

1) Introduction

In line with current ESQCR requirements a risk assessment to the public is required to be made for new electrical installations. This is required at:

- the design stage for new or to be modified installations
- as a part of an inspection routine of existing assets (to be covered by a separate assessment to this document).

2) Method of Assessment

This assessment is to be undertaken prior to design approval and any measures which have been advised need to be included for design approval. Should a design change or a new understanding be gained from site (e.g. from a site visit) following a risk assessment having already been undertaken then the designer/assessor is responsible to reconsider the validity of the prior risk assessment and undertake a new one if required.

1. Ensure there is an understanding of the site, the equipment and the enclosure type being proposed
2. Go to 'Table 1: Overall Substation Risk' and work across the selection from left to right.
3. Reference will also be required to 'Table 2: Location Risk' in order to select the correct final column to use in Table 1. Note that within Table 2 there are often multiple options which will apply to a project so the worst-case option is to be utilised for this assessment *e.g. a school (termed as high risk) in a rural location (termed as low risk) is to have a location risk of High assigned to it.*
4. Once the correct assessment of the Overall Substation Risk is found in Table 1 this will display some mandatory mitigation codes. The details of the mitigation codes are shown in 'Table 3: Risk Mitigation and Codes'
5. Further reference should be made to the site-specific mitigation codes shown in the right column of 'Table 2: Location Risk'. This would often show further mitigation codes to those from the Table 1 findings. These should be enacted on also if valid to help reduce the risk further.
6. The form in Annex A is to be completed with the details of the assessment. The assessor can also raise concerns and suggest additional measures to be undertaken should it be felt necessary.
7. This form is to be signed, circulated to the designers or contractors as necessary to be acted upon, and sent to Eclipse Power as a part of the design assessment.
8. The design submission should include clarification that the mitigations have been enacted. Where a mitigation has not been able to be put in place the designer needs to ensure that the risk to the public has been controlled suitably via another means so that risk is no greater.

Table 1: Overall Substation Risk

Equipment Risk		Enclosure/ Surround Type	Enclosure Security Rating	Equipment/ Enclosure Risk	Overall Substation Risk		
					Low Substation Location Risk	Medium Substation Location Risk	High Substation Location Risk
High Risk	Exposed Live Conductors	No Surround	5	Very High	V High M33 and/or M34	V High M33 and/or M34	V High M33 and/or M34
		Chain Link/ Close Board/ Railing Surround <1.8m	4				
		Palisade/ Brick/ Expamet Surround <1.8m	3				
		Chain Link/ Close Board/ Railing Surround 1.8-2.4m					
		Palisade/ Brick/ Expamet Surround 1.8-2.4m					
		Chain Link/ Close Board/ Railing Surround 2.4m	2	High	High M1	High M1	High M1, M2, M10
		Palisade/ Brick/ Expamet Surround 2.4m					
		GRP Enclosure	1	Medium	Medium M0	Medium M0	High M1, M2
Indoor Substation Enclosure							
Medium Risk	Fully Enclosed Switchgear or Equipment	No Surround	5	Very High	V High. M33 and/or M34	V High. M33 and/or M34	V High. M33 and/or M34
		Chain Link/ Close Board/ Railing Surround <1.8m	4	Medium	Medium M0	Medium M0	High M1, M2
		Palisade/ Brick/ Expamet Surround <1.8m	3				
		Chain Link/ Close Board/ Railing Surround 1.8-2.4m					
		Palisade/ Brick/ Expamet Surround 1.8-2.4m					
		Chain Link/ Close Board/ Railing Surround 2.4m	2				
		Palisade/ Brick/ Expamet Surround 2.4m					
		GRP Enclosure	1	Low	Low M0	Medium M0	High M1 / M2
Indoor Substation Enclosure							
Low Risk	Compact/ Micro/ Pad Mount Substations	No Surround	5	Medium	Medium M0	Medium M0	High M34
		Chain Link/ Close Board/ Railing Surround <1.8m	4	Low	Low M0	Medium M0	High M1 / M2
		Palisade/ Brick/ Expamet Surround <1.8m	3				
		Chain Link/ Close Board/ Railing Surround 1.8-2.4m					
		Palisade/ Brick/ Expamet Surround 1.8-2.4m					
		Chain Link/ Close Board/ Railing Surround 2.4m	2				
		Palisade/ Brick/ Expamet Surround 2.4m					
		GRP Enclosure	1	Low	Low M0	Medium M0	High M1 / M2
Indoor Substation Enclosure							

Table 2: Location Risk

Code	Title	Description	Land Usage Mitigation Codes
High Risk			
S1	Trespass Sites	Sites with signs of trespass	M1, M2, M8, M9, M10, M11
S2	Schools	School areas including playgrounds	M1, M2, M5, M8
S3	Traveller Sites	Permanent site for travelling people	M2, M8, M10
S4	Children's play areas	Both official and unofficial play areas	M1, M2, M8
S5	Caravan sites	Caravan and chalet sites	M1, M2, M8
S6	Derelict/ Unoccupied Areas	Derelict industrial site/ quarry/ land fill/ neglected areas	M1, M2, M8, M10, M11
S7	Vandalism/ fly-tipping	Areas with evidence of vandalism or fly tipping	M1, M2, M8, M9, M10, M11
S8	Public Land (category applies only for pad mount areas)	Areas of public land where the substation is not visible from roadways or paths	M1
Medium Risk			
S9	Roadside	Situated at the side of a road/ driveable track	M1, M35
Low Risk			
SA	Rural	Rural location	M1
SB	Private	Private land	M1
SC	Secure Sites	Within secure buildings or sites	M1
SD	Commercial	Retail and commercial premises/ industrial areas	M1, M2, M5, M11

Table 3: Risk Mitigation and Codes

Possible Risk Mitigation and Codes	
Code	Non-Structural Mitigation
M0	No mitigation
M1	Enhanced Warning Signage
M2	Enhanced Anti-climbing Guard
M5	Public safety visit
M8	Vegetation/ Rubbish clearance
M9	Supplementary Inspections
M10	High Security Locks
M12	Remove Infringement
M14	Temporary Repair
M15	Remove Graffiti
M20	Requires Structural Mitigation
Code	Structural Mitigation
M11	Security Surveillance (e.g. CCTV, Security Observation, Alarms)
M29	Upgrade lighting
M30	Install Palisade Fencing/ Gate/ Visibility Panel
M31	Install Perimeter Fencing/ Gate/ Visibility Panel
M32	Install Expamet Fencing/ Gate/ Visibility Panel
M33	Re-design Switchgear
M34	Re-design Enclosure
M35	Install Crash Barrier
M36	Remove/ Decommission Plant

Annex A: Design Stage Public Risk Assessment

Project Name:	Universal Square	Eclipse Power's Project Number:	N4812
Date of Assessment:	09/10/2024		

Equipment Risk		Enclosure Risk			Substation Location Risk		Overall Substation Risk	Mitigation Measures	
Equipment	Equipment Risk	Enclosure / Surround Type	Enclosure Security Rating	Equipment/ Enclosure Risk	Location Code and Type ¹	Location Risk		Mandatory Mitigation Codes & detail ²	Suggested Additional Mitigation Codes and details ³
From Table 1	From Table 1	From Table 1	From Table 1	From Table 1	Worst case from Table 2	From Table 2	From Table 1	From Tables 1 & 3	Additional items shown in Table 2
Fully Enclosed Switchgear or Equipment	Medium	GRP	1	Low	SD - Commercial	Low	Low	M1, M11	M30, M35
e.g.									
Fully Enclosed Switchgear or Equipment	Medium Risk	GRP Enclosure	1	Low	S2- Schools	High	High	M1-Enhanced Warning Signage M2-Enhanced Anti-climb guard	M5- Public safety visit M8- Vegetation/ Rubbish clearance

¹ = Often there is a chance for multiple selections. In this case use the worst-case option.

² = These mitigations should be undertaken. Where not possible or feasible it is the designer's responsibility to ensure another method is utilised to control the risk to where it would have been should the omitted mitigation been used.

³ = Any suggested additional mitigations from this column are to be considered by the designer and instigated as necessary to increase the site safety. A reason should be provided by the designer within the design submission explaining why any have not been instigated.

Additional Information

A General Explanation of the situation leading to the selection of the type codes used (e.g. why the location code was selected when there may be multiple options):

*The 132kV cables enter the compound buried and turn up directly into the PASS M0 unit without any exposed busbars. On the outgoing site it is top exit exposed busbar to the client cable sealing end.
Eclipse protection panels/ SCADA unit are within a locked room on the lower floor of the main client switchroom. Entry to the room is via locked key box which will only be accessible to UKPN and Eclipse. Meter panels are within a neighbouring room.
The 132kV cables are buried and ducted along the whole route to the UKPN POC compound at the tower. UKPN are responsible for the whole compound, including the 2 x small CSE compounds where our cables terminate into. UKPN's labels and locks only are to be on these compounds and as such this assessment does not cover this POC area as it is UKPN's responsibility.*

Details of how the Mandatory Mitigations are planned to be put in place (if known at this stage):

M1- Site fencing warning signs are to be installed at regular intervals along the compound fencing.

Details of the additional mitigations suggested and how these are going to be instigated/ why not instigated etc (if known at this stage):

None

Any additional Measures/ Mitigations advised beyond those already listed which can include additional items shown in Table 3 or other unlisted measures: (if known at this stage e.g. To effect 'M2-Enhanced Anti-climb guard' it may be suggested to use 'M30- Install Palisade Fencing'):

M10- High Security Locks. Eclipse EHV padlocks will be installed on the compound fencing

M11- Security Surveillance (e.g. CCTV, Security Observation, Alarms). The site is a secure entry data centre with 24/7 guards. There is also CCTV installed and perimeter fence intruder detection alarms. All these are monitored by the site security.



**Design Stage Assessment of the Risk to The
Public from Eclipse Power Networks Ltd
Substations**

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FC

Signature

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Assessor's Signature:	FC	Date:	09/10/2024