning considerations to be taken into account when enclosing transformer cooler banks.

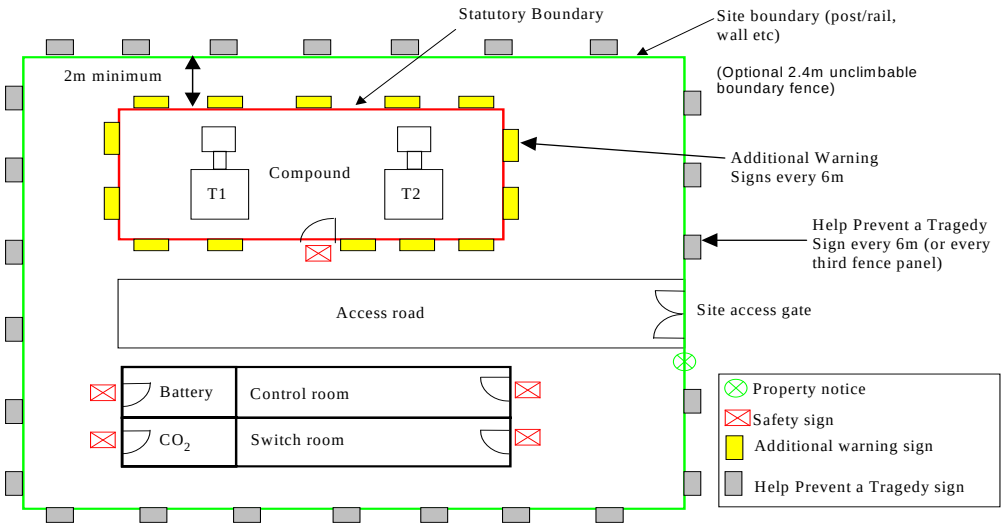
** In order to prevent accidental contact with the electrified fence system, where the statutory boundary forms part of the site boundary or other instances that present a risk of inadvertent contact, an additional galvanised steel mesh barrier shall be securely fixed from the bottom to the top horizontal support of the rear of the palisade fence. This shall be not fitted in a way that would provide an aid to climbing.

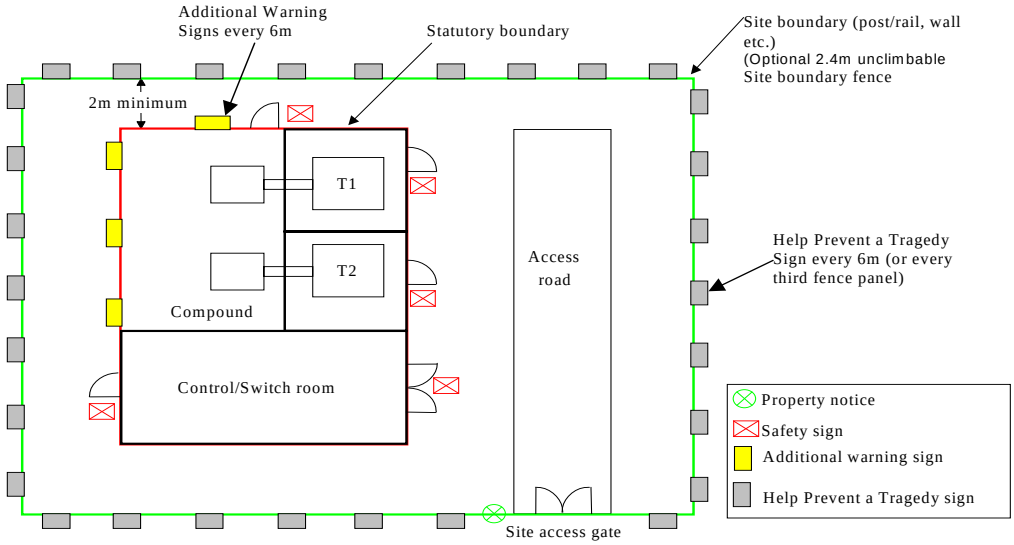
*** W Pale fencing shall comply with The British Standard for Palisade Fencing, BS 1722, Part 12 Type 12.

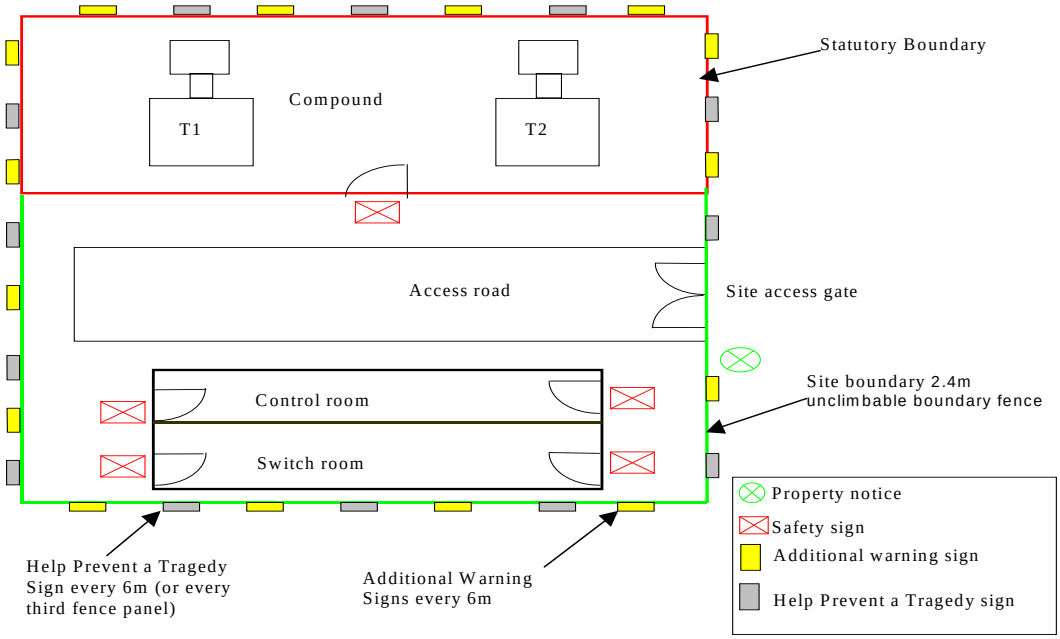
Appendix 2 - Security Systems

	Risk Level		
S/S Type	**Low**	**Medium**	**High**
Indoor all voltages	Lighting – PIR Operated CCTV / PA – No Ext. Telephone – No	Lighting – PIR Operated CCTV / PA – No Ext. Telephone – No	Lighting – photo-electric CCTV / PA – No Ext. Telephone – No
Outdoor –upto and incl. 66kV open busbars	Lighting – PIR Operated CCTV / PA – No Ext. Telephone – No	Lighting – PIR Operated CCTV / PA – No Ext. Telephone – No	Lighting – photo-electric CCTV / PA – No Ext. Telephone – No
Outdoor -132kV open busbar	Lighting – PIR Operated CCTV / PA – No Ext. Telephone – No	Lighting – photo-electric CCTV / PA –Yes Ext. Telephone – No	Lighting – photo-electric CCTV / PA – Yes Ext. Telephone –Yes

Appendix 3 - Typical Substation Layouts






Statutory Boundary
Compound
T1
T2
Access road
Site access gate
Control room
Switch room
Site boundary 2.4m
unclimbable boundary fence
Property notice
Safety sign
Additional warning sign
Help Prevent a Tragedy sign
Help Prevent a Tragedy
Sign every 6m (or every
third fence panel)
Additional Warning
Signs every 6m