Substation Civils Re-Opener
Basic Project Investment Paper
Barking 275kV Substation – Remedial Works to Floor Voids

Author	Steve Barnett	Date Started	14/06/2022
Reference Number	2014-148		

1. Scheme Summary by Regulatory Category

Unique Identifier	Site	Asset	RIIO Financial Category	Output Year	Total Costs (£m)
2014-148	Barking 275kV Substation	Switchhouse Floor	Buildings	2026	[redacted]

2. Driver Summary

Project Overview	Barking 275KV Substation is an indoor site but suffers from voids under the floor surface. This means that the floor level is uneven and cannot be loaded with the heavy machinery necessary to undertake significant works. The building foundations supporting the columns are not moving as these are piled. However, the cast-in-situ concrete infill slabs forming the floor of the building are cracking and moving. Vehicles are unable to be used in the Switch-House because of the danger of collapse. The project intends to inject foamed concrete into the voids under the floor slabs to prevent further movement.
Plant Status Link:	2014-148
Scope Diagram/Photographs	 High level photo showing the congested nature of the site, with the breaker cages barely visible on the ground floor.

3. Project Summary

Overview	Barking 275KV Substation is an indoor site but suffers from having voids under the floor surface. This means that the floor level is uneven and cannot be loaded with the heavy machinery necessary to undertake significant works. The building foundations supporting the columns are not moving as these are piled, however, the cast-in-situ concrete infill slabs forming the floor of the building are cracking and moving. Voids are developing under the concrete floor slabs because of settlement of the sub-strata below. Vehicles are unable to be used in the Switch-House because of the danger of collapse. The voids under the floor slabs around Circuit Breaker S10 were injected with foamed concrete a couple of years ago and this appears to have stopped any movement and allows plant to be used during the maintenance of the CB. A survey is required to determine the extent of settlement under the Switch-House floor. The voids under the other floor slabs should then be injected with foamed concrete to prevent further movement. The Switch-House is approximately 122m long x 43m wide. (The floor area around Circuit Breaker S10 is 17m long x 16m wide).
Programme/Duration	Actual works expected to take around 9 months, but intermittently due to outage requirements, so overall project timescale could extend for 2-3 years.
Outage Requirements & Ops Resource	Multiple outages as all the circuit breakers are ground mounted and caged.
Key Risks and Hazards	Access to each bay requires an outage, which may be difficult to obtain. Some outages will also be required for the initial survey work.
Design to Be Resolved	The entire floor area requires surveying to determine the extent of the issue, and then solutions proposed by specialist contractors.
Development Strategy/Interacting Works	No interacting works identified.
Assets In Ellipse:	BARK2SBLD
Contract Strategy	Competitive tender or multiple quotations.

4. Baseline Cost Estimates

All costs in this section are base costs (pre-out-turned), to 2 decimal places

Base Year	*2018/2019*							
Base Cost totals (£m)	**Plant Status No.**	**Costs incurred to date (£m)**	**Design Costs (£m)**	**Contractor Prelims (£m)**	**Contractor Construction Cost (£m)**	**Contractor Temporary Works (£m)**	**Contingency (£m)**	**Total Project Cost (£m)**
	2014-148	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Notes:	Design costs included for survey work and structural loading calculations.							

5. Declarations

Approval		Name	Signature	Date	Declaration
1	Commercial and Portfolio Manager	Sheena Froggatt		17/08/2022	The Investment Team Manager has determined that this scheme is in line with overall business goals and objectives.
2.	Asset Management Lead	Damien Culley		22/08/22	The Asset Management Lead has determined that this scheme is in line with overall business goals and objectives.