

Code of Practice 998

Issue 5 August 2022

Security of Substations



Amendment Summary

ISSUE NO. DATE	DESCRIPTION
Issue 5 August 2022	New Template Applied. References to DMSC updated to Network Management Hub (due to number of them, change lines not marked). Directorates Updated. References to Appendix G corrected to F. Kinglsey Plastics address updated. Workmanager updated to chime. CIFMS updated to NMS webDMD. No Technical Changes Prepared by: Matthew Kayes Approved by: Policy Approval Panel and signed on its behalf by Steve Cox, DSO Director

Contents

1	Introduction	5
2	Scope	5
2.1	In Scope	5
2.2	Out of Scope	5
3	Definitions	6
4	Security of Substations	7
4.1	Breaches of Security	7
4.2	Security Review Following Actual or Suspected Third Party Interference at Substations	10
4.3	Unauthorised Operation of Switchgear	10
5	Documents Referenced	11
6	Keywords	11
7	List of Apendices	12
	Appendix A – Security Action Plan	13
	Table 1: New Build – Pole and Distribution	13
	Table 2: First Break-in – Pole and Distribution	15
	Table 3: Multiple Break-in – Pole and Distribution	17
	Table 4: New Build – Primary and Grid	18
	Table 5: First Break-In – Primary and Grid	21
	Table 6: Multiple Break-In – Primary and Grid	24
	Appendix B – Security Report Example	26
	B1 Electricity North West Procedure: Physical Security Incident Reporting	26
	B1.1 Overview	26
	B2 Electricity North West: Immediate Report of an Incident for Escalation to Senior Management	31
	B3 Electricity North West: Security and Resilience Monthly Report	33
	B3.1 Summary of Activity	33
	B3.2 Recorded Incidents	33
	B3.3 Map of Incidents and Incident Types	33
	B3.4 Incident Trends	33
	B3.5 Lessons Identified	33
	B4 Electricity North West: Physical Security Measures	35
	Appendix C – Security Process Flow Charts	38
	Chart 1 – Decision Process for Vandalised Substations	39

Chart 2 – Non-approved Operation of Switchgear	40
Chart 3 – Break-in Through or Over Fence	41
Chart 4 – Break-in Through Door Lock	42
Chart 5 – Break-In Through Door	43
Chart 6 – Break-in Through Louvres	44
Appendix D – Plant or Structure Earthing Example Diagrams	46
Appendix E – Typical Installation Photographs and Anti-Vandal Covers and Housings	49
E1 Further Examples	51
E2 Example Cage	52
E2.1 Typical Constructions	52
E2.2 Example GRP Housings	52
Figure 1: Security Rated CRP Housing	52
Figure 2: Standard GRP Housing	53
E3 Anti-Vandal Covers and Housings	53
E3.1 Long Controls – Long and Crawford Anti-Vandal Covers	53
E3.2 Schneider Electric – Long and Crawford Anti-Vandal Covers	53
E3.3 Kingsley Plastics - GRP Housings (Standard and Security Rated)	53
E3.4 Other	53
Appendix F – Security Enhancement Review Reference Numbers	54

All Rights Reserved

The copyright of this document, which contains information of a proprietary nature, is vested in Electricity North West Limited. The contents of this document may not be used for purposes other than that for which it has been supplied and may not be reproduced, either wholly or in part, in any way whatsoever. It may not be used by, or its contents divulged to, any other person whatsoever without the prior written permission of Electricity North West Limited.

1 Introduction

Electricity North West Limited (Electricity North West) regards all its assets as extremely important, significant and valuable.

Code of Practice (CP) 998 was developed in reaction to increased interference, theft activity, vandalism or unauthorised access associated with Electricity North West's assets. It was developed to ascertain risks and to look at a systematic approach to applying preventative measures.

This CP Incorporates lessons learnt and aims to consolidate the previous CP into a single coherent document. This CP details the security measures to be implemented following a security breach or interference of company operational assets.

The recommendations will be dependent on the mode of entry, strategic importance and voltage. It is intended that the security level is escalated in stages as the number of occurrences of interference increases. The measures to be implemented can be ascertained through the use of the flow charts contained within this document.

2 Scope

2.1 In Scope

This CP summarises the baseline solutions which shall be applied to all Electricity North West Substations, the responsibilities of members of staff and network partners towards Electricity North West assets, and the actions that shall be taken to maintain security and implement improvements following security breaches.

The purpose of the Electricity North West security strategy is to:

- Set and explain the application of relevant policies, codes of practice and reporting procedures and formats.
- Identify and examine the nature of security related risk across Electricity North West's network operations.

2.2 Out of Scope

This CP does not address specific site worsening requirements as defined by the Centre for Protection of National Infrastructure required by the Department of Business, Energy and Industry Strategy.

3 Definitions

ACD	Anti-Climbing Devices.
AIS	Air Insulated Switchgear.
Authorised Person	As defined in the Distribution Safety Rules.
CCTV	Closed Circuit Television.
Competent Person	As defined in the Distribution Safety Rules.
Control Engineer	Network Management Hub (Control Engineer).
CP	Code of Practice.
CPNI	Centre for the Protection of National Infrastructure.
EHV	Extra High Voltage.
Electrical System Event	Any of the following occurring in a substation: electrocution; electric shock, flashover, fire, explosion, or a serious event closely associated with the handling of commissioned electrical plant.
Electricity North West	Electricity North West Limited.
GIS	Gas Insulated Switchgear.
GM	Greater Manchester.
GRC	Glass Reinforced Concrete.
GRP	Glass Reinforced Plastic.
HR	Human Resources.
HV AP	High Voltage Authorised Person.
HV SAP	High Voltage Senior Authorised Person.
LPS	Loss Prevention Standards.
NGET	National Grid Electrical Transmission organisation.
ED	Engineering Directorate.
OI	Operational Instruction.

PIR	Passive Infrared.
PTZ	Pan-Tilt-Zoom.
SEAP	Security Equipment Assessment Panel.
SER	Security Enhancement Review reference number – refer to table in Appendix F .
DSR	Distribution Safety Rule
s/s	Substation.
Substation Authorisation	A certificate issued by the System Operations Manager to a Competent Person, setting out the types of substation to which the Competent Person is permitted access.
NMS	Network Management System

4 Security of Substations

August
2022

4.1 Breaches of Security

4.1.1 Primary Aim – Prevent Breaches in Security

Whilst the primary aim is to prevent breaches of security wherever possible, it is inevitable that some breaches will occur. It is therefore necessary for members of staff and network partners to be aware of their duties and responsibilities when security breaches occur.

Security breaches occur in a wide variety of situations and have a wide range of severity. For example, any occurrence ranging from unauthorised access to plant theft shall be regarded as a breach of security. Members of staff and network partners are expected to take reasonable action to contain and rectify any situation that they may encounter, in accordance with this section.

All reasonable steps shall be taken to protect Electricity North West assets from further damage or attack.

CP606 S50 includes a checklist graphic that clearly explains actions to be taken on discovering a breach of security.

4.1.2 Risk Assessment upon Discovering an Incident

Both during and after an incident, it is important that members of staff and network partners do not expose themselves or others to unnecessary risk.

Members of staff and network partners shall not attempt to carry out tasks which are beyond their capability or authority. The most effective first step may be to summon assistance, without delay, whether from colleagues, supervisors or the emergency services.

Where there are unexpected hazards, e.g. aggressive persons, fire, every effort shall be made to keep unauthorised persons or members of the public away. It may be beneficial to divert the energies of the keen onlooker, by suggesting something else they might do to help.

On encountering hazardous situations specifically relating to Electricity North West substations, staff and network partners shall follow actions described in CP606 Procedure S50 and inform the Network Management Hub immediately.

On encountering any other hazards on the system such as damaged cables, street furniture knocked down, overhead conductors on the ground, fires, explosions, arcing, smoking or overheating, staff shall follow actions described in CP606 Procedure G9.

4.1.3 Informing Network Management Hub, the Control Engineer and Cascading Information

The re-securing of damaged substations needs to be co-ordinated by the Network Management Hub.

All authorised staff or network partners entering site shall have contact details for the Control Engineer at the Network Management Hub. In addition, the Electricity North West Property plate on the facility contains an emergency contact number which connects to the Network Management Hub and thereby informs the Control Engineer. The emergency number should be used by members of the public and non-electrically-authorized staff.

Where events occur during major construction works or that are found in circumstances where the Network Management Hub would not normally be involved, such as Substation Inspections etc, The Network Management Hub shall be informed on an urgent basis.

In all cases, the supervisors of all members of staff and network partners involved during or after the incident shall be notified. This is particularly urgent where members of staff have been injured or otherwise diverted from their normal duties or places of work. Accident and other reporting procedures shall be adhered to.

When a supervisor of a network partner is notified of an incident, the supervisor shall immediately assess the impact of the incident on his worksite with reference to this CP and apply such procedures as are applicable to secure the work site and ensure the safety of the Supervisor's staff.

In the case of incidents involving substations or other network equipment, reporting shall be co-ordinated by the Network Management Hub. Information on the initial requests made by site staff to the emergency services to attend will be passed on to the Network Management Hub by the person who made the initial request. This will enable the Network Management Hub to record the details and report the events to the following people for urgent attention:

- Security and Resilience Team

Special consideration must be given on certain GSP sites where NGET have an involvement. The Security and Resilience Team will escalate the incident as appropriate and any action plan must be co-ordinated and agreed with NGET before commencement.

4.1.4 Security Immediately Following the Incident

The format for the Network Management Hub to record a Security Incident Report reported to the Network Management Hub by means of phone call, Chime application, web form or through line management (listed in order of likelihood) by members of staff, network partners, or the emergency services is set down in

[Appendix B](#). The Network Management Hub will inform the Security and Resilience Team via security@enwl.co.uk and will cascade the information as appropriate.

When an incident is reported to the Network Management Hub by a member of the public then a work instruction will be raised and the incident confirmed by a member of staff.

Security guards will only be requested following discussions between the Security and Resilience Team Manager and the Civil Manager. Where there is a requirement for a security guard to secure the asset the Security and Resilience Team will coordinate through the incumbent minor civil works framework contractor using the emergency civil response team number 0843 311 3979 (civil response team) or 0845 168 6168 (24hr civil contractor emergency number).

Should a full security review of the site be deemed necessary then it shall be organised as soon as reasonably practicable by the Security and Resilience Team in the form of a security assessment survey and any security improvements shall be implemented.

See [Appendix C](#) for security intervention process (Inspection and Remediation Process Following a Substation Break-in (Planned / Reactive)).

4.1.5 Site Evidence

Every reasonable effort shall be made by personnel on site to preserve evidence and relevant photographs shall be taken. Where the Police are involved, or likely to become involved, no evidence shall be disturbed or removed from its original position where reasonably practicable subject to network security, until the Police give sanction for this. Notwithstanding the above, the health and safety of staff and the general public takes priority if this could be jeopardised by trying to maintain the evidence.

If personnel on site make an assessment that forensic intelligence can be recovered, for example:

- Blood from an individual(s) who conducted the break-in or theft is identified.
- Shoe prints from an individual(s) who conducted the break-in or theft are identified.
- There is a strong belief that fingerprints can be recovered, or other biometric material such as hair from individual(s) who conducted the break-in or theft.
- Tool marks can be identified at point of break-in or theft.

They shall act to maximise the forensic integrity, seal the substation and not allow any further personnel to enter and contaminate the site.

After reporting the security breach to the Network Management Hub (see earlier [Section 4.1.3](#)) members of staff and network partners shall cooperate fully with all requirements to report or investigate the matter. The Network Management Hub shall dispatch an engineer to take control of the site. If forensic recovery is not possible, the engineer on site sent by the Network Management Hub shall ensure that the substation is left secure, either by co-ordinating with the Network Management Hub for civil works to secure the substation or by taking the necessary appropriate actions. The engineer or Network Partner must remain on site until the site is secure.

4.1.6 Security Updates

Where they deem appropriate, the Security and Resilience Team will organise a review of the security of the sub-station and take enhancement actions as required.

Where security upgrades are required the additional security, measures shall be added as per [Appendix A](#) upgrading the site to the next Specification Level on an urgent basis.

Current security arrangements for new-build sites are also shown in [Appendix A](#).

4.2 Security Review Following Actual or Suspected Third Party Interference at Substations

4.2.1 Modes of Entry

4.2.1.1 Fence

If entry is gained into a substation via the fence it is necessary to consult [Chart 3](#) of the flowcharts in [Appendix C](#) to decide on the appropriate security measure to be put in place.

The current standard for fencing is detailed in ES352, CP351 and CP355. Typical installation photographs of the Anti-Climbing Devices (ACD) can be seen in [Appendix E](#).

4.2.1.2 Door Lock

If entry is gained into a substation through the door lock it is necessary to consult [Chart 4](#) of the flowcharts in [Appendix C](#) to decide on the appropriate security measure to be put in place. Note that any changes required to door locks shall be implemented on all doors in the asset concerned.

The Standard Locking arrangements for Substation doors and gates are detailed in EPD603, ES309, ES301 (for GRP housings) and ES326 (for all other door types). Photographs of the anti-vandal gates can be seen in [Appendix E](#). Any legacy door locks breached shall be replaced with the new Abloy locking arrangements that Electricity North West are presently upgrading on their facilities.

4.2.1.3 Door

If entry is gained into a substation through the door it is necessary to consult [Chart 5](#) of the flowcharts in [Appendix C](#) to decide on the appropriate security measure to be put in place.

4.2.1.4 Louvres

If entry is gained into a substation through the louvres it is necessary to consult [Chart 6](#) of the flowcharts in [Appendix C](#) to decide on the appropriate security measure to be put in place.

The current standard for louvres are detailed in ES352 and ES301.

4.3 Unauthorised Operation of Switchgear

Situations have occurred which have resulted in the unauthorised and potentially malicious operation of switchgear. If this occurs it is necessary to consult [Chart 2](#) of the flowcharts in [Appendix C](#).

Typical installation photographs of the anti-vandal cover can be seen in [Appendix E](#). The anti-vandal covers available and the manufacturer from which they can be purchased are also contained in [Appendix E](#).

5 Documents Referenced

DOCUMENTS REFERENCED	
Electricity Safety, Quality and Continuity Regulations	
BS EN 50131	Alarm systems
BS 1722	Fences
Distribution Safety Rules	
EPD301	Inspection and Maintenance of Electrical Plant And Substation Security
EPD603	Substation Locking
CP340	Security Review Following Third Party Interference at Substations
CP351	Civil Design Aspects of Primary Substations
CP355	Civil Design Aspects of 132kV Substations
CP356	Design of Primary Substations designated for Asset Replacement.
CP606	Operations Manual
ES301	GRP Distribution Substation Housings
ES309	Locks for Substations and Associated Plant
ES326	Substation Security Doors
ES352	Design of Distribution Substation and Transforming Points
ES356	Notices and Nameplates

6 Keywords

Security; Substation

7 List of Appendices

[Appendix A:](#) Security Action Plan

- [Table 1:](#) New Build – Pole and Distribution
- [Table 2:](#) First Break-In – Pole and Distribution
- [Table 3:](#) Multiple Break-In – Pole and Distribution
- [Table 4:](#) New Build – Primaries and Grids
- [Table 5:](#) First Break-In – Primaries and Grids
- [Table 6:](#) Multiple Break-In – Primaries and Grids

[Appendix B:](#) Security Report Example

[Appendix C:](#) Security Process Flow Charts

[Appendix D:](#) Plant or Structure Earthing Example Diagrams

[Appendix E:](#) Typical Installation Photographs and Anti-Vandal Covers and Housings

[Appendix F:](#) Security Enhancement Serial Numbers

Appendix A – Security Action Plan

Table 1: New Build – Pole and Distribution

Security Action Plan: Security Specification Levels – New Buildings

NOTE: All items in this table are to be installed in new-build constructions.

All Items Fitted	Actions to be taken, by Substation Type [Refer to Appendix F for SER Reference]		
	A. Pole Mounted	Distribution 11kV/6.6kV	
		B. Outdoor E. Indoor/Plant Outdoor	C. Indoor GRP D. Indoor
1	SER 7. Fix Earth Tape Marking Signs to Poles and any Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).
2	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin new earthing strips to pole using stainless steel tamperproof bolts. SER 11. Earth connections security bolted; shroud covers on terminations. SER 29.	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin new earthing strips using stainless steel tamperproof bolts. <i>[Refer to Appendix E.]</i> SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i> SER 11.	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin new earthing strips using stainless steel tamperproof bolts. SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i> SER 11. Earth connections security bolted; shroud covers on terminations.

	Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.	Earth connections security bolted; shroud covers on terminations.	
2 (cont)		SER 12. Abloy mechanical locking suite fitted. <i>For all Sites considered high/with primary style assets and risk/multiple break-in:-</i> Abloy electronic locking suite may be fitted. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables. <i>[Refer to Appendix E.]</i>	SER 12. Abloy mechanical locking suite fitted. <i>For all Sites considered high/with primary style assets and risk/multiple break-in:-</i> Abloy electronic locking suite may be fitted. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.
3		SER 6. Fencing and Gates to be 2.4m palisade. <i>[Refer to Appendix E.]</i> SER 13. Lockshields fitted to Door & Gate Padlocks.	SER 6. Fencing and Gates to be 2.4m palisade. SER 13. Lockshields fitted to Door & Gate Padlocks.

Table 2: First Break-in – Pole and Distribution

Security Action Plan: Security Specification Levels – Existing Buildings

NOTE: If the first mitigation measure is already installed escalate to the next measure.

Order of	Actions to be taken, by Substation Type [Refer To Appendix F For SER Reference]		
	A. Pole Mounted	Distribution 11kV/6.6kV	
		B. Outdoor E. Indoor/Plant Outdoor	C. Indoor GRP D. Indoor
1	SER 7. Fix Earth Tape Marking Signs to Poles and any Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).
2	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin new earthing strips to pole using stainless steel tamperproof bolts. SER 11. Earth connections security bolted; shroud covers on terminations. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin existing or replacement earthing strips using stainless steel tamperproof bolts. <i>[Refer to Appendix E.]</i> SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & E below.]</i> SER 11.	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin existing or replacement earthing strips using stainless steel tamperproof bolts. SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i> SER 11. Earth connections security bolted; shroud covers on terminations. SER 12.

		Earth connections security bolted; shroud covers on terminations. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables. <i>[Refer to Appendix E.]</i> SER 12. Where not already installed upgrade to Abloy mechanical locking suite. <i>For all Sites considered high/with primary style assets and risk/multiple break-in:-</i> An upgrade to Abloy electronic locking suite may be fitted.	Where not already installed upgrade to Abloy mechanical locking suite. <i>For all Sites considered high/with primary style assets and risk/multiple break-in:-</i> An upgrade to Abloy electronic locking suite may be fitted. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.
3	SER 13. If fence installed Lockshields fitted to Gate Padlocks. SER 32. Investigate options with local landowner to fit fencing around pole. Fencing and Gates to be 2.4m palisade.	SER 6. Replace any fencing and gates with 2.4m palisade. <i>[Refer to Appendix E.]</i> SER 13. Lockshields fitted to Door & Gate Padlocks (where practicable).	SER 6. Replace any fencing and gates with 2.4m palisade. SER 13. Lockshields fitted to Door & Gate Padlocks (where practicable).
4	SER 33. Investigate options with local landowner to procure plot for construction of ground-based structure.		

Table 3: Multiple Break-in – Pole and Distribution

Break-in Action Plan: Security Specification Levels – Existing Buildings – Multiple Break-in (3Nr)

Order of	Actions to be taken, by Substation Type [Refer To Appendix F For SER Reference]		
	A. Pole Mounted	Distribution 11kV/6.6kV	
		B. Outdoor E. Indoor/Plant Outdoor	C. Indoor GRP D. Indoor
1	-	SER 25. Rapid Deployment temporary CCTV; to be determined by the Security and Resilience Team.	SER 17. – Type D Substations Only Replace Doors, Louvres & Top panels with High Security Type SEAP Base/CPNI Base/LPS 1175: Issue 7, SR3. SER 31. – Type C Substations Only Replace GRP Housing with High Security Type SEAP Base/CPNI Base/LPS 1175: Issue 7, SR3.
2	-	SER 19. Fix Weldmesh to inside of Fencing (if practicable).	SER 25. Rapid Deployment temporary CCTV; to be determined by the Security and Resilience Team.
3	-	SER 30. Construct Weldmesh and palisade 'cage' around equipment or add GRP housing. <i>[Refer to Appendix E.]</i>	SER 26. Fixed Camera CCTV unit inside S/S with remote monitoring & Alarm facilities; to be determined by the Security and Resilience Team..

Table 4: New Build – Primary and Grid

Security Action Plan: Security Specification Levels – New Buildings and New Works

NOTE: All items in this table are to be installed in new-build constructions.

All Items Fitted	Actions to be taken, by Substation Type [Refer To Appendix F For SER Reference]			
	Primary 33kV/11kV/6.6kV Substations	H (1). BSP 132kV/33kV/ 11kV/6.6kV	GSP NGET/132kV/33kV	
	F. Distribution (Indoor), Primary (Indoor) G. Primary (Indoor/Outdoor)		H (2). Indoor	H (3). Outdoor
1	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).

2	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin new earthing strips using stainless steel tamperproof bolts. SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i>	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin new earthing strips using stainless steel tamperproof bolts. SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i>	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin new earthing strips using stainless steel tamperproof bolts. SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i>	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin new earthing strips using stainless steel tamperproof bolts. SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i>
2 (cont)	SER 11. Earth connections security bolted; shroud covers on terminations. SER 12. Abloy electronic locking suite fitted. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.	SER 11. Earth connections security bolted; shroud covers on terminations. SER 12. Abloy electronic locking suite fitted. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.	SER 11. Earth connections security bolted; shroud covers on terminations. SER 12. Abloy electronic locking suite fitted. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.	SER 11. Earth connections security bolted; shroud covers on terminations. SER 12. Abloy electronic locking suite fitted. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.

3	SER 6. Fencing and Gates to be 2.4m palisade. SER 13. Lockshields fitted to Door & Gate Padlocks.	SER 6. Fencing and Gates to be 2.4m palisade. SER 13. Lockshields fitted to Door & Gate Padlocks.	SER 6. Fencing and Gates to be 2.4m palisade. SER 13. Lockshields fitted to Door & Gate Padlocks.	SER 6. Fencing and Gates to be 2.4m palisade. SER 13. Lockshields fitted to Door & Gate Padlocks.
4	SER 21. Fit Alarm system monitoring on all Access Doors.	SER 21. Fit Alarm system monitoring on all Access Doors.	SER 21. Fit Alarm system monitoring on all Access Doors.	SER 21. Fit Alarm system monitoring on all Access Doors.
5	Primary Substations only:- SER 20. Fit Electric Fence with Weldmesh added to Palisade fencing & set in Concrete base. [Refer Appendix E.]	SER 20. Fit Electric Fence with Weldmesh added to Palisade fencing & set in Concrete base. [Refer Appendix E.]	SER 20. Fit Electric Fence with Weldmesh added to Palisade fencing & set in Concrete base. [Refer Appendix E.]	SER 20. Fit Electric Fence with Weldmesh added to Palisade fencing & set in Concrete base [Refer Appendix E.]

Table 5: First Break-In – Primary and Grid

Break-in Action Plan: Security Specification Levels – Existing Buildings

NOTE: If the first mitigation measure is already installed escalate to the next measure

Order of	Actions to be taken, by Substation Type [Refer To Appendix F For SER Reference]			
	Primary 33kV/11kV/6.6kV Substations	H (1). BSP 132kV/33kV/ 11kV/6.6kV	GSP NGET/132kV/33kV	
	F. Distribution (Indoor), Primary (Indoor) G. Primary (Indoor/Outdoor)		H (2). Indoor	H (3). Outdoor
1	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).	SER 7. Fix Earth Tape Marking Signs to Fencing. SER 14. Ensure all climbing aids are identified and removed (as far as possible).

2	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin existing or replacement earthing strips using stainless steel tamperproof bolts. SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i>	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin existing or replacement earthing strips using stainless steel tamperproof bolts. SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i>	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin existing or replacement earthing strips using stainless steel tamperproof bolts. SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i>	SER 8. Earth tape / cable marking with substation, name, number, postcode. SER 9. Cap and pin existing or replacement earthing strips using stainless steel tamperproof bolts. SER 10. Earth strips to be buried and weighted down with blocks/concrete. <i>[Refer to Appendix D & below.]</i>
2 (cont)	SER 11. Earth connections security bolted; shroud covers on terminations. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.	SER 11. Earth connections security bolted; shroud covers on terminations. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.	SER 11. Earth connections security bolted; shroud covers on terminations. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.	SER 11. Earth connections security bolted; shroud covers on terminations. SER 29. Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.

3	SER 6. Replace any fencing and gates with 2.4m palisade. SER 13. Fix Lockshields to Door & Gate Padlocks (where practicable). Escalate to next level if already fitted.	SER 6. Replace any fencing and gates with 2.4m palisade. SER 13. Fix Lockshields to Door & Gate Padlocks (where practicable). Escalate to next level if already fitted.	SER 6. Replace any fencing and gates with 2.4m palisade. SER 13. Fix Lockshields to Door & Gate Padlocks (where practicable). Escalate to next level if already fitted.	SER 6. Replace any fencing and gates with 2.4m palisade. SER 13. Fix Lockshields to Door & Gate Padlocks (where practicable). Escalate to next level if already fitted.
4	SER 21. Fit Alarm system monitoring on all Access Doors.	SER 21. Fit Alarm system monitoring on all Access Doors.	SER 21. Fit Alarm system monitoring on all Access Doors. (Already standard fitting on GIS Sites – if so escalate to next level)	SER 21. Fit Alarm system monitoring on all Access Doors.
5	-	SER 20. Fit Electric Fence with Weldmesh added to Palisade fencing & set in Concrete base. <i>[Refer Appendix E.]</i>	SER 20. Fit Electric Fence with Weldmesh added to Palisade fencing & set in Concrete base. Already standard fitting on GIS Sites – if so escalate to next level.	SER 20. Fit Electric Fence with Weldmesh added to Palisade fencing & set in Concrete base <i>[Refer Appendix E.]</i>

Table 6: Multiple Break-In – Primary and Grid

Break-in Action Plan: Security Specification Levels – Existing Buildings – Multiple Break-Ins (3Nr)

Order of	Actions to be taken, by Substation Type [Refer To Appendix F For SER Reference]			
	Primary 33kV/11kV/6.6kV Substations	H (1). BSP 132kV/33kV/ 11kV/6.6kV	GSP NGET/132kV/33kV	
	F. Distribution (Indoor), Primary (Indoor) G. Primary (Indoor/Outdoor)		H (2). Indoor	H (3). Outdoor
1	SER 17. Replace Doors, Louvers, & Top panels with High Security Type SEAP Base/CPNI Base/LPS 1175: Issue 7, SR3.	SER 17. Replace Doors, Louvers, & Top panels with High Security Type SEAP Base/CPNI Base/LPS 1175: Issue 7, SR3.	SER 17. Replace Doors, Louvers, & Top panels with High Security Type SEAP Base/CPNI Base/LPS 1175: Issue 7, SR3.	SER 17. Replace Doors, Louvers, & Top panels with High Security Type SEAP Base/CPNI Base/LPS 1175: Issue 7, SR3.
2	SER 25. Rapid Deployment temporary CCTV; to be determined by the Security and Resilience Team.	SER 25. Rapid Deployment temporary CCTV; to be determined by the Security and Resilience Team.	SER 25. Rapid Deployment temporary CCTV; to be determined by the Security and Resilience Team.	SER 25. Rapid Deployment temporary CCTV; to be determined by the Security and Resilience Team.
3	SER 26. Fixed Camera CCTV unit inside S/S with remote monitoring & Alarm facilities; to be determined by the Security and Resilience Team.	SER 27. Multi-unit CCTV with Pan Tilt Zoom option and with remote monitoring & Alarm facilities all linked to Electric Fence. Subject to final agreement of Security Working group on strategy for major site security.	SER 27. Multi-unit CCTV with Pan Tilt Zoom option and with remote monitoring & Alarm facilities all linked to Electric Fence. Subject to final agreement of Security Working group on strategy for major site security.	SER 27. Multi-unit CCTV with Pan Tilt Zoom option and with remote monitoring & Alarm facilities all linked to Electric Fence. Subject to final agreement of Security Working group on strategy for major site security.
4	SER 20. Fit Electric Fence with Weldmesh added to Palisade fencing & set in Concrete base.	SER 28. Additional inner Fence with dead zones incorporating monitoring via multi camera CCTV and	SER 28. Additional inner Fence with dead zones incorporating monitoring via multi camera CCTV and	SER 28. Additional inner Fence with dead zones incorporating monitoring via multi camera CCTV and

	<i>[Refer to Appendix E.]</i>	Infrared detectors all integrated with Electric Fence and Remotely monitored alarm systems.	Infrared detectors all integrated with Electric Fence and Remotely monitored alarm systems.	Infrared detectors all integrated with Electric Fence and Remotely monitored alarm systems.
5	-	SER 34. Provide duplicate intruder detection systems all integrated to Remote monitoring and alarm systems.	SER 34. Provide duplicate intruder detection systems all integrated to Remote monitoring and alarm systems.	SER 34. Provide duplicate intruder detection systems all integrated to Remote monitoring and alarm systems.

Appendix B – Security Report Example

B1 Electricity North West Procedure: Physical Security Incident Reporting

B1.1 Overview

The accurate and timely reporting of Physical Security Incidents forms the backbone of Electricity North West's management and exploitation of security related information. Recent security projects have illustrated the potential of providing a direct means for the reporting of physical security incidents by member of local police forces and the public. The form indicated below is the one used by Electricity North West for recording incidents reported by Police and members of the public and network partners. The form for use by Electricity North West staff is similar.

The purpose of this procedure is to illustrate and explain the form hosted on the Electricity North West website and available within the Electricity North West Security Management Enterprise software for data entry to be completed by Electricity North West personnel.

Physical Security Incident Reporting Format for Members of the Police and the Public

Physical Security Report (Police and Public)		
Report number:	Auto Complete	Date: Auto Suggest
Information Submitted by		
1	Name	Free Text Input
2	Address	Free Text Input
3	Organisation (If relevant)	Free Text Input
4	Contact Number	Free Text Input
5	Email	Free Text Input
Incident Information		
1	Asset Number	Auto Suggest (Only if known)
2	Address	Free Text
3	Crime Category	Drop Down List
4	Method of Entry Category	Drop Down List (Only if known)
5	Description	Free Text Input
6	Images	Upload Function
Serials 5 to 8 not shown on form for police and public but entered subsequently by Electricity North West staff		
7	Customer Interruptions	Free Text Input (Completed by Electricity North West staff)
8	Customer Minutes Lost	Free Text Input (Completed by Electricity North West staff)
9	NMS webDMD Number	Free Text Input (Completed by Electricity North West staff)
10	NaFIRS Area	Drop Down List (Completed by Electricity North West staff)
11	Police Authority	Drop Down List (Completed by Electricity North West staff)

It is recognised that not all information can be compiled concurrently. For example, information on Customer Interruptions, Customer Minutes Lost and the NMS webDMD Number will routinely be entered retrospectively.

August 2022

The details of the Auto Suggest and Drop-down lists are as follows:

- **Asset Number:** Each Electricity North West substation has a six figure Unique Reference Number (URN). There are over 42,000 substations, an impractical amount for a drop down list, hence the requirement to use an auto-suggest function.
- **Crime Category:** The categories of crime are:
 - Attempted Theft.
 - Break-in.
 - Illegal Interference.
 - Illegal Switching.
 - Locks Intact Possible use of Keys.
 - LV Fuses Stolen.
 - Not known.
 - Substation Demolished.
 - Substation Locks Stolen.
 - Theft of Cables.
 - Theft of Earth Harness.
 - Theft of Earthing.
 - Theft of Equipment, e.g. fixed electrical assets removed from the site.
 - Theft of Laptop.
 - Theft of Neutral Conductor.
 - Theft of Overhead Line Conductor.
 - Theft of Plant.
 - Vandalism.
- **Method of Entry:** The differing methods of entry are (select all relevant entry methods when more than one):
 - Door Forced.
 - Entry through Roof.
 - Fence Cut.
 - Fence Scaled.
 - Locks Intact Possible use of Keys.
 - Locks Removed.
 - Louvres Smashed In.
 - Not known.
 - Wall Demolished.
 - Wall Scaled.
- **NAFIRs Area:** The areas are:
 - 1 - Manchester.
 - 2 – South Lancashire.
 - 3 – Peak District.
 - 4 – Lancashire.
 - 6 - Lake District.

- Police Authorities: The Authorities are:
Greater Manchester.
Cheshire.
Cumbria.
Lancashire.
Merseyside.
Derbyshire.
North Yorkshire.
West Yorkshire.
South Yorkshire.

**Electricity North West Procedure:
Physical Security Incident Reporting – Blank Form**

Physical Security Report (Police and Public)		
Report number:		Date:
Information Submitted by		
1	Name	
2	Address	
3	Organisation (If relevant)	
4	Contact Number	
5	Email	
Incident Information		
1	Asset Number	
2	Address	
3	Crime Category	
4	Method of Entry Category	
5	Description	
6	Images	
7	Customer Interruptions	
8	Customer Minutes Lost	
9	CIFMS Number	
10	NaFIRS Area	
11	Police Authority	

B2 Electricity North West: Immediate Report of an Incident for Escalation to Senior Management

Factor	Information Required
Time	Incident occurred
Location	Physical location of incident: District of City, Town, Village or Rural Area Asset Name Site Substation Number Geographical Address
What has happened	Brief description of security incident
What are the immediate known and perceived consequences	Consequences by: Delivery of essential national and customer services Economic consequence Levels of risk to public health and safety
What actions have been taken	By Electricity North West By Other Organisations
What is the plan for any further activity	By Electricity North West By Other Organisations
Any decisions required by Senior Management	Required in next 24 hours Required in next week to month

**Electricity North West:
Immediate Report of an Incident for Escalation to Senior Management – Blank Form**

Factor	Information Required
Time	
Location	Physical location of incident: District of City, Town, Village or Rural Area: Asset Name: Site: Substation Number: Geographical Address:
What has happened	
What are the immediate known and perceived consequences	Consequences by: Delivery of essential national and customer services: Economic consequence: Levels of risk to public health and safety:
What actions have been taken	By Electricity North West: By Other Organisations:
What is the plan for any further activity	By Electricity North West: By Other Organisations:
Any decisions required by Senior Management	Required in next 24 hours: Required in next week to month:

B3 Electricity North West: Security and Resilience Monthly Report

B3.1 Summary of Activity

What major security events happened and when.

The major consequences of the security incidents, such as duration and number of customer interruptions and both known and estimated costs.

Any major involvement of an outside agency or organisation.

What activity has been conducted to repair assets and what activity is on-going to mitigate further vulnerabilities.

B3.2 Recorded Incidents

Serial	Incident Number	Asset Number	Asset Type	Location	Crime Category	Description	Customer Interruptions	Customer Minutes Lost

The production of such tables will be an automated extraction from the security information management software.

B3.3 Map of Incidents and Incident Types

The production of such maps will be an automated extraction from the security information management software. Each category of incident has a separate icon for visualisation purposes.

B3.4 Incident Trends

The production of a number of methods of illustrating incident trends is possible through automated extraction from the security information management software.

B3.5 Lessons Identified

What are the major lessons identified from the incidents and how do the lessons integrate with on-going security projects or research and development projects.

Any requirements to establish a new security project, find new technology, source new services, or establish new collaborative partnerships.

Electricity North West: Security and Resilience Monthly Report – Blank Form

Recorded Incidents

[illegible]

B4 Electricity North West: Physical Security Measures

The application of Physical Security Measures is determined by their ability to:

- Enable achievement of minimum legal, regulatory and safety requirements.
- Mitigate known attacks.
- Address a wide variety of attacks.
- Identify and stop attacks at the earliest possible stage.

The designation of Physical Security Measures is a constantly evolving process. Changing technologies, regulations and threats will necessitate future changes to this document.

Physical Security Measures currently available to Electricity North-West include:

- **Perimeter Fences:**

The fences which secure the perimeter of the asset, prevent unauthorised entry and mark extent of property owned.

Harris fence.

Wooden slat fence.

Metal fence.

Palisade fence.

- **Padlocks:**

Detachable locks to secure entry to the asset and prevent unauthorised entry.

- **Gates and Doors:**

Hinged barriers which provide access through a perimeter and access into an asset. External facing gates and doors are commonly secured by locks to prevent unauthorised entry.

- **Access Control Systems:**

Systems that enable the control of access to areas and resources, thus preventing unauthorised entry.

- **Signage:**

Physical objects displaying information that meet legal and practical requirements to inform on the dangers associated with the asset, together with the asset's identity and ownership.

DNA System Notice for Substations.

Substation Public Warning Notice: Hazard – Keep Out (Danger of Death).

Universal Property Plate

Sub-Station nameplate.

- **Lighting:**

The arrangement of lights to provide illumination of an asset, its perimeter, or selected areas within and in the vicinity of the asset.

- **Earth tape / conductor pinning and camouflage:**

Physical measures taken to fix earth tape / conductors to the ground and to paint a non-descript colour, in order to increase the level of effort and time take to conduct the unauthorised removal of earth tape / conductors and to decrease the likelihood of the earth tape / conductor being recognised by an intruder.

Pinning.

Camouflage.

- **Earth tape / conductor marking:**

Laser marking of ownership of the earth tape / conductor to determine which asset the earth tape / conductor resides in and to provide deterrence of theft.

- **Cable entry protection:**

Protection provided around where a cable enters an asset, piece of equipment or the ground, to increase the time and effort required by criminals to access cable at the point of entry to the ground or a piece of equipment.

- **High Security Louvres:**

Reinforced set of angled slats, fixed to a door, which reduce the opportunities for illegal entry through a door by the violent removal or breaking through of the louvres.

- **CCTV**

Closed-circuit television, positioned to allow viewing and recording of activities within the perimeter of an Electricity North West asset, or inside a building and to deter criminal activity.

- **Forensic Investigation:**

Application of sciences, technologies and specially trained personnel to conduct the forensic gathering of information at an Electricity North West asset, following a criminal incident, in order to enable exploitation of the information for the benefit of Electricity North West.

- **Intelligence Development:**

The purposeful identification, collation, structuring, analysis and exploitation of all information related to individuals and groups, both internal to Electricity North West and external, who participate in criminal activity against Electricity North West assets.

- **Directed Security Operations:**

Deliberately planned and conducted security operations to directly catch individuals and groups, both internal to Electricity North West and external, who participate in criminal activity against Electricity North West assets.

- **Asset Monitoring and Tracking:**

Specially designed equipment and processes to provide the ability to remotely monitor the status of a key asset, to determine if it has been interfered with or stolen and in the event of a theft, provide real time tracking.

- **Intruder Detection:**

Equipment and procedures to detect the unauthorised entry into an Electricity North West asset or its perimeter.

- **Unique Gel or Liquid Equipment Marking:**

Equipment that allows the unobtrusive and uniquely verifiable marking of Electricity North West equipment to record ownership.

- **Power Line Monitoring Device:**

Equipment which can be temporarily fixed to de-energised power lines, which provides an instantaneous notification of when the line has been cut.

Appendix C – Security Process Flow Charts

[Chart 1](#) – Decision Process for Vandalised Substations

[Chart 2](#) – Non-approved Operation of Switchgear

[Chart 3](#) – Break-in Through or Over Fence

[Chart 4](#) – Break-in Through Door Lock

[Chart 5](#) – Break-in Through Door

[Chart 6](#) – Break-in Through Louvres

Chart 7 – Inspection and Remediation Process Following a Substation Break-in
(Planned / Reactive)

Chart 1 – Decision Process for Vandalised Substations

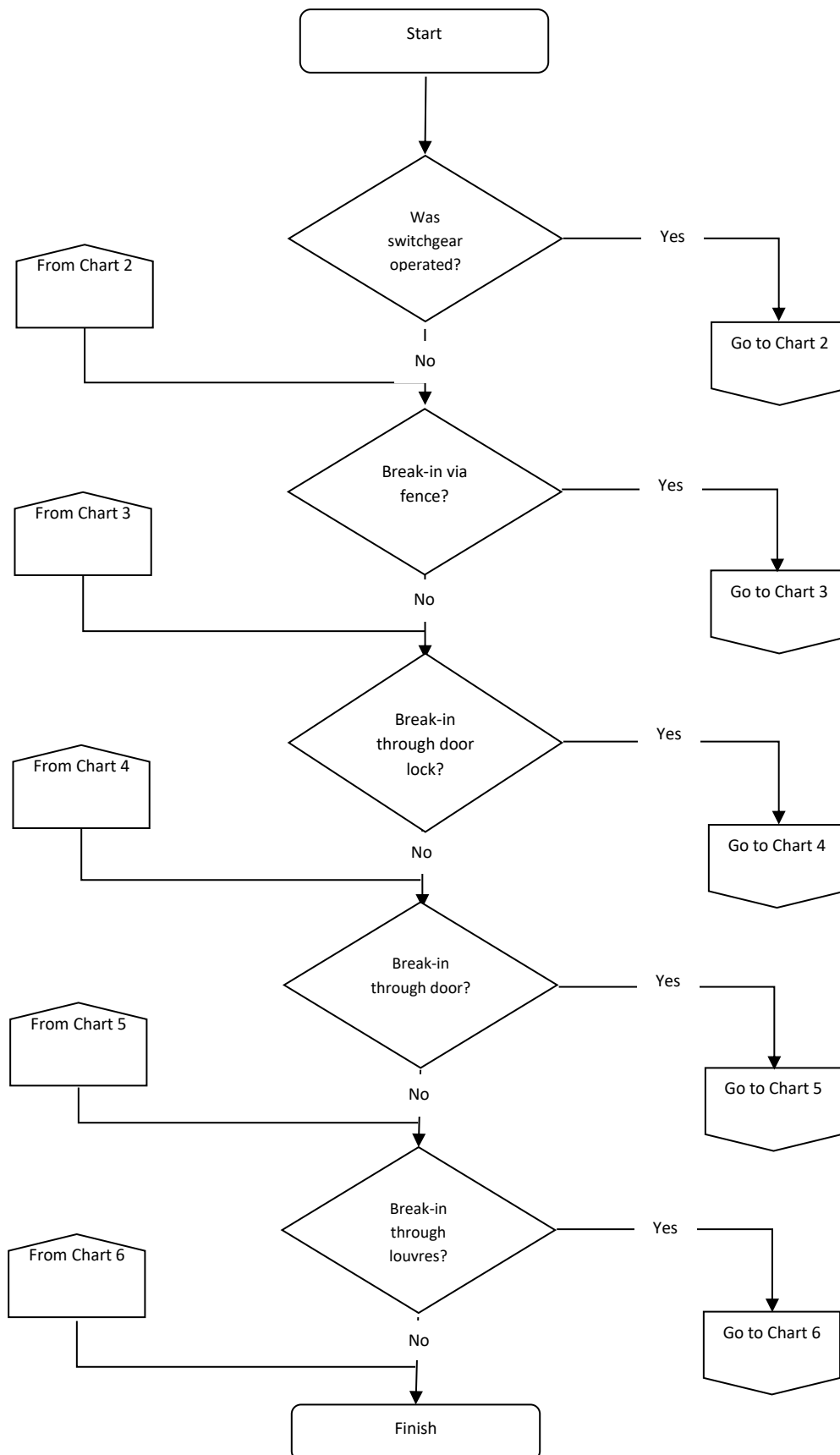


Chart 2 – Non-approved Operation of Switchgear

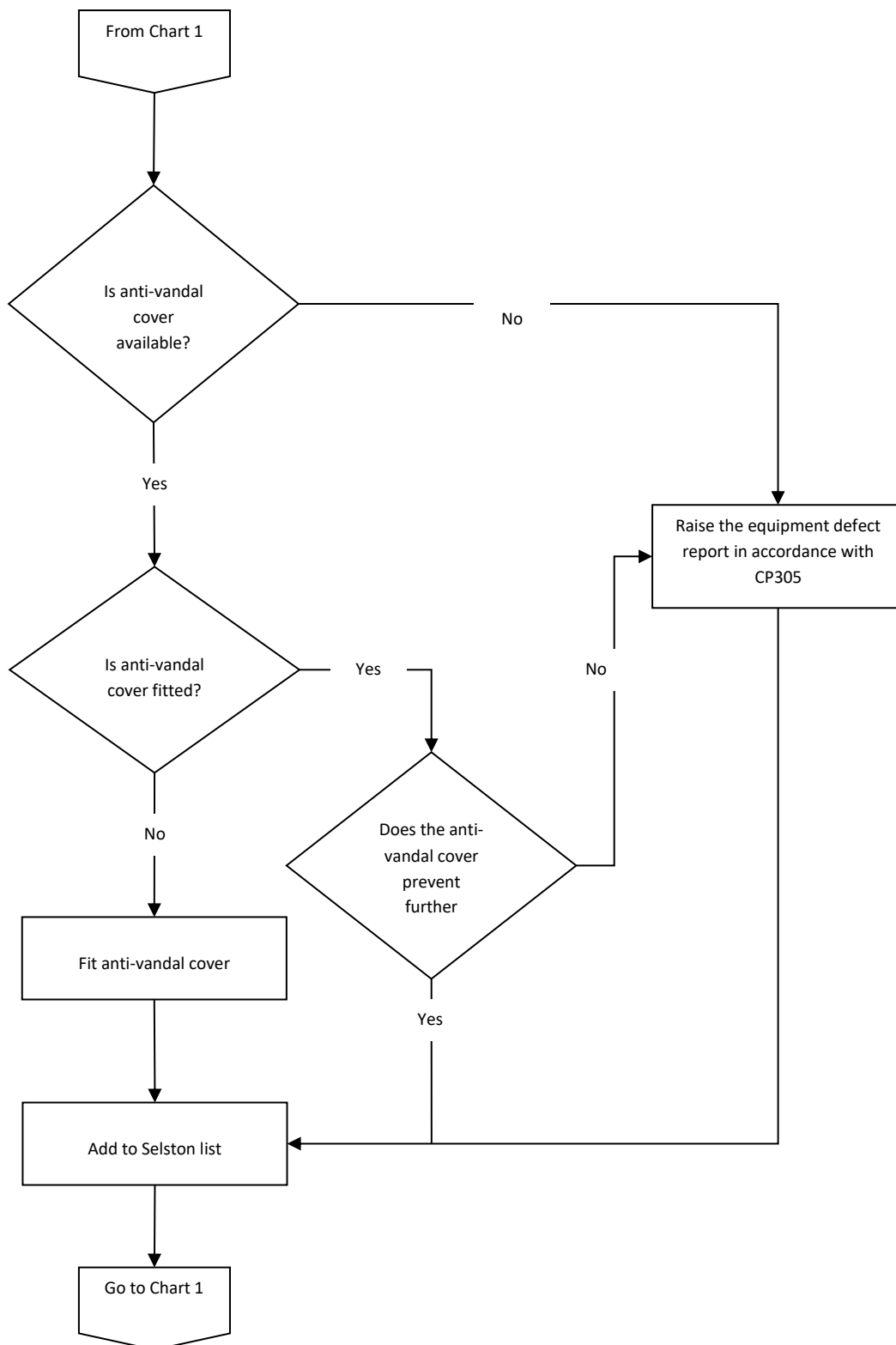


Chart 3 – Break-in Through or Over Fence

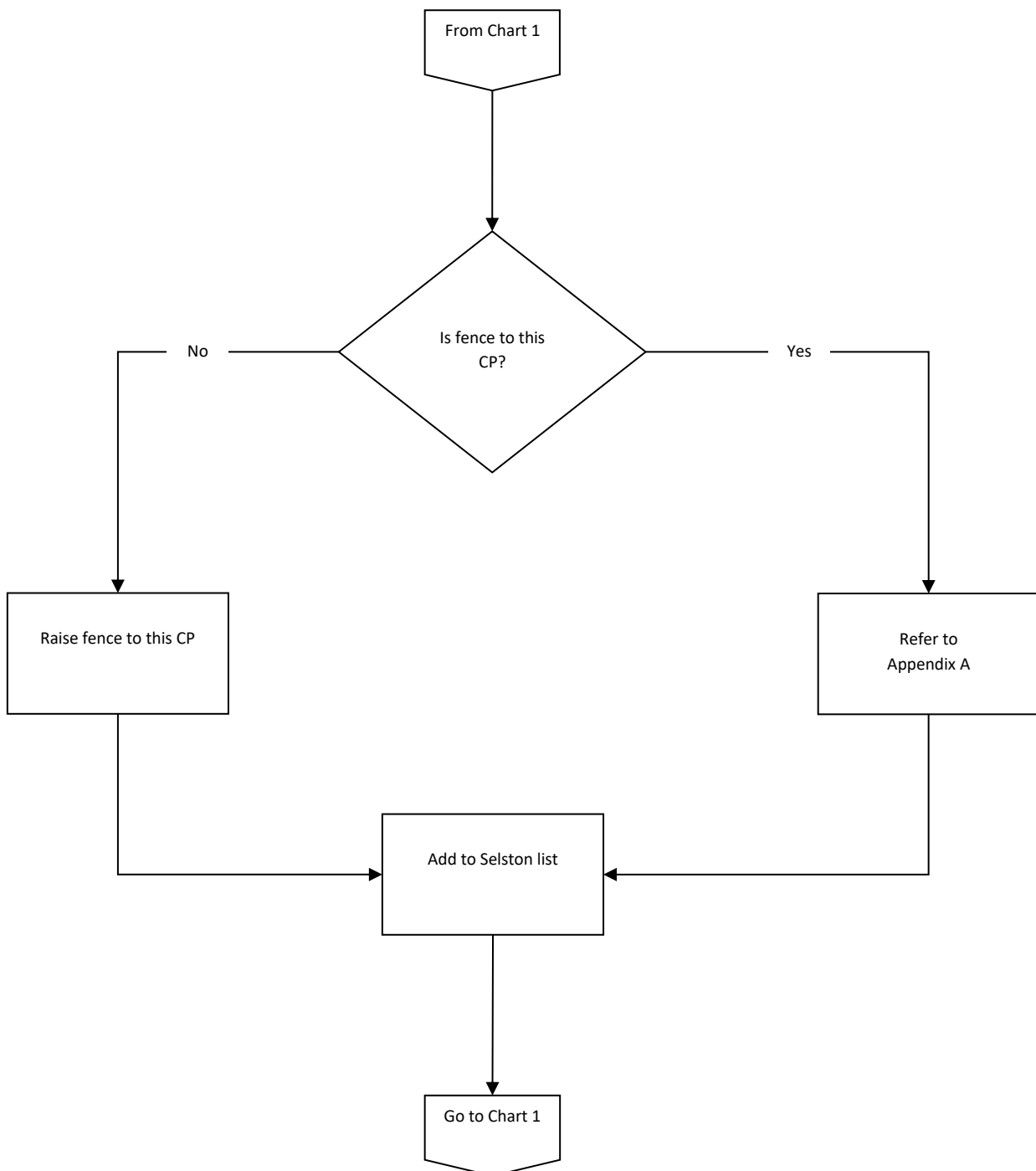


Chart 4 – Break-in Through Door Lock

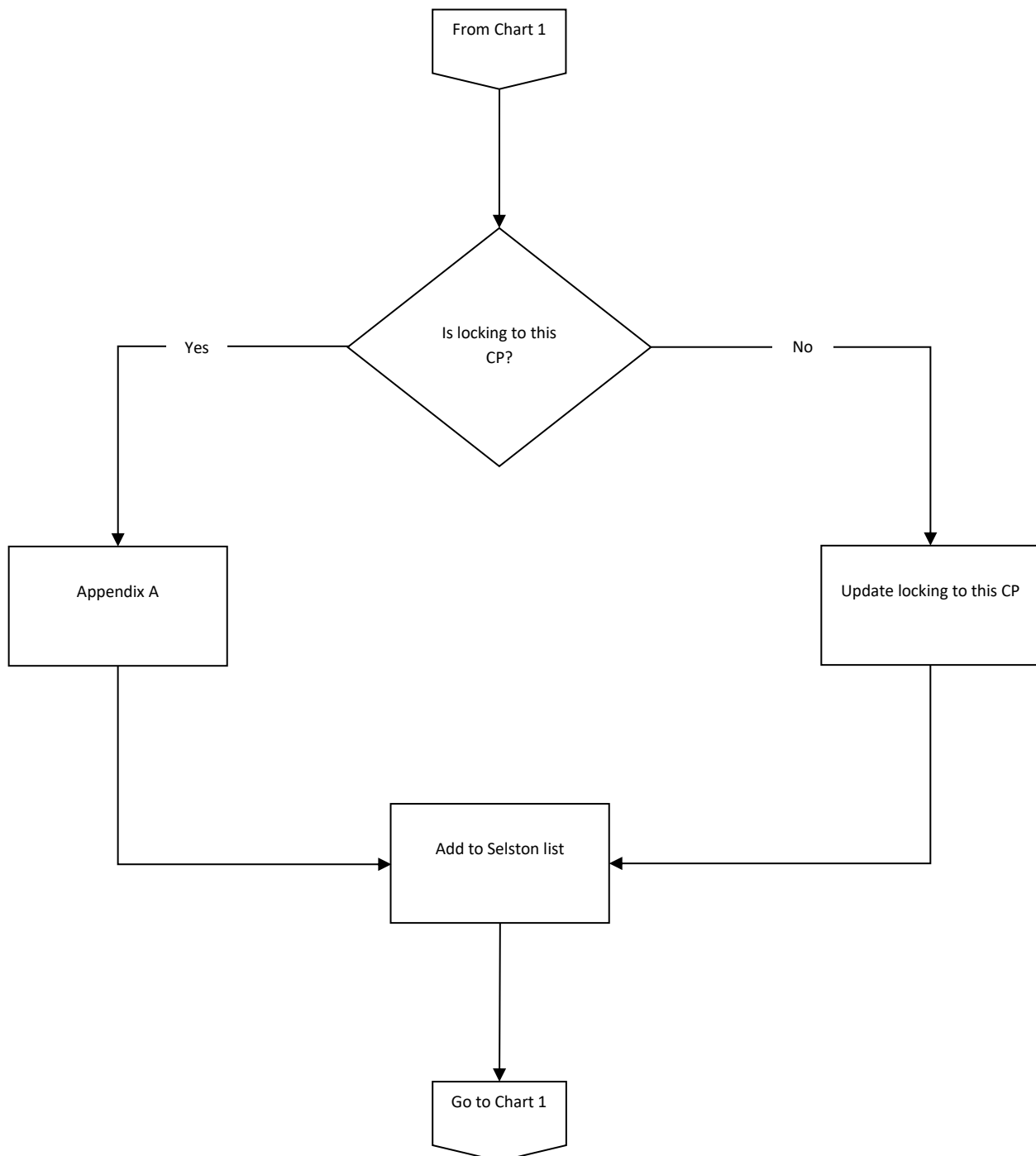


Chart 5 – Break-In Through Door

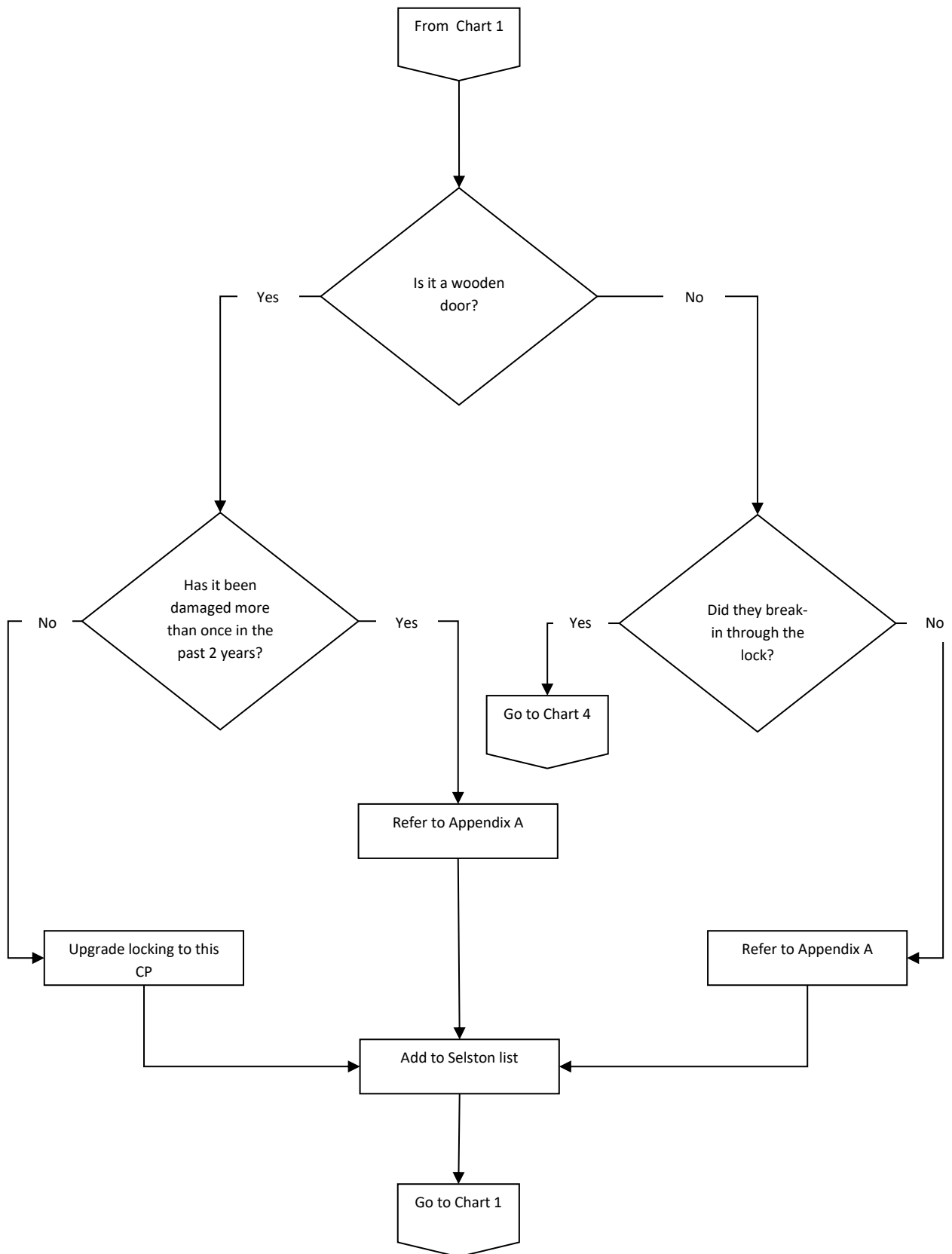
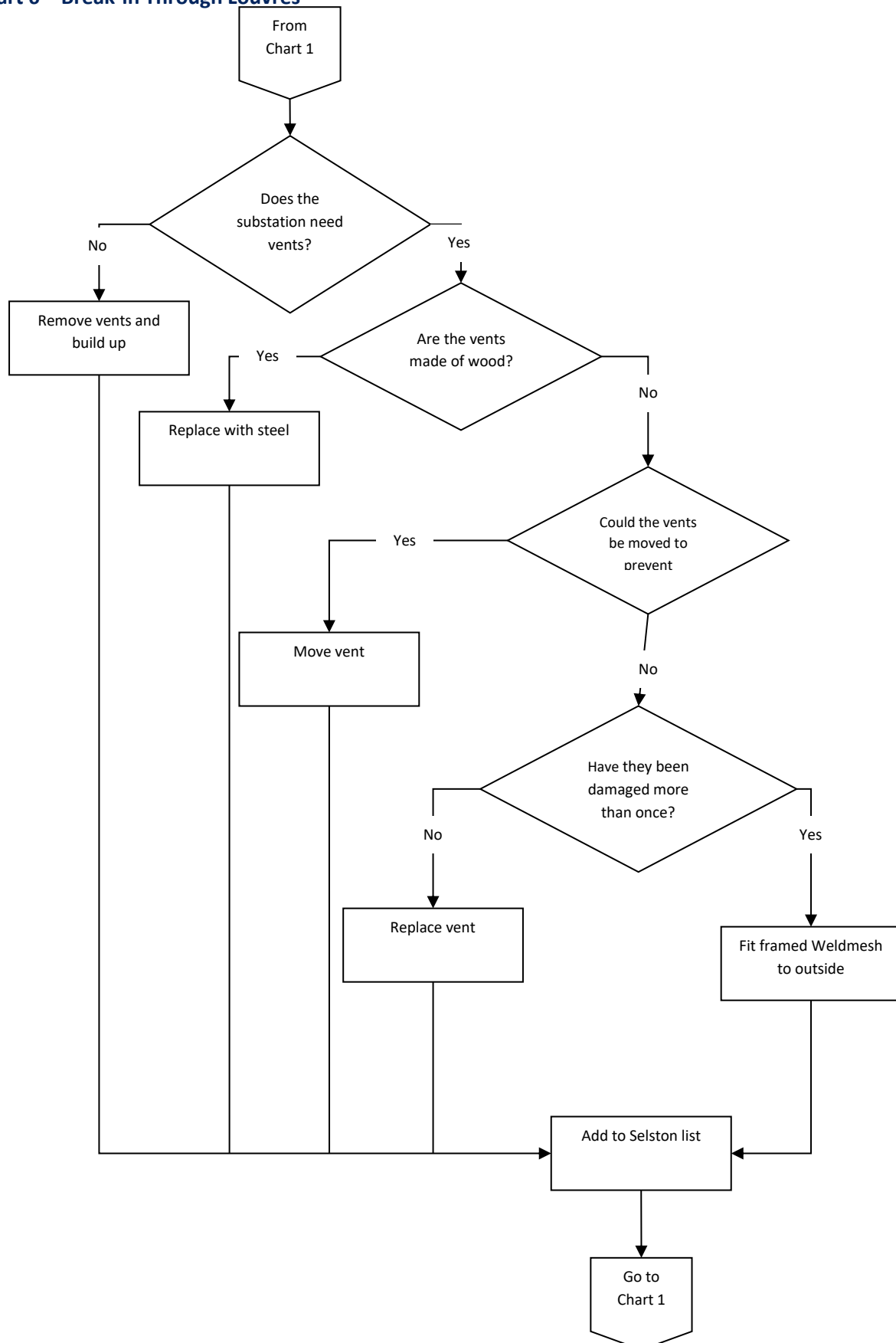
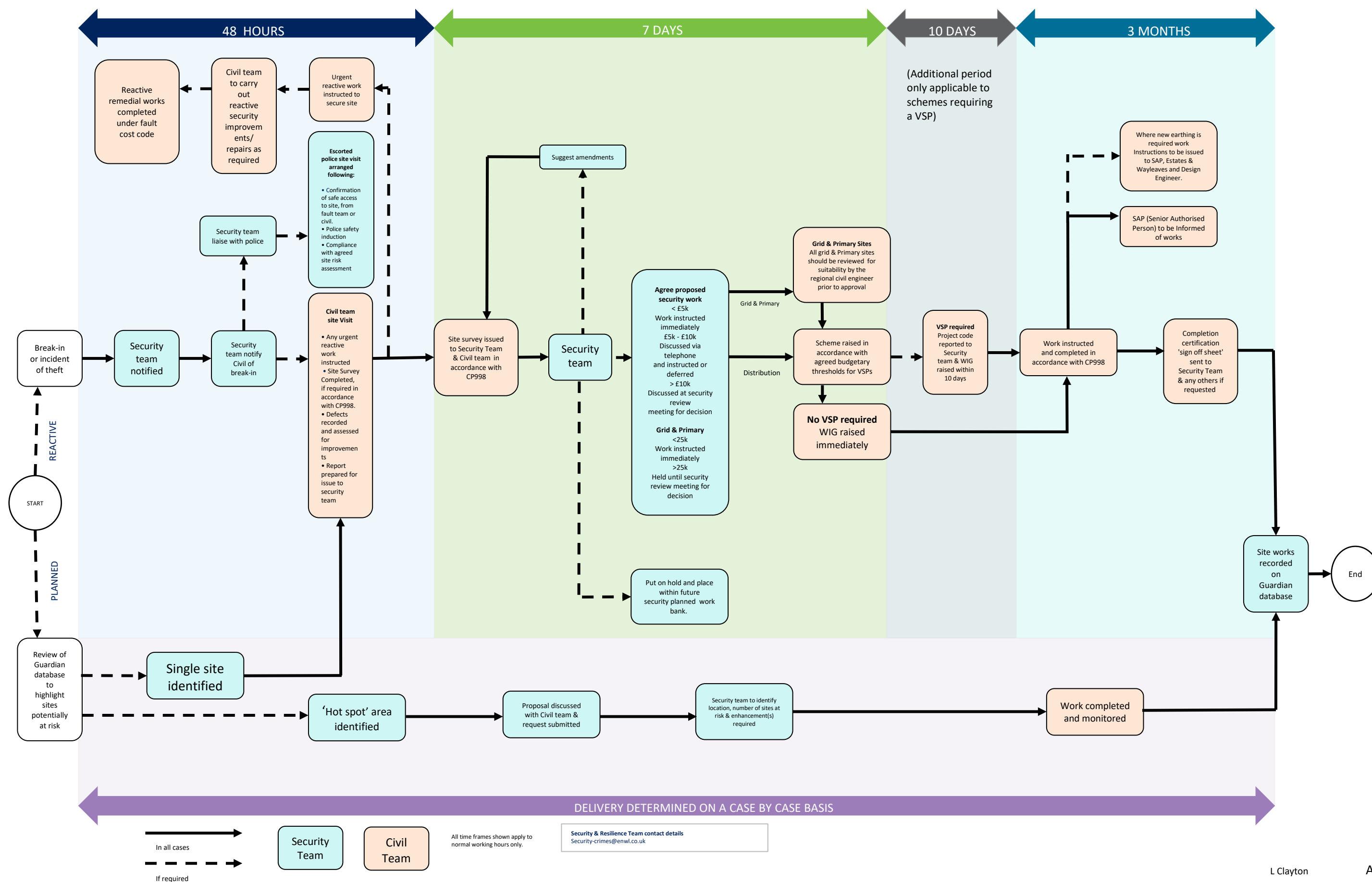


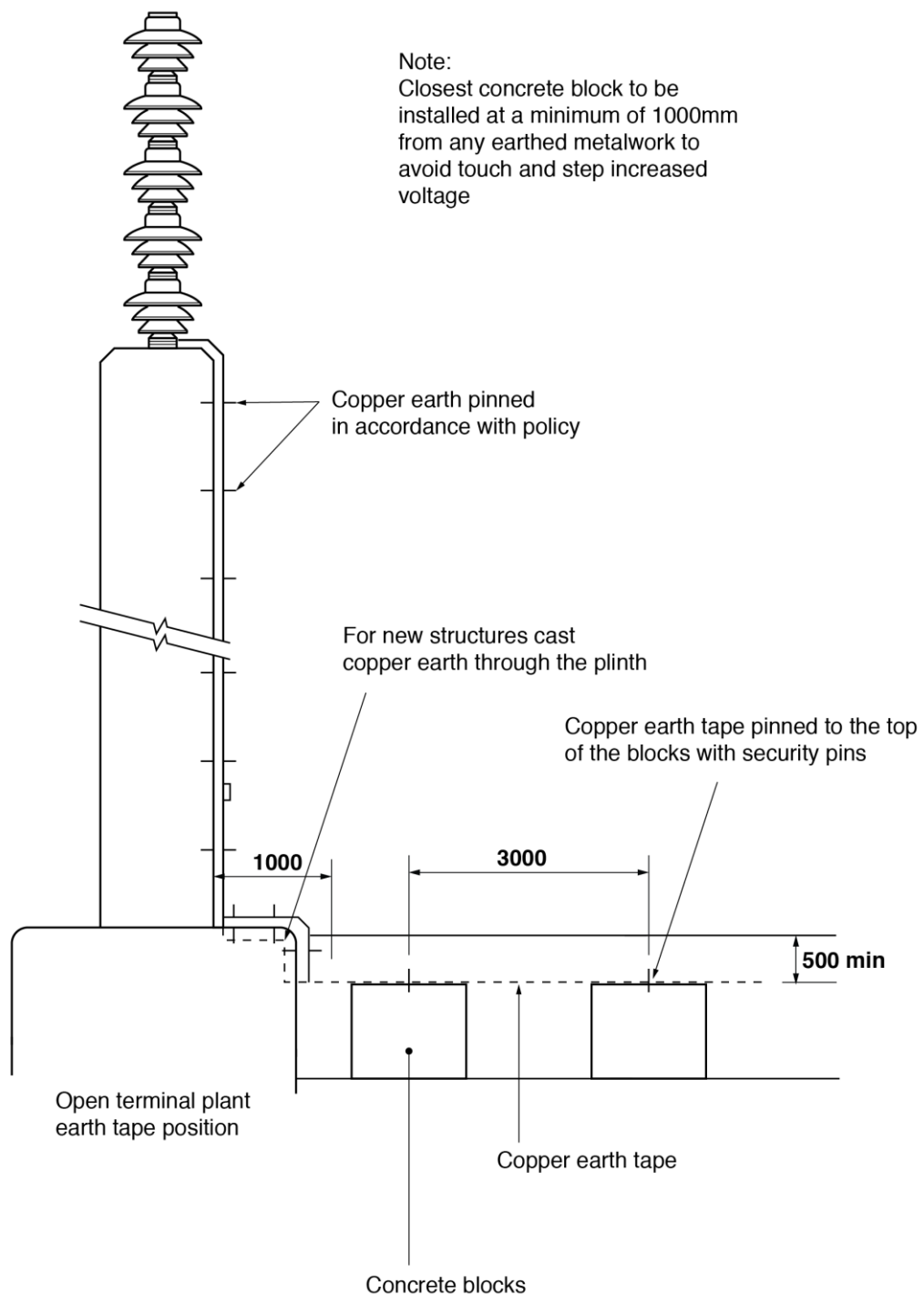
Chart 6 – Break-in Through Louvres



Inspection & Remediation Process Following a Substation Break-in or Identified to be Requiring Enhancement



Appendix D – Plant or Structure Earthing Example Diagrams



PLANT OR STRUCTURE
EARTHING DESIGN –
EXAMPLE A

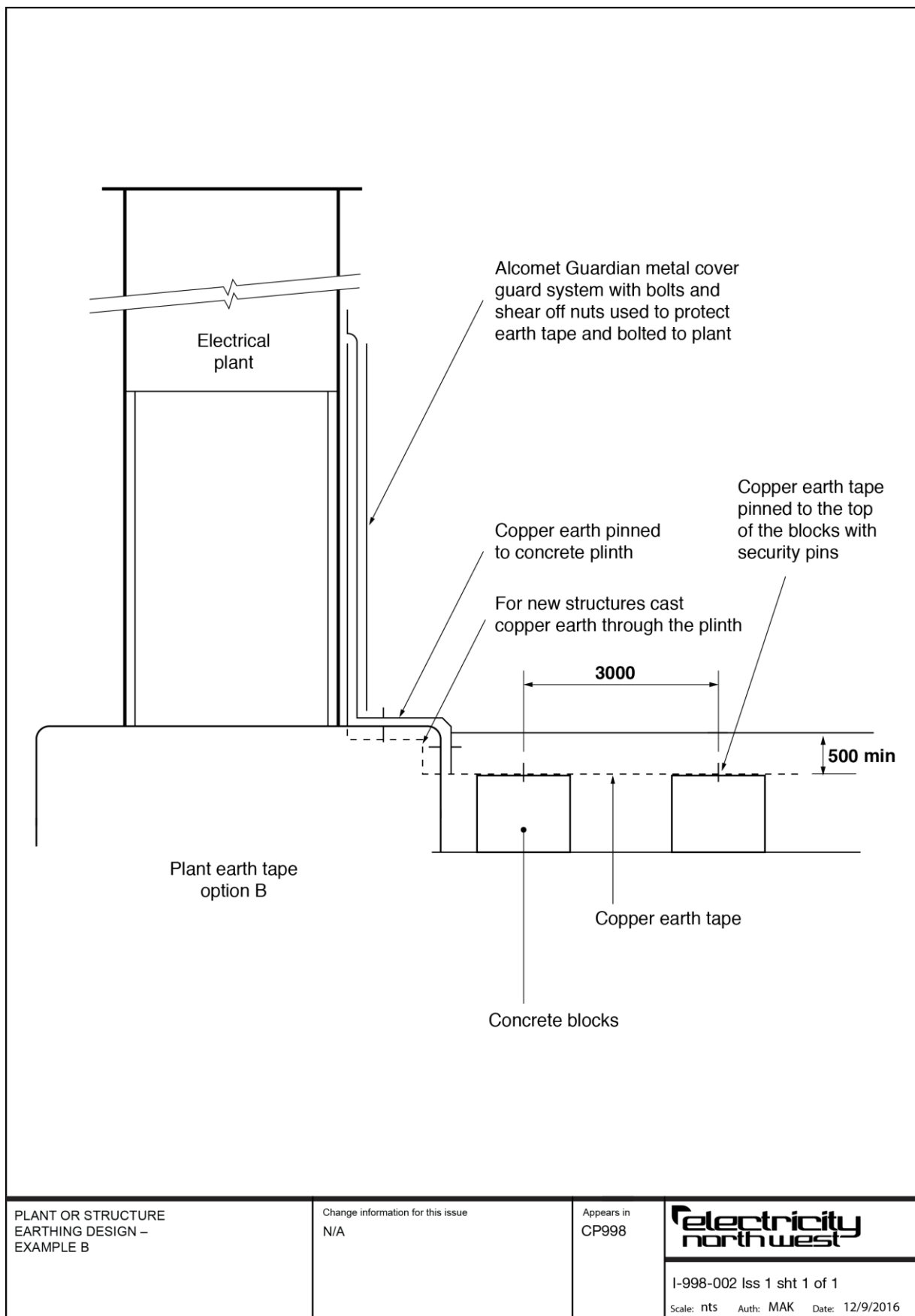
Change information for this issue
N/A

Appears in
CP998

electricity
north west

I-998-001 Iss 1 sht 1 of 1

Scale: nts Auth: MAK Date: 12/9/2016

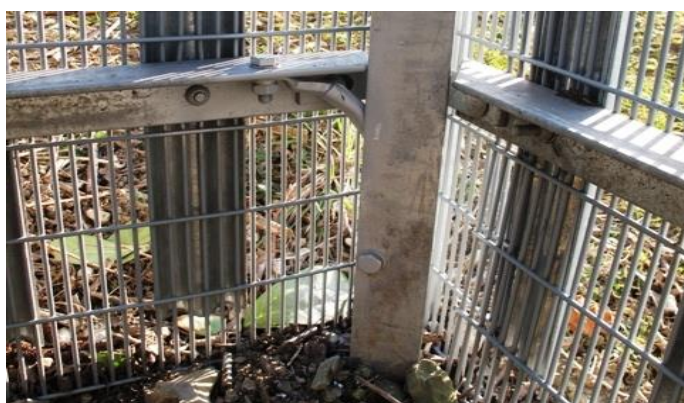


Appendix E – Typical Installation Photographs and Anti-Vandal Covers and Housings

Example Security Upgrade Works and Earthing Installations



COMMENTS: Example of security fencing installation to a distribution substation. 'W' section palisade fencing and 358 Weldmesh lining



COMMENTS: Earth links to palisade fence panel and gate, camouflage painted



COMMENTS: Earth links between electrical apparatus, camouflage painted

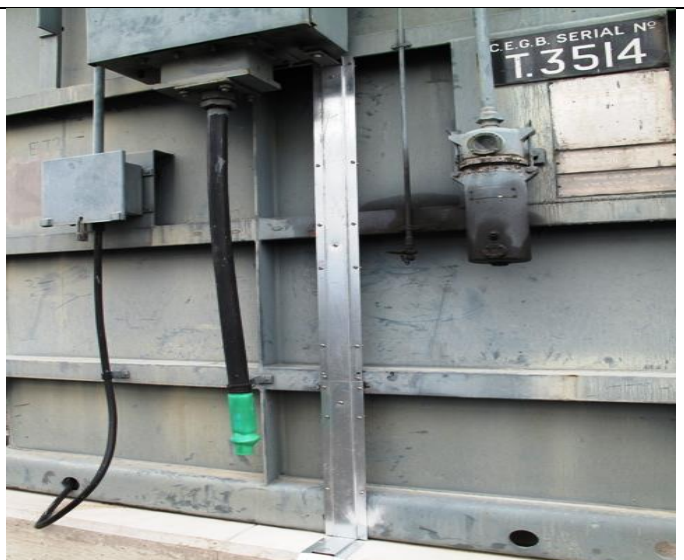
Example Security Upgrade Works and Earthing Installations



COMMENTS: Electrified security fence installation: in-situ concrete kerb; camouflaged angle earth links, security bolted

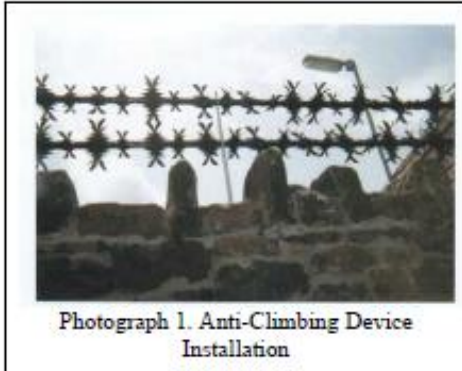


COMMENTS: Earth connection to equipment and palisade fencing, pinned, security bolted, camouflaged and capping. Connections to be as low as possible.

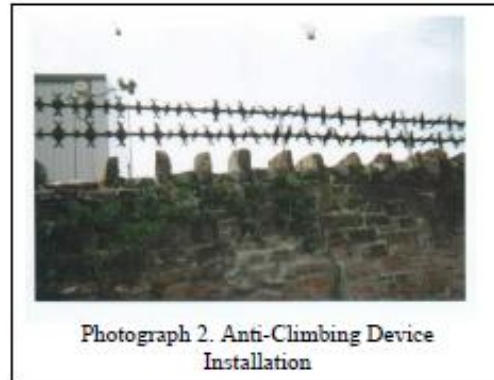


COMMENTS: Earthing connections to transformer with back-to-back security capping protection with security fixings

E1 Further Examples



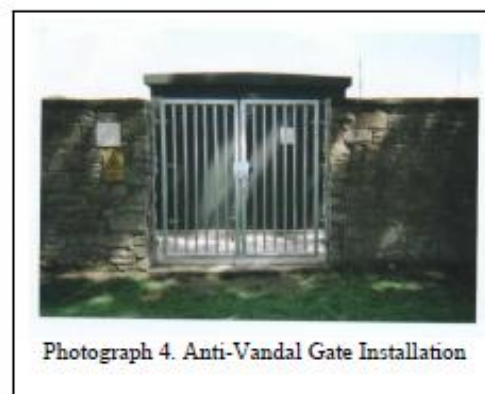
Photograph 1. Anti-Climbing Device Installation



Photograph 2. Anti-Climbing Device Installation



Photograph 3. Anti-Vandal Gate Installation



Photograph 4. Anti-Vandal Gate Installation



Photograph 5. T4GF3 without anti-vandal cover fitted



Photograph 6. T4GF3 with anti-vandal cover fitted

E2 Example Cage



E2.1 Typical Constructions

- Mesh panelled roofing; powder coated; brown.
- Steel box section frame; welded to the existing fence; with Weldmesh fixed top and side.
- Steel frame with Weldmesh pitched roof.
- Pitched steel frame roof with Weldmesh.
- 2400mm high palisade fence fixed internally within existing timber fence, with mesh panelled pitched roof; powder coated brown.

E2.2 Example GRP Housings

Figure 1: Security Rated CRP Housing



Figure 2: Standard GRP Housing



E3 Anti-Vandal Covers and Housings

This part of the appendix details the equipment for which anti-vandal covers are available and the manufacturer from which they can be purchased.

E3.1 Long Controls – Long and Crawford Anti-Vandal Covers

Burtonhead Road, St Helens, WA9 5DS.

Tel: 01744 730 371

Fax: 01744 750 865

Email: enquires@longcontrols.com

E3.2 Schneider Electric – Long and Crawford Anti-Vandal Covers

Europa House, 310 Europa Boulevard, Warrington, WA5 7XR.

Tel: 01925 401000

E3.3 Kingsley Plastics - GRP Housings (Standard and Security Rated)

The Airfield, Winkleigh, Devon, EX19 8DW

Telephone: 01837 83154

Fax: 01837 83529

Email: sales@kingsleyplastics.co.uk

E3.4 Other

Security Considerations (CP356 - Guidance Note: Design of Primary Substations designated for Asset Replacement):

August
2022

Appendix F – Security Enhancement Review Reference Numbers

Ser	Security Enhancement Review (SER)
1	Location Signage
2	Danger Of Death Signage.
6	2.4 metre Palisade fence with Weldmesh, gate and lock shield.
7	Fit Earth Tape Marking Signs to Fencing.
8	Earth tape / cable marking with substation, name, number, postcode.
9	Cap and pin new earthing strips using stainless steel tamperproof bolts.
10	Earth strips to be buried and weighted down with blocks / concrete.
11	Earth connections security bolted; shroud covers on terminations; Camouflage paint to exposed, accessible, Earth Conductors and Cables.
12	Abloy locking suite fitted in line with Locking Policies.
13	Lock shields over existing padlocks to non-SEAP doors and gates.
14	Ensure all climbing aids are identified and removed (as far as possible).
17	Doors, louvres and top panels; High Security Type SEAP Base/CPNI Base or LPS 1175: Issue 7, SR3 equivalent.
19	Weldmesh fitted to in position 2.4 metre Palisade fence around existing plant.
20	Electric Fence with Weldmesh added to Palisade fencing and set in concrete base.
21	Intruder Access Alarm on all access doors to SEAP standards 5200 2/3.
25	Rapid deployment temporary CCTV.
26	Fixed camera CCTV unit with remote monitoring and alarm facilities.
27	Multi-unit CCTV with pan, tilt, zoom option and with remote monitoring and alarm facilities, all linked to electric fence.
28	Additional inner fence with dead zones incorporating monitoring via multi camera CCTV and infra-red detectors, all integrated with electric fence and remotely monitored alarm systems.
29	Apply Camouflage paint to exposed, accessible, Earth Conductors and Cables.
30	Construct Weldmesh and palisade 'cage' around equipment or add a standard GRP Housing.
31	Security Rated GRP Housing - High Security Type SEAP Base/CPNI Base or LPS 1175: Issue 7, SR3 equivalent.
32	Investigate options with local landowner to fit fencing around pole. Fencing and Gates to be 2.4m palisade.
33	Investigate options with local landowner to procure plot for construction of ground-based structure.
34	Provide duplicate intruder detection systems all integrated to Remote monitoring and alarm systems.