

Technical Note

09/12/2025

1. Introduction

1.1 Scope

- 1.1.1 Arthian Ltd (Arthian) has been commissioned by Assystem Energy and Infrastructure Ltd (Assystem) on behalf of Equans Services Ltd (Equans) to undertake drainage assessments in support of discharging Requirement 10: (Surface Water Drainage) of the North London Reinforcement Project Development Consent Order (DCO Ref: EN020009). The stage of works is defined in Arthian proposal Ref: 318957/JD/CT/JR/270825/6.0 and covers Stage 5 (ZBC Line: Waltham Cross to Tottenham).
- 1.1.2 This appendix relates to solely to ZBC43 within the ZBC line corridor and should be read alongside the overarching Drainage Technical Covering Report.

1.2 Project Overview

- 1.2.1 The works assessed within this Appendix comprise the uprating of the existing 275 kV overhead line to 400 kV at tower ZB43, including minor ground works required to facilitate safe access. Figure 1 illustrates the location and extent of the assessment area. Please refer to Annex A for work plans showing the site.

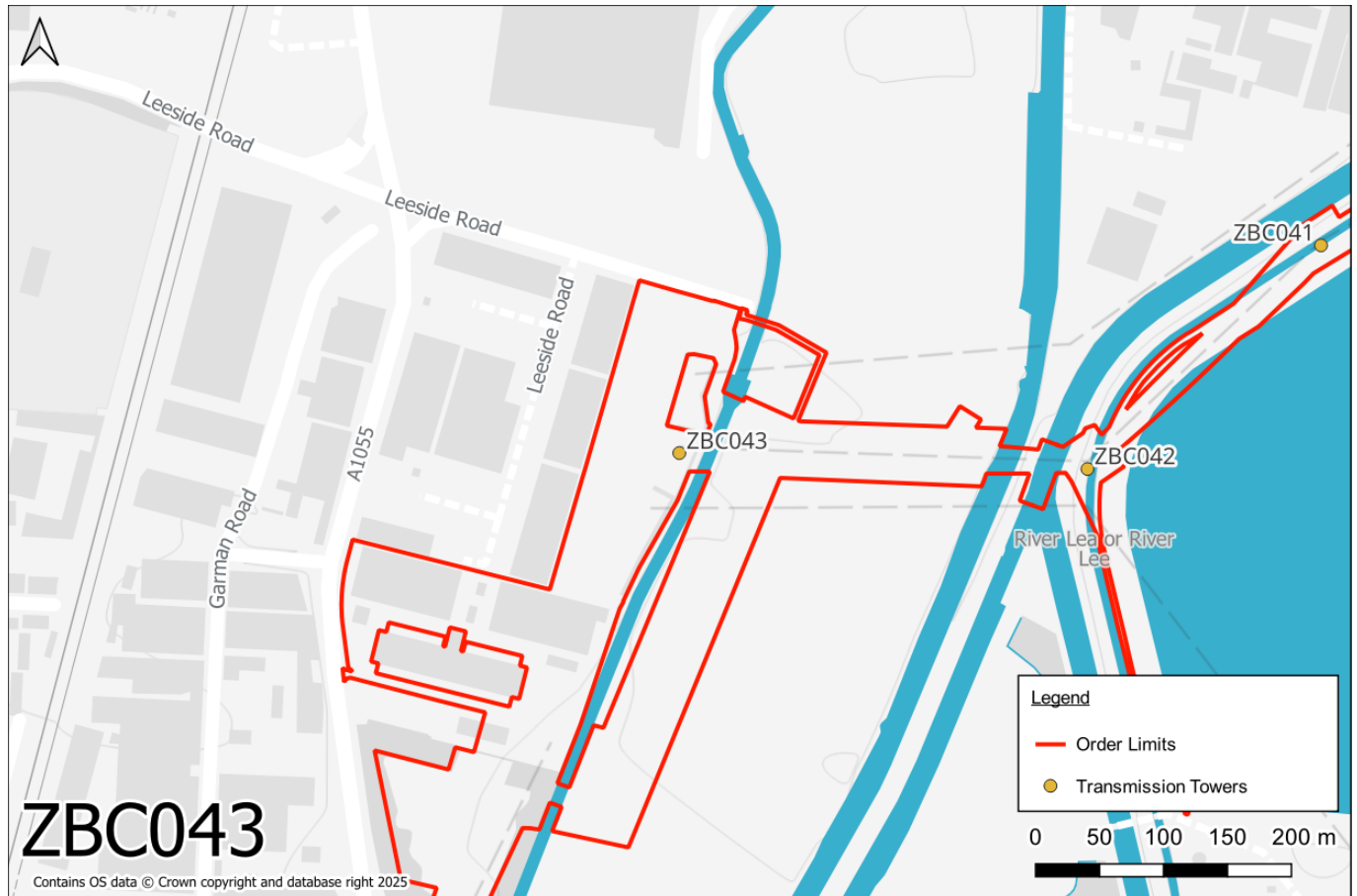


Figure 1: Site Location

1.2.2 Upon completion, the site will be reinstated to its pre-construction condition. ZBC43 lies within a yard of an industrial estate, and temporary working areas will be restored once construction equipment and materials are removed.

1.2.3 Please refer to Annex A for work plans showing the site.

1.3 Legislative Context

1.3.1 Legislative and policy requirements are outlined in the Drainage Technical Covering Report, including the 2014 DCO (EN020009), Requirement 10 (Surface Water Drainage), and relevant Environment Agency and LLFA guidance.

1.4 Aims and Objectives

1.4.1 The objectives of this Appendix are to:

- Identify appropriate surface water management arrangements for ZBC43 during construction and operation stages.
- Demonstrate compliance with the drainage hierarchy and DCO Requirement 10.
- Reference relevant design standards including CIRIA C753 (SuDS Manual) and EA/LLFA policy requirements. Proposed Assessment Methodology.

1.4.2 The assessment methodology comprised desktop review of publicly available datasets (Defra MAGIC, EA Flood Map for Planning, BGS Geology, Soilscapes), review of Stage 5 works plans and EA/LLFA

records, and application of the drainage hierarchy in accordance with NPPF and CIRIA C753. ZBC43 forms part of Stage 5f of the North London Reinforcement Project.

2. Site Description

2.1 Site Details

- 2.1.1 Baseline information for ZBC43 was compiled from publicly available datasets and verified against the Stage 5 Works Plans (Ref 2.4). Sources consulted are referenced throughout this Appendix.

Table 1: Current Site Setting

Site Name	ZBC43
Nature of Site	Transmission Tower
Local Planning Authority	London Borough of Haringey
Topography	10 m AOD
National Grid Reference	535415,191403
6-Figure Grid Reference	TQ 35408 91413
Address	Leeside Road, London Borough of Haringey, Greater London, N17 0SG
Current Site Use	Transmission Tower
Access	Access from the yard via Leeside Road

2.2 Hydrology

- 2.2.1 The nearest Main River is the Pymme's Brook which is located 20 m east of the site and flows southwards towards to River Lea.
- 2.2.2 Other watercourses in the area include the River Lea Navigation Canal located approximately 245 m east of the site, and Bandbury Reservoir approximately 365 m to the east.
- 2.2.3 Ordinary Watercourses fall under the jurisdiction of the LLFA whilst Main Rivers fall within the jurisdiction of the EA.

2.3 Geology

- 2.3.1 Reference to the British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the site is underlain by superficial deposits of Alluvium - Clay, silt, sand and gravel. The superficial deposits are underlain by bedrock deposits of London Clay Formation - Clay, silt and sand.
- 2.3.2 The geological mapping is available at a scale of 1:50,000 and as such may not be accurate on a site-specific basis.



2.4 Hydrogeology

- 2.4.1 According to the EA's Aquifer Designation data, obtained from MAGIC Map's online mapping [accessed 02.12.25], the underlying superficial deposits is described as a Secondary A Aquifer.
- 2.4.2 The EA's 'Source Protection Zones' data, obtained from MAGIC Map's online mapping [accessed 02.12.25] indicates that the site is / is not located within Groundwater Source Protection Zone II (Outer Protection Zone).

2.5 Local Drainage

- 2.5.1 No foul or surface water sewers are present within the working area.

3. Flood Risk Summary

- 3.1.1 This section provides a high-level summary of flood-risk sources for ZBC43, based on Environment Agency flood-mapping, LLFA datasets and Ordnance Survey topography. It supports Requirement 10 by confirming that the proposed works do not alter existing flood-risk conditions.

Table 2: Flood Risk Screening Summary

Source of Flood Risk	Screening Comments	Risk Rating
Tidal	The site lies at approximately 10 m AOD, well above tidal influence. There is no tidal flood pathway and the risk is negligible.	Negligible
Fluvial	The tower lies within Flood Zones 2 associated with the Pymme's Brook as shown on EA mapping, indicating potential exposure to fluvial flooding during extreme events. The proposed works are temporary, confined to existing operational areas, and will not alter ground levels or impede flow paths. Fluvial risk will be managed through the temporary nature of the activity and the application of CEMP-defined flood-response and plant-management measures. Residual risk is moderate but acceptable for the purpose of Requirement 10.	Moderate to High
Surface Water	The site is located within an area at Low risk of surface water flooding.	Low
Groundwater	Soilscapes data identify loamy and clayey floodplain soils with naturally high groundwater. Shallow groundwater may be present seasonally but poses no constraint given the short-term temporary nature of the works.	Low
Sewer	No public sewers are located within the working area, therefore, the likelihood of sewer flooding at this location is considered Low.	Low
Artificial Sources (Canal/Reservoir)	The River Lea Navigation Canal located approximately 245 m, is a controlled waterway hydraulically connected to the River Lea. Flooding from the canal is considered a residual risk managed through existing lock and weir systems.	Negligible



	The Environment Agency's <i>Flood Risk from Reservoirs</i> mapping identifies the site as within an area that could be affected in the unlikely event of a reservoir breach. The EA confirms that reservoir flooding is extremely unlikely, as all large reservoirs are inspected and maintained under the Reservoirs Act 1975 by qualified panel engineers.	
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- 3.1.2 Overall, flood risk screening confirms that Tower ZBC43 is located within an area of fluvial flood risk but that the short duration, limited footprint, and reinstatement approach ensures there will be no increase in flood risk onsite or elsewhere, in accordance with Requirement 10 of the DCO.

4. Surface Water Drainage Assessment

4.1 Description of Development Proposals

- 4.1.1 The works at Tower ZBC43 form part of the uprating of the existing 275 kV overhead line to 400 kV between Towers ZBC02 and ZBC43. At ZBC43 the activities comprise the placement of temporary access surfacing for construction plant. No permanent structures or alterations to existing ground levels are proposed and the land will be reinstated to its original condition when works are complete.
- 4.1.2 The tower stands in a yard approximately 20 metres west of the Main River, Pymme's Brook, within Flood Zone 2. The surface comprises grassed alluvial soils of clay, silt, and sand over the London Clay Formation. These deposits exhibit low permeability but provide sufficient capacity for shallow infiltration and slow lateral movement of rainfall to adjacent ground. All works will remain within the existing National Grid operational corridor and will not encroach on the Pymme's Brook channel or associated drainage features.
- 4.1.3 Because the works are temporary, small in area and do not introduce new impermeable surfaces, the existing drainage regime will be maintained. Rainfall will continue to infiltrate and drain naturally across the surface with no change to local runoff pathways or volumes. Any short-term runoff during heavy rainfall will be managed using the passive construction controls defined in the Construction Environmental Management Plan (CEMP, Requirement 13).
- 4.1.4 This confirms that no permanent drainage infrastructure is required and that the works will not increase flood risk or surface-water discharge to the Pymme's Brook or its tributaries. The strategy therefore satisfies Requirement 10 (Surface Water Drainage) of the North London Reinforcement Project DCO (EN020009).

4.2 Drainage Hierarchy

- 4.2.1 The drainage approach has been prepared in accordance with Paragraph 080 of the NPPG (Flood Risk and Coastal Change), the National Standards for Sustainable Drainage Systems (SuDS, updated 30 July 2025) and the SuDS Manual (CIRIA C753). These documents confirm that infiltration is the preferred method of managing rainfall, followed by discharge to a watercourse, then to a sewer only where other options are not feasible.
- 4.2.2 At Tower ZBC43 infiltration remains the most appropriate solution. The site's gently graded surface, vegetated cover and low-intensity works allow rainfall to soak to ground without the need for constructed systems or surface-water discharge. This approach maintains the pre-existing greenfield drainage regime and meets the principles of the 2025 National SuDS Standards and the objectives of Requirement 10.



4.3 Sustainable Drainage Systems

4.3.1 Surface-water and pollution control during construction will be delivered through low-impact, temporary measures defined in the CEMP. These controls are proportionate to the sensitivity of the site (Flood Zone 2 and SPZ 2) and will be installed only where necessary. Typical measures include:

- shallow grading or temporary grips to direct clean runoff away from work areas
- use of gravel or crushed stone working surfaces to encourage infiltration and reduce soil compaction
- straw-bale barriers or silt-fencing to intercept and filter runoff before it reaches the River Lea corridor
- drip trays, spill kits and designated refuelling zones for plant and vehicles
- temporary settlement through vegetated ground or straw-bale filtration if clean water must be discharged

4.3.2 All controls will be maintained for the duration of construction and removed on reinstatement. The measures conform to the 2025 National SuDS Standards by managing runoff at source, mimicking natural drainage, and preventing pollution through good site practice rather than engineered systems.

4.4 Preferred Drainage Scheme

4.4.1 At Tower ZBC43, natural infiltration and diffuse overland flow will remain the principal drainage pathways. During construction, this behaviour will be maintained by using gravel working platforms, shallow grips and straw-bale check barriers positioned to intercept and dissipate runoff before it enters adjacent ditches or the Pymme's Brook. All works will occur on existing ground and within the operational boundary. Controls will be removed when reinstatement is complete.

4.4.2 This localised approach ensures runoff rate and volume remain consistent with existing conditions and prevents creation of new flow routes. It also provides protection for surface water and groundwater within Source Protection Zone 2 through compliance with CEMP pollution-prevention measures. The approach accords with the National Standards for Sustainable Drainage Systems (2025), CIRIA C753 and Environment Agency guidance GPP5 Works and maintenance in or near water (2023), and fully satisfies Requirement 10 of the DCO.

4.4.3 A Flood Risk Activity Permit (FRAP) is not required for the works at Tower ZBC15. All activities will occur outside the Main River channel and floodplain extents of the Pymme's Brook, and no new drainage outfalls, diversions or in-channel works are proposed. The temporary measures described are limited to surface-water management within the existing operational corridor and do not alter the function or capacity of the Main River.

4.5 Surface Water Treatment and Maintenance

4.5.1 Pollution-prevention and sediment-control measures will follow the CEMP and contractor environmental method statements. These include secure fuel and oil storage, drip trays beneath stationary plant, silt-control barriers around excavations and regular inspection of runoff controls. All temporary features will be maintained by the contractor throughout the works and removed upon completion. Reinstatement will restore the site to its original condition with no residual drainage infrastructure or long-term maintenance obligations.



4.6 Foul Water Discharge

- 4.6.1 No welfare facilities or foul-water discharges are proposed at ZBC43. Any welfare needs will be managed off site in accordance with contractor procedures. Foul drainage is therefore not relevant to this assessment.

5. Conclusions and Recommendations

5.1 Conclusions

- 5.1.1 The drainage assessment for Tower ZBC43 confirms that the proposed works will not alter existing surface water pathways or increase flood risk. The Tower lies on a yard within an industrial state within Flood Zone 2, approximately 20 metres west of the Pymme's Brook. The site's alluvial soils over London Clay provide slow infiltration and shallow natural runoff, which will continue unchanged during and after construction.
- 5.1.2 No new impermeable surfaces or drainage infrastructure are required. Temporary passive measures, such as gravel working platforms, shallow grips and straw-bale check barriers, may be installed during the works to manage local runoff and prevent sediment or pollutants reaching adjacent watercourses. These will be implemented and maintained under the Construction Environmental Management Plan (Requirement 13) and removed once the site is reinstated.
- 5.1.3 The approach complies with Paragraph 080 of the NPPG (Flood Risk and Coastal Change), the National Standards for Sustainable Drainage Systems (SuDS, updated 30 July 2025), and CIRIA C753 The SuDS Manual. By maintaining infiltration at source, preventing pollution through good practice, and avoiding any increase in runoff rate or volume, the works fully satisfy Requirement 10 of the North London Reinforcement Project DCO (EN020009).

5.2 Recommendations

- Continue to implement construction-stage surface-water and pollution-prevention controls through the CEMP.
- Inspect all temporary measures regularly and remove them upon completion.
- Reinstatement the ground to existing levels and vegetation cover to restore natural infiltration.
- Monitor weather conditions and avoid ground disturbance during periods of heavy rainfall.
- Retain records of CEMP implementation and reinstatement inspections for audit against Requirement 10 compliance.

Annex A: Work Plans



