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Norwich to Tilbury

Volume 8: Examination Documents

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Final Issue D

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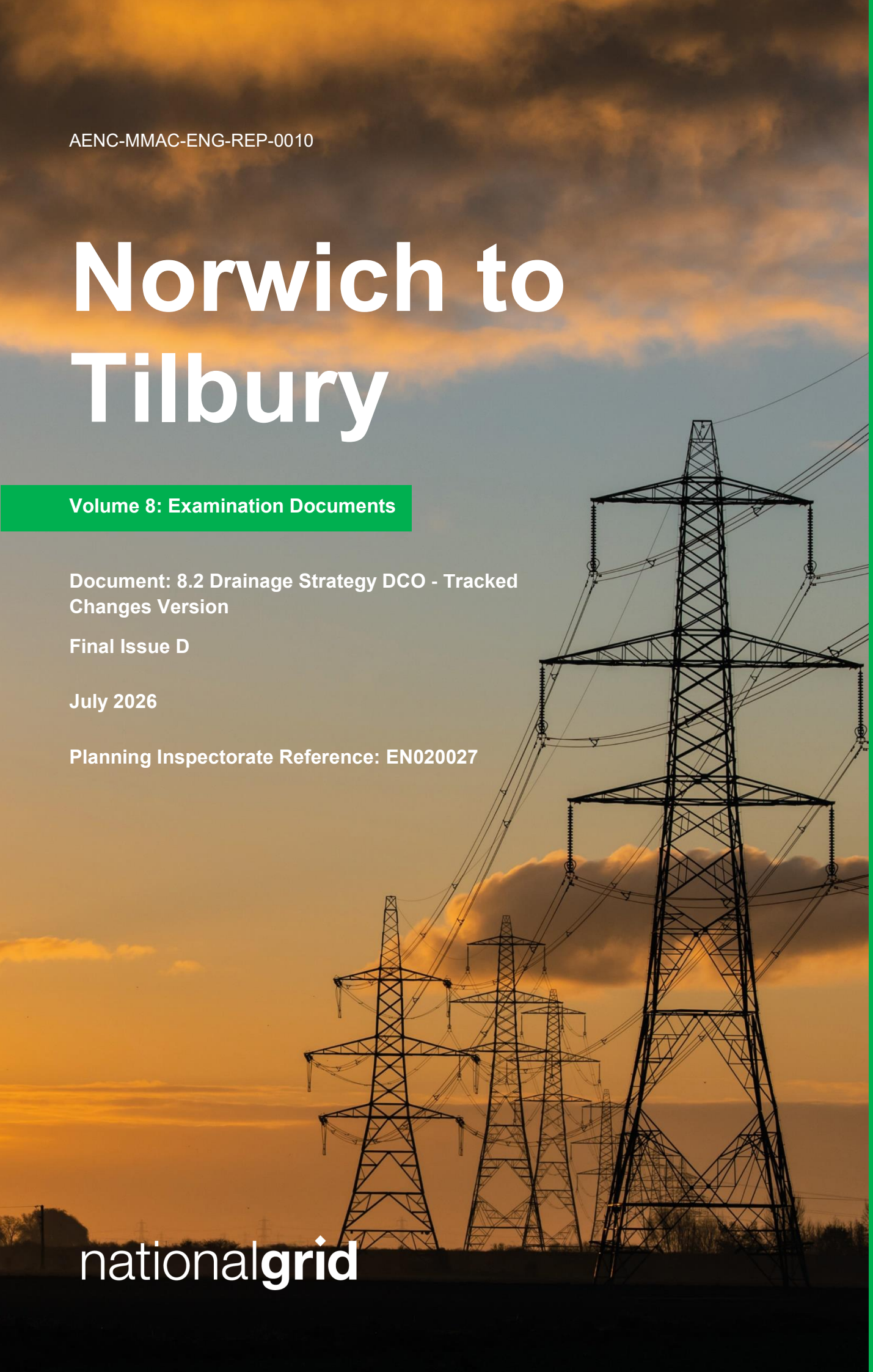

nationalgrid

Revision History

Version	Date	Submitted at
A	26 February 2026	Deadline 1
B	12 May 2026	Deadline 4
C	07 July 2026	Deadline 6
D	21 July 2026	Deadline 7

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Executive Summary

Purpose of This Report

National Grid has developed plans for Norwich to Tilbury (the 'Project'). The Project would support the UK's net zero target through the connection of new low carbon energy generation in East Anglia by reinforcing the transmission network. The Project comprises reinforcement of the transmission network between the existing Norwich Main Substation in Norfolk and Tilbury Substation in Essex, via Bramford Substation, the new East Anglia Connection Node (EACN) Substation and the new Tilbury North Substation.

The Project includes the construction of approximately 180 km of new 400 kV electricity transmission infrastructure, including approximately 159 km of new overhead line and approximately 21 km of underground cabling, along with associated infrastructure. All elements of the Project require the implementation of temporary, and in some cases permanent, drainage infrastructure.

This Drainage Strategy has been produced to support the application for development consent, alongside the Environmental Statement, specifically **6.12 Environmental Statement Chapter 12 - Hydrology Land Drainage and Flood Risk [~~APP-221~~Revision B], 7.9 Flood Risk Assessment [APP-331]** and **8.10.2 Flood Risk Assessment Technical Note [REP2-031]**. The Drainage Strategy documents the assessment and design undertaken to understand the impact the Project may have on the existing surface water flow paths and the existing field drainage networks within the vicinity of the Project and provides a high-level drainage strategy to mitigate these impacts.

Commitment GG22, from **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**, states that the '*Main Works Contractor(s) will prepare a Surface Water Management Plan to inform discharge of the DCO Requirement'***.** The Main Works Contractor shall further develop this high-level drainage strategy. Commitment GG22, also states *'construction drainage measures will be developed liaising with the Lead Local Flood Authorities (LLFAs) and statutory undertakers including Anglian Water (where relevant), with ongoing dialogue during implementation of the measures'.*

1. Introduction

1.1 Overview

1.1.1 National Grid Electricity Transmission plc ('National Grid') owns and maintains the national high voltage electricity transmission network throughout England and Wales.

1.1.2 National Grid has developed plans for Norwich to Tilbury (the 'Project'). The Project would support the UK's net zero target through the connection of new low carbon energy generation in East Anglia and by reinforcing the transmission network.

1.1.3 The Project comprises reinforcement of the transmission network between the existing Norwich Main Substation in Norfolk and Tilbury Substation in Essex, via Bramford Substation, the new East Anglia Connection Node (EACN) Substation and the new Tilbury North Substation.

1.1.4 A summary of the Project is provided in Section 2.1 of this document, with full details provided in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]** and shown on **6.4.F1 Environmental Statement Figure 4.1 - Proposed Project Design [~~APP-130~~REP4-109]** and **6.4.F2 Environmental Statement Figure 4.2 - Proposed Project Design - Permanent Features [REP4-110]**.

1.2 Purpose of this Report

1.2.1 This Drainage Strategy details relevant legislation, policy and guidance, provides an overview of the Project, includes a summary of feedback from the Lead Local Flood Authorities (LLFAs) and discusses the predicted impact of the Project on the existing surface water flow paths and the existing field drainage networks. This strategy provides a narrative of the drainage design that informed the application for development consent. Further engagement with the LLFAs, Environment Agency, the Water Management Alliance (WMA) and relevant statutory undertakers is required throughout the application for development consent and detailed design.

1.2.2 This Drainage Strategy also sets out a high-level strategy to mitigate the impacts on the existing surface water flow paths and the existing field drainage networks. The mitigation measures themselves are secured through commitments within the **7.2 Outline Code of Construction Practice [Revision ~~F~~G]** and have been given a code, e.g. GG01, to allow the measures to be easily cross referenced.

1.2.3 This strategy provides the outline proposals for drainage required for the construction and operation of the Project and demonstrates compliance with the following:

- National standards for sustainable drainage systems (SuDS) first published in June 2025 (Department of Environment, Food and Rural Affairs (Defra), 2025b)
- Overarching National Policy Statement for Energy (EN-1) published January 2026 (Department for Energy Security and Net Zero, 2026)
- LLFA guidance, refer to Table 2.3 for further information.

1.2.4 The **7.9 Flood Risk Assessment [APP-331]** has been produced to assess the impact of the Project on flood risk from surface water, fluvial, coastal and groundwater sources, or any changes to flood risk in the surrounding areas affected by the Project. It should be noted that flood risk from sewers, reservoirs or other man-made sources was scoped out of the **7.9 Flood Risk Assessment [APP-331]** in agreement with the Planning Inspectorate. Whilst this drainage strategy does discuss sewers as civil infrastructure, it does not comment on the flood risk to/from sewers as a result of the Project.

1.3 Report Assumptions

1.3.1 The effects of various elements of the Project on the existing surface water flow paths and field drainage networks differ. This is attributable to the complexity of permanent infrastructure and the construction works associated with the underground cables relative to overhead lines. Consequently, it has been essential to differentiate between these specific elements of the Project.

1.3.2 Section 5.4 of this strategy outlines the proposed management of extreme rainfall events. This is focused predominantly on the substation elements and the construction works associated with the underground cable, as these are considered to require the most drainage infrastructure for the Project. The overhead line in comparison requires no permanent and less construction drainage infrastructure. Extreme rainfall events can be managed with similar mitigation measures across the Project.

2. Project Description

2.1 Project Description

2.1.1 The Project is a proposal by National Grid to upgrade the electricity transmission system in East Anglia between Norwich and Tilbury, comprising:

- A new 400 kilovolt (kV) electricity transmission connection of approximately 180 km overall length from Norwich Main Substation to Tilbury Substation via Bramford Substation, a new EACN Substation and a new Tilbury North Substation, including:
  - Approximately 159 km of new overhead line supported on approximately 509 pylons, either standard steel lattice pylons (approximately 50 m in height) or low height steel lattice pylons (approximately 40 m in height) and some of which would be gantries (typically up to 15 m in height) within proposed Cable Sealing End (CSE) compounds or existing or proposed substations
  - Approximately 21 km of 400 kV underground cabling, some of which would be located through the Dedham Vale National Landscape (an Area of Outstanding Natural Beauty (AONB))[1]
- Up to seven new CSE compounds (with permanent access) to connect the overhead lines to the underground cables
- Modification works to connect into the existing Norwich Main Substation and a substation extension at the existing Bramford Substation
- A new 400 kV substation on the Tendring Peninsula, referred to as the EACN Substation (with a new permanent access). This is proposed to be an Air Insulated Switchgear substation
- A new 400 kV substation to the south of Orsett Golf Course in Essex, referred to as the Tilbury North Substation (with a new permanent access). This is proposed to be a Gas Insulated Switchgear (GIS) substation
- Modifications to the existing National Grid Electricity Transmission (NGET) overhead lines to facilitate the connection of the existing network into the new Tilbury North Substation to provide connection to the Tilbury Substation
- Ancillary and/or temporary works associated with the construction of the Project.

2.1.2 In addition, third party utilities diversions and/or modifications would be required to facilitate the construction of the Project. There would also be land required for environmental mitigation and Biodiversity Net Gain (BNG).

2.1.3 As well as the permanent infrastructure, land would also be required temporarily for construction activities including, for example, working areas for construction

[1] National Landscape is the rebranded name of an AONB from 22 November 2023.

equipment and machinery, site offices, welfare, storage and temporary construction access.

2.1.4 The Project would be designed, constructed and operated in accordance with applicable health and safety legislation. The Project will need to comply with design safety standards including the Security and Quality of Supply Standard, which sets out the criteria and methodology for planning and operating the National Electricity Transmission System. This informs a suite of National Grid policies and processes, which contain details on design standards required to be met when designing, constructing and operating assets such as those proposed for the Project.

2.2 Order Limits and Project Sections

2.2.1 The Order Limits are defined as the maximum extent of land within which the Project, as defined within the Environmental Statement (ES) (Volume 6 of the DCO application), may be carried out, and includes both permanent and temporary land required to build and operate (and maintain) the Project.

2.2.2 The Project has also been sub-divided into eight geographical sections for reader accessibility, based largely on Local Planning Authority boundaries:

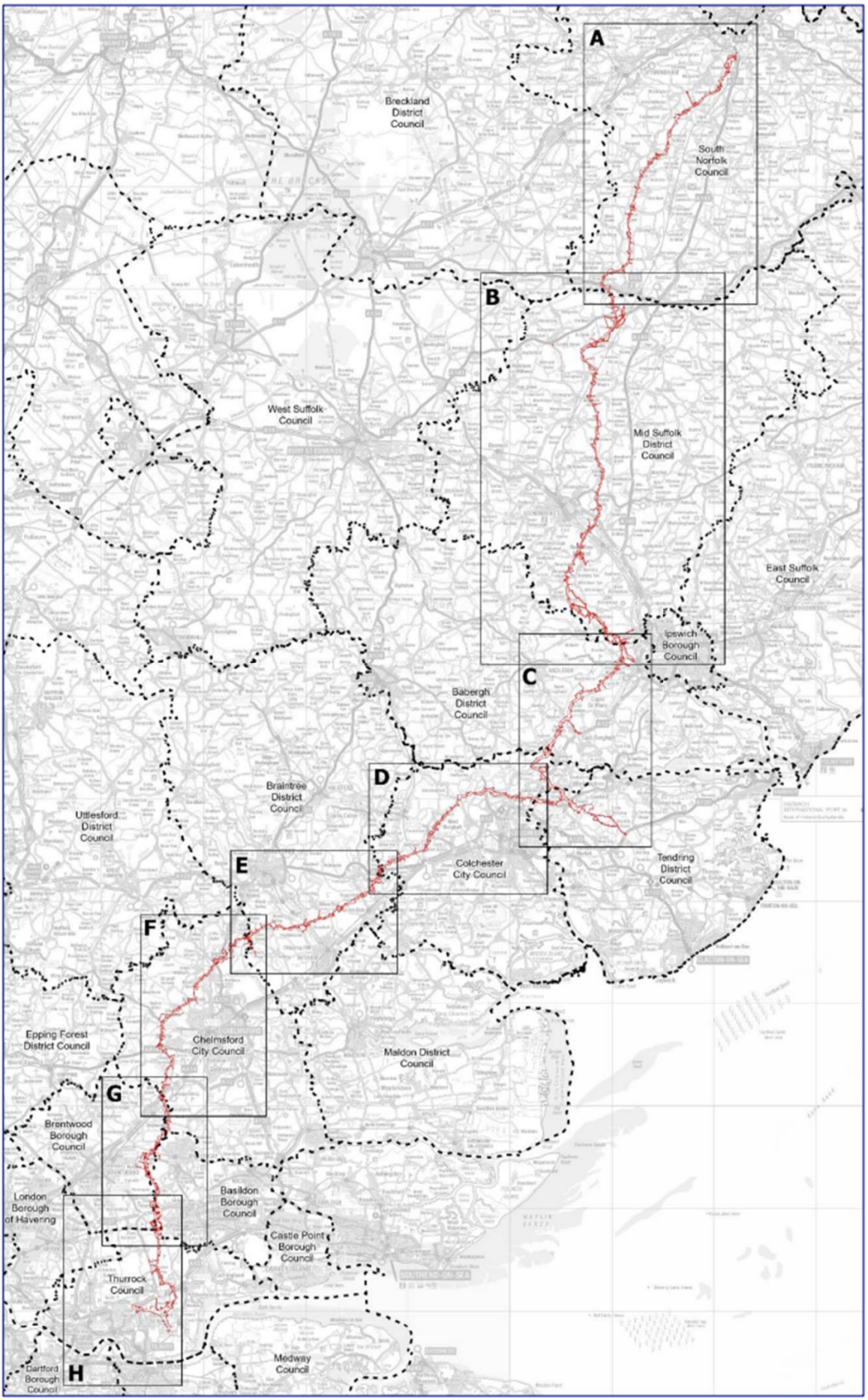
- Section A – South Norfolk Council
- Section B – Mid-Suffolk District Council
- Section C – Babergh District Council, Colchester City Council and Tendring District Council
- Section D – Colchester City Council
- Section E – Braintree District Council
- Section F – Chelmsford City Council and Brentwood Borough Council
- Section G – Basildon Borough Council and Brentwood Borough Council (and part of Chelmsford City Council)
- Section H – Thurrock Council.

2.2.3 **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**, Table 4.1 provides a description of the Project from north to south by section.

2.2.4 Within each section of the Project there is an overhead line route with its route-specific numbering sequence (RG, JC, TB and YYJ) as set out in the **2.0 Guide to the Plans [REP4-004]**. Every overhead line route in the country has a unique identifying numbering sequence for ease of reference. The underground cables have inherited the same identifying sequence as a continuation from the overhead lines. Where appropriate this strategy uses these specific numbering sequences to describe certain elements of the alignment.

2.2.5 Image 2.1 highlights the breakdown of the Project sections.

Image 2.1 Master key plan: Project sections


A
B
C
D
E
F
G
H
Breckland District Council
South Norfolk Council
West Suffolk Council
Mid Suffolk District Council
East Suffolk Council
Ipswich Borough Council
Babergh District Council
Braintree District Council
Uttlesford District Council
Colchester City Council
Tendring District Council
Epping Forest District Council
Chelmsford City Council
Maldon District Council
Brentwood Borough Council
London Borough of Havering
Basildon Borough Council
Castle Point Borough Council
Thurrock Council
Medway Council
Dartford Borough Council

2.3 Drainage Stakeholders Consultation

2.3.1 Drainage stakeholders need to be consulted to ensure clear information is communicated regarding general industry practice and to support the development of presented solutions at key constraints. In addition, given the scale of the Project, stakeholder consultation ensures the drainage strategy aligns to the regional water management strategies and any potential consenting requirements are understood and taken into consideration during the design development. The following stakeholders must be consulted:

- The Environment Agency is the principal flood risk management authority in England providing a strategic overview relating to all forms of flood and coastal erosion risk. They are responsible for water quality and resources, and management of risk of flooding from Main Rivers, reservoirs, estuaries, and the sea
- Lead Local Flood Authorities (LLFAs) investigate flood incidents and have powers to undertake works to manage flood risk from surface runoff and groundwater. They are the statutory consultee on all major planning applications in relation to surface water drainage. They also administer consents for applications to culvert or install structures in Ordinary Watercourses, except in Internal Drainage Board (IDB) districts
- The Water Management Alliance (WMA) is a consortium of seven IDBs. The Project interacts with the following IDBs within the WMA: Norfolk Rivers IDB, Waveney, Lower Yare and Lothingland Drainage Board, and East Suffolk Water Management Board. IDBs are constituted to undertake water level management and flood risk functions in their designated catchment districts. IDB consents for discharges to watercourses will be secured through the approvals process defined in the Protective Provisions. The Main Works Contractor(s) will engage with the relevant Internal Drainage Board (IDB), acting as the drainage authority within the IDB districts, during the development of detailed drainage designs
- Anglian Water, Affinity Water and Essex and Suffolk Water are the water suppliers.

2.3.2 For each of these stakeholders, the Project has sought to produce a Statement of Common Ground. These are listed within the **5.9 Draft Statement of Common Ground - Overview [~~REP5-079~~Revision G]**. Commitment GG22, from **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**, secures preparation of a Surface Water Management Plan that 'will be developed liaising with the Lead Local Flood Authorities (LLFAs) and statutory undertakers including Anglian Water (where relevant), with ongoing dialogue during implementation of the measures'.

2.3.3 The following LLFAs have been consulted for this Project and drainage stakeholder engagement meetings have taken place with each of the parties (as listed in Table 2.1):

- Norfolk County Council LLFA
- Suffolk County Council LLFA
- Essex County Council LLFA
- Thurrock Council LLFA.

Table 2.1 LLFA stakeholder engagement meeting dates

Stakeholder	Meeting Date	Topic/ Description
Norfolk County Council LLFA	July 2022	National Grid presented the Environmental Impact Assessment (EIA) approach at the Hydrology and Land Drainage Thematic Group meeting to the Environment Agency and all host authorities
	October 2024	National Grid held a meeting to discuss comments from stakeholders on the principles for surface water drainage design for above ground infrastructure and watercourse crossing designs for the Project
	October 2024	Hydrology and Land Drainage Thematic Group Meeting
	January 2025	National Grid held a meeting to discuss comments raised from the draft Flood Risk Assessment (FRA)
Suffolk County Council LLFA	July 2022	National Grid presented the EIA approach at the Hydrology and Land Drainage Thematic Group meeting to the Environment Agency and all host authorities.
	October 2024	National Grid held a meeting to discuss comments from stakeholders on the principles for surface water drainage design for above ground infrastructure and watercourse crossing designs for the Project.
	October 2024	Hydrology and Land Drainage Thematic Group Meeting
	January 2025	National Grid hosted a meeting to discuss comments received on the draft FRA
Essex County Council LLFA	July 2022	National Grid presented the EIA approach at the Hydrology and Land Drainage Thematic Group meeting to the Environment Agency and all host authorities.
	October 2024	National Grid held a meeting to discuss comments from stakeholders on the principles for surface water drainage design for above ground infrastructure and watercourse crossing designs for the Project.
	October 2024	Hydrology and Land Drainage Thematic Group Meeting
	January 2025	National Grid hosted a meeting to discuss comments received on the draft FRA
Thurrock Council LLFA	July 2022	National Grid presented the EIA approach at the Hydrology and Land Drainage Thematic Group to the Environment Agency and all host authorities.
	May 2024	Drainage/watercourse discussion.
	October 2024	National Grid held a meeting to discuss comments from stakeholders on the principles for surface water drainage design for above ground infrastructure and watercourse crossing designs for the Project.
	October 2024	Hydrology and Land Drainage Thematic Group Meeting
	January 2025	National Grid hosted a meeting to discuss comments

Stakeholder	Meeting Date	Topic/ Description
		received on the draft FRA

The Environment Agency

2.3.4 The Environment Agency requires that there should be no increase in the rate of surface water emanating from a newly developed site above that of any previous development. Furthermore, it is the joint aim of the Environment Agency and Local Planning Authorities to actively encourage a reduction in the discharge of storm water as a condition of approval for new developments.

Norfolk County Council

2.3.5 As per the guidance given in the Norfolk County Council engagement meeting, the Flood Estimation Handbook (FEH) rainfall calculation method will be used for the design of site drainage and substations and will be applied to attenuation volumes and greenfield runoff rates. The proposed surface water drainage design seeks to improve the local runoff profile using systems that can either attenuate runoff or reduce peak flow rates on the existing flood profile.

2.3.6 In Revision A of this Drainage Strategy, **8.2 Drainage Strategy DCO [REP1-072]**, it was incorrectly stated that Norfolk LLFA had requested Flood Studies Report (FSR) data to be used. As commented on in **8.4.8 Applicant's Comments on any Further Information or Submissions Received by Deadline 2 [REP3-070],** the FEH rainfall calculation method has been used in the assessment for all catchments except for one catchment near Norwich Main Substation. The details of this basin are in Appendix A, reference RG-TC-ATPN-1, but this basin was descoped and is not illustrated on **6.4.F1 Environmental Statement Figure 4.1 - Proposed Project Design [~~APP-130~~REP4-109]**, or in the drainage figures within **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]**. This basin was descoped to coordinate with the drainage strategy of another developer which has used the FEH rainfall calculation method to develop the basin prior to this now separate scheme being consented.

Suffolk County Council

2.3.7 As per the guidance given in the Suffolk County Council engagement meeting, the Flood Estimation Handbook (FEH) rainfall calculation method will be used for the design of site drainage and substations and will be applied to attenuation volumes and greenfield runoff rates. The proposed surface water drainage design seeks to improve the local runoff profile using systems that can either attenuate runoff or reduce peak flow rates on the existing flood profile.

Essex County Council

2.3.8 As per the guidance given in the Essex County Council engagement meeting, the FSR rainfall calculation method has been used for the design of site drainage and substations and has been applied to attenuation volumes and greenfield runoff rates. The proposed surface water drainage design seeks to improve the local runoff profile using systems that can either attenuate runoff or reduce peak flow rates on the existing flood profile. Flood Estimation Handbook (FEH) rainfall calculation method

will be used for the detailed design development, completed by the Main Works Contractor(s).

Thurrock Council

2.3.9 As per the response given by Thurrock Council, the surface water drainage design will follow the same guidance as provided by Essex County Council.

Water Management Alliance

2.3.10 The WMA is supportive of the proposal that SuDS will be designed to discharge at a restricted rate as determined by the relevant LLFA's guidance. The WMA has requested that the Project discharge at a maximum rate of 1.4 l/s/ha or 1 l/s (whichever is greater) in its catchments.

2.4 Data Sources

The data sources listed in Table 2.2 have been used for this assessment.

Table 2.2 Data sources

Name	File Ref/ Link	Source	Date Received	Revision
The Project	**3.1 Draft Development Consent Order [~~REVISON F~~Revision G]**	National Grid Energy Transmission	2026	Final Issue ~~F~~G
The Project	**6.4~~.F1~~ Environmental Statement ~~Figure 4.1 - Proposed~~Chapter 4 - Project ~~Design~~Description [APP-130]**	National Grid Energy Transmission	2026	Final Issue A
The Project	**6.4.F1 Environmental Statement Figure 4.1 - Proposed Project Design [REP4-109]**	National Grid Energy Transmission	2026	Final Issue B
The Project	**6.4.F2 Environmental Statement Figure 4.2 - Proposed Project Design -Permanent Features [REP4-110]**	National Grid Energy Transmission	2026	Final Issue B
Guide to the Plans	**2.0 Guide to the Plans [REP4-004]**	National Grid Energy Transmission	2026	Final Issue B
Design and	**2.6.1 Design and Layout**	National Grid	2026	Final Issue D

Name	File Ref/ Link	Source	Date Received	Revision
Layout Plans – Subs and Cables	**Plans - Subs and Cables [~~Revision D~~REP6-020]**	Energy Transmissio n		
Design and Layout Plans – Overhead Lines	**2.6.2 Design and Layout Plans - Overhead Lines [APP-042]**	National Grid Energy Transmissio n	2025	Final Issue A
Design and Layout Plans – Traffic and Transport	**2.6.3 Design and Layout Plans - Traffic and Transport [APP-043]**	National Grid Energy Transmissio n	2025	Final Issue A
Watercourse Crossing Details	**6.4.A2 Environmental Statement Appendix 4.2 - Watercourse Crossing Details [~~REVISON B~~Revision C]**	National Grid Energy Transmissio n	2026	Final Issue ~~B~~C
Hydrogeology and Hydrogeological Receptors	**6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]**	National Grid Energy Transmissio n	2025	Final Issue A
Contaminated Land, Geology and Hydrogeology	**6.9 Environmental Statement Chapter 9 - Contaminated Land Geology and Hydrogeology [~~APP-181~~Revision B]**	National Grid Energy Transmissio n	2025	Final Issue ~~A~~B
Groundwater Baseline and Qualitative Groundwater Risk Assessment	**6.9.A3 Environmental Statement Appendix 9.3 - Groundwater Baseline and Qualitative Groundwater Risk Assessment [~~APP-184~~Revision B]**	National Grid Energy Transmissio n	2025	Final Issue ~~A~~B
Superficial Geology	**6.9.F1 Environmental Statement Figure 9.1 - Superficial Geology [APP-186]**	National Grid Energy Transmissio n	2025	Final Issue A
Bedrock Geology	**6.9.F2 Environmental Statement Figure 9.2 - Bedrock Geology [APP-187]**	National Grid Energy Transmissio n	2025	Final Issue A
The ES (Volume 6 of the DCO	**Environmental Statement**	National Grid Energy Transmissio	2025 - 2026	Final Issue

Name	File Ref/ Link	Source	Date Received	Revision
application)		n		
Ordnance Survey (OS) Mapping	Background mapping information has been produced from the Ordnance Survey by permission of Ordnance Survey of the Controller of His Majesty's Stationery Office. © Crown Copyright and Database Rights (2025) Licence OS100024241 and AC0000807948.	Ordnance Survey	2025	N/A
Aerial Survey – LiDAR data	Bluesky International	Survey Data	2023	N/A
OS Terrain 5	Online resource	Ordnance Survey	2022	N/A
Aerial Maps, Openstreet Maps	N/A	Google Maps, Google Earth and Bing Maps	2022–2025	N/A
River Catchment Mapping	Catchment Data Explorer[2]	Environment Agency	2025	N/A
Geological and Borehole Maps	British Geological Survey (BGS) GeoIndex Viewer[3]	British Geological Survey (BGS)	2025	N/A
Soilscape Viewer	LandIS Soilscapes Viewer Interactive Map[4]	LandIS	2025	N/A
Magic Map	Online resource	DEFRA	N/A	N/A

2.5 Standards and Guidance

2.5.1 The standards and guidance listed in Table 2.3 have been used for this assessment.

Table 2.3 Standards and guidance

[2] https://environment.data.gov.uk/catchment-planning/

[3] https://mapapps2.bgs.ac.uk/geoindex/home.html

[4] https://www.landis.org.uk/soilscapes/

Name	File Ref/ Link	Source
National Grid Standard - Oil Containment	TS 2.10.01	National Grid
National Grid - Roadworks and Surfacing	TS 2.10.08	National Grid
National Grid - Site Drainage	TS 2.10.09	National Grid
National Grid - Flood Defences for electricity substations	TS 2.10.13	National Grid
The SuDS Manual	C753	Construction Industry Research and Information Association (CIRIA)
Culvert, Screen and Outfall Manual	C786	CIRIA
Groundwater control - Design and Practice, Second Edition	C750	CIRIA
Control of water pollution from linear construction projects	C648	CIRIA
Control of water pollution from construction sites	C532	CIRIA
Environmental Good Practice on Site	C762	CIRIA
Hydraulic, Structural and Water Quality Advice	C609	CIRIA
Natural Flood Management Manual (2022)	-	CIRIA
National Planning Policy Framework (NPPF) 2025	NPPF	UK Government
Norfolk Local Flood Risk Management Strategy 2018[5] (including 2021 review)	-	Norfolk County Council
Norfolk County Council Local SuDS Guidance - Information for developers[6]	-	Norfolk County Council
Construction Surface Water Management Plan[7]		

[5] https://www.norfolk.gov.uk/39041

[6] https://www.norfolk.gov.uk/article/38642/Information-for-developer

[7] https://www.suffolk.gov.uk/roads-and-transport/flooding-and-drainage/guidance-on-development-and-flood-risk/construction-surface-water-management-plan

Name	File Ref/ Link	Source
	August 2018	Suffolk County Council
Suffolk Local Flood Risk Management Strategy[8]	2022	Suffolk County Council
Suffolk County Council Local SuDS Guidance[9]	March 2023	Suffolk County Council
The Sustainable Drainage Systems Design Guide for Essex[10]	-	Essex County Council
Thurrock Council Local Flood Risk Management Strategy[11]	2015	Thurrock Council
Thurrock SuDS Guidance[12]	-	Thurrock Council
National standards for sustainable drainage systems (SuDS) [13]	-	UK Government
Rural Sustainable Drainage Systems[14]	June 2012 - RSuDS	Environment Agency
Institute of Hydrology Report 124 (IH24)[15]	-	Institute of Hydrology
Flood Estimation Handbook (FEH)[16]	-	UK Centre for Ecology & Hydrology
Flood Studies Report (FSR)	-	UK Centre for Ecology & Hydrology

National Grid Technical Specifications

2.5.2 The National Grid design document TS 2.10.13 establishes the minimum criteria for site drainage. These requirements are strengthened and superseded by the National Standards for Sustainable Drainage, by incorporating climate change, refer to Table 5.2 which provides a summary of the design storm events and climate change allowances for the Project. The minimum site drainage requirements, as defined in TS 2.10.13, are as follows:

[8] https://www.suffolk.gov.uk/asset-library/Final-Published-Suffolk-LFRM-Strategy-February-2023.pdf

[9] https://www.suffolk.gov.uk/roads-and-transport/flooding-and-drainage/guidance-on-development-and-flood-risk

[10] https://www.essexdesignguide.co.uk/suds

[11] https://www.thurrock.gov.uk/sites/default/files/assets/documents/flood-risk-management-201512-v01.pdf

[12] https://www.thurrock.gov.uk/flood-risks/sustainable-drainage

[13] https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds

[14] https://www.gov.uk/government/publications/rural-sustainable-drainage-systems

[15] https://nora.nerc.ac.uk/id/eprint/7367/1/IH_124.pdf

[16] https://www.ceh.ac.uk/data/software-models/flood-estimation-handbook

- 1 in 30-year rainfall event – no flooding on-site
- 1 in 100-year rainfall event – no flooding on operational areas of the Project (car parks may flood in this scenario)
- In both 1 in 30-year and 1 in 100-year scenarios, the design shall ensure that excess runoff from the drainage system does not affect adjacent third-party land
- Where discharge consents or downstream capacity restrictions are in place the design shall restrict flows and incorporate attenuation to achieve the requirement.

National Standards for Sustainable Drainage

2.5.3 The National Standards for Sustainable Drainage state:

- Surface water drainage systems shall be designed, constructed, maintained and operated following a natural approach to managing water. This should mimic natural drainage, manage surface runoff at or close to the surface and as close to its source as practicable. This approach should also control the flow of runoff and provide a range of additional benefits. It contrasts with traditional drainage techniques, which are based on underground pipes to convey runoff away from the development as quickly as possible. By following this natural approach, surface water shall be utilised as a resource on site with multiple benefits to the environment and society, helping to combat climate change, meet future water needs and protect receiving waters and their associated ecology
- The most effective surface water drainage systems use a series of different drainage features, operating as close to the source of runoff as practicable. These should work as a SuDS management train to control flow rates and reduce volumes of runoff, providing water quality benefits and opportunities to encourage biodiversity and amenity
- The use of higher priority final destinations shall not be discounted because the development site is, or was, contaminated where practicable remediation strategies can be developed in conjunction with the drainage system design
- Where access to third party land is required to facilitate discharge to a final destination, evidence that any necessary easements are in place for the lifetime of the development shall be provided to the approving body
- The runoff from development shall not increase the risk of flooding elsewhere from any source.

3. Existing Conditions

3.1 Topography

3.1.1 The topography of the Project can have a significant effect on the drainage design. Further assessment of the topography of the site may be required at a later stage.

3.1.2 LiDAR data has been collected across the majority of the Project. In the limited instances where this data is not available, topographical information has been drawn from OS Terrain 5 data[17] with a vertical accuracy of up to 2 m and a 1.5 m root mean square error. Levels are provided in metres Above Ordnance Datum (mAOD).

3.1.3 The Applicant commissioned Bluesky International to conduct an Aerial Survey and capture LiDAR of the ground along the Norwich to Tilbury Project route. The data captured the existing ground elevation above ordnance datum (AOD) in mid-late 2023. Where the Project alignment has subsequently changed as set out and detailed in **7.21 2024 - Design Development Report for the Project [APP-359]** and **5.15 Design Development Report [APP-122]**; these changes represent locations where OS Terrain 5 data may have been used, as the extent of the original LiDAR coverage may not have been sufficient to capture the developed Project alignment. The existing ground profile for the overhead line sections is presented in the DCO Elevation Drawings (Volume 2, Documents 2.7) **[APP-044] [APP-045]** and is explained on the Explanatory Sheet of those documents. This LiDAR data set has been predominately used to inform the outline drainage design.

3.1.4 At this stage, the estimated elevations of permanent features are indicated in Table 3.1, and represented in **2.6.1 Design and Layout Plans - Subs and Cables [~~Revision D~~REP6-020]**.

3.1.5 The Finished Floor Levels (FFLs) for the assets proposed in Table 3.1 are based on the existing platform levels where appropriate. This is based on available information from the respective LiDAR and the existing substation models.

3.1.6 It should be noted that these levels are indicative, and the FFL of the platforms may need to be updated. All drainage within the platforms should drain by gravity to the discharge point, where practicable. The discharge points are selected to ensure the drainage can discharge by gravity according to the FFL of the platform.

3.1.7 Design levels for the individual areas, including construction compounds, are to be defined at a later stage of the Project, following more detailed assessment of the topography of the site.

[17] Although a coarser dataset, given the limited areas to which it has been applied and the purpose of this outline drainage strategy, it is considered sufficient for identifying the general topographical conditions. Detailed topographic surveys will be completed by the Main Works Contractor(s) in the detailed design of the drainage measures, set out in the Main Works Contractor's Surface Water Management Plan as secured in commitment GG22, in **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**.

Table 3.1 Estimated elevations of proposed permanent elements

Name	Approximate Elevations mAOD
Norwich Main Substation	33.40
Bramford Substation Platform Extension	56.25
Wenham Grove CSE Compound	47.90
EACN Substation	36.20
Great Horkesley – EACN side CSE Compound	50.50
Great Horkesley – Tilbury side CSE Compound	47.00
Fairstead – EACN side CSE Compound	58.30
Fairstead – Tilbury side CSE Compound	60.30
Tilbury North Substation	21.10
YYJ – Combined CSE Compound	16.35

Norwich Main Substation (in Section A)

3.1.8 The existing Norwich Main Substation is built on relatively flat ground, with ground elevations sloping from 30.17 mAOD in the north-east corner to 35.36 mAOD in the north-west corner.

3.1.9 The proposed location of the construction compound at the site is to the direct north of the substation. The topography in this area is predominately flat with a slight slope falling to the south-east.

RG Overhead Line Alignment (in Sections A and B)

3.1.10 Topography is generally flatter in the northern section of the RG Overhead Line Alignment with land between 20.00 mAOD and 50.00 mAOD. Topography along the southern section is more undulating and reaches up to 77.00 mAOD. The topography is presented in **2.7 Elevation Drawings - Overhead Line Profiles – Part 1 of 2 [APP-044]**.

Bramford Substation (in Section B)

3.1.11 The existing Bramford Substation is built on relatively flat ground, with ground elevations ranging from 54.00 mAOD to 56.50 mAOD, with sloping embankments raising to 58.00 mAOD to the west of the substation.

JC Overhead Line Alignment (in Section C)

3.1.12 The JC overhead alignment is generally on flat and gently sloping agricultural land with topographic lows associated with watercourse valleys. Ground elevations along the JC alignment are typically between 30.00 mAOD and 60.00 mAOD. The topography is presented in **2.7 Elevation Drawings - Overhead Line Profiles – Part 1 of 2 [APP-044]** and in **2.7 Elevation Drawings - Overhead Line Profiles – Part 2 of 2 [APP-045]**.

Dedham Vale National Landscape Underground Cable Alignment (in Section C)

3.1.13 The topography that underlies the Wenham Grove CSE Compound, slopes from 50.00 mAOD in the south-east corner to approx. 47.00 mAOD in the north-west corner.

3.1.14 The highest point along the cable alignment lies at an elevation of approximately 53.00 mAOD north of the B1068. The lowest point has an elevation of 6.00 mAOD, at the River Stour riverbank.

EACN Substation (in Section C)

3.1.15 The ground where the substation compound sits is relatively flat, sloping from 36.60 mAOD towards the north-west to 35.50 mAOD at the south-east.

3.1.16 The topography in the vicinity of the EACN Substation is flat, so it could be challenging to achieve suitable gravity fed drainage if infiltration is not feasible. Therefore, a pumped drainage solution may be required.

TB Overhead Line Alignment (in Sections D, E, F, G and H)

3.1.17 The TB Overhead Line Alignment is generally on flat and gently sloping agricultural land with topographic lows associated with watercourse valleys. The alignment becomes more undulating with rolling hills and the occasional steeper valleys, particularly around Chelmsford where ground elevations reach up to 97.00 mAOD. The topography is presented in **2.7 Elevation Drawings - Overhead Line Profiles – Part 2 of 2 [APP-045]**.

Great Horkesley Underground Cable Alignment (in Section D)

3.1.18 The eastern CSE compound is at an elevation of approximately 50.00 mAOD. The highest point along the cable alignment lies at an elevation of approximately 55.00 mAOD around the centre of the cable alignment. The lowest point, shortly after the high point has an elevation of 44.00 mAOD. The western CSE compound is at an elevation of approximately 47.00 mAOD.

Fairstead Underground Cable Alignment (in Section H)

3.1.19 The topography that underlies the Fairstead cable route slopes from south to north the EACN side CSE Compound is at an elevation of approximately 58.00 mAOD and the Tilbury side CSE Compound is at an elevation of approximately 60.00 mAOD.

Tilbury North Substation (in Section H)

3.1.20 The Tilbury North Substation platform has an approximate FFL of 21.10 mAOD as per Table 3.1. The ground where the substation will be sited slopes from north to south, with a level change of approximately 10.00 m.

Modifications to the Existing YYJ Infrastructure (in Section H)

3.1.21 Generally, the ground slopes along the route, falling from west to east. The western end of the section is at approximately 20.00 mAOD, and the eastern end of the section is at approximately 10.00 mAOD.

3.2 Hydrology and Existing Drainage

3.2.1 **6.12 Environmental Statement Chapter 12 - Hydrology Land Drainage and Flood Risk [~~APP-221~~Revision B]** and **7.9 Flood Risk Assessment [APP-331]** set out the existing hydrology across the Project.

Watercourses

3.2.2 Watercourses are classified by the Project as follows:

- Main Rivers: Rivers, larger streams and smaller watercourses of strategic drainage importance regulated by the Environment Agency
- Ordinary Watercourses: Rivers, streams, ditches and drains which do not form part of a Main River. There are two types of Ordinary Watercourses:
  - Those regulated by an IDB
  - Those that are regulated by the LLFA.

3.2.3 Table 3.2 provides details of the Environment Agency Watercourse Management Catchments the Project passes through.

Table 3.2 Environment Agency Management Catchments

Section	Catchment Area
Section A	Tas (Tasburgh to R. Yare)[18] and Waveney operational catchment area, within the Broadland Rivers Management Catchment in the Anglian River Basin District.
Section B	This section lies within two operational catchment areas: Waveney within the Broadland Rivers Management Catchment and Gipping, within the East

[18] The River Waveney is part of the River Yare catchment as it discharges to the River Yare.

Section	Catchment Area
	Suffolk Management Catchment. Both fall in the Anglian River Basin District.
Section C	The section of route lies within Gipping operational catchment area within the East Suffolk Management Catchment. Also, it lies in the Stour OC and Colne Essex operational catchment areas within the Essex Combined Management Catchment. All fall within the Anglian River Basin District.
Section D	The proposed cable route is located within two catchment areas: Colne Essex and Stour OC. Both are located within the Essex Combined Management Catchment in the Anglian River Basin District.
Section E	The section of route lies within the Blackwater and Chelmer operational catchment area, within the Essex Combined Management Catchment in the Anglian River Basin District.
Section F	The section of route lies entirely within the Chelmer operational catchment area, within the Essex Combined Management Catchment in the Anglian River Basin District.
Section G	The section of route lies within the Chelmer and Crouch and Roach operational catchment area, within the Essex Combined Management Catchment in the Anglian River Basin District. The section of route also lies within the Mardyke operational catchment area, within the Essex South Management Catchment in the Thames River Basin District.
Section H	The section of route lies within the Mardyke operational catchment within the Essex South management catchment within the Thames River Basin District.

Source: Catchment Data Explorer (Environment Agency, 2025)[19]

3.2.4 An assessment of the works has been undertaken to locate crossings of Main Rivers and Ordinary Watercourses, and to identify the relevant regulatory body for each Ordinary Watercourse. These crossings are detailed in **6.4.A2 Environmental Statement Appendix 4.2 - Watercourse Crossing Details [~~REVISON B~~Revision C]**.

3.2.5 To identify existing watercourses, OS mapping, Aerial mapping, Openstreet mapping, and the MAGIC map website have been referred to as data sources (see Table 2.2). Multiple watercourses along the route have been identified and the dimensions recorded as part of site walkovers that have been completed. Further site walkovers and surveys to confirm the watercourse are proposed as part of the detailed design development.

Lakes/ponds and Reservoirs

3.2.6 Crossings of waterbodies are detailed in **6.4.A2 Environmental Statement Appendix 4.2 - Watercourse Crossing Details [~~REVISON B~~Revision C]**, this includes crossings of lakes, ponds and reservoirs. The overhead line alignments do not directly interface with any waterbodies, but the construction swathes of the

[19] https://environment.data.gov.uk/catchment-planning/

underground cable sections do. The drainage plans provided in **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]** illustrate where the Project interfaces with lakes, ponds and reservoirs. No works are anticipated within any lakes or reservoirs crossed by the Project, except for the construction and installation of outfalls (where required) and the stabilisation of embankments, if any works are in close proximity to the waterbodies.

Existing Drainage

Existing Sewers

3.2.7 For all existing sewers, further design development will be undertaken, and survey data will be collected by the Main Works Contractor where required as secured by commitment GG15, in **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**. These interfaces would be managed and controlled in accordance with the protective provisions agreed with the relevant statutory undertakers. The presence of private sewers have not been confirmed at this outline design stage, further surveys are required to identify any interactions with private sewers.

Norwich and Bramford Substations (in Sections A and B Respectively)

3.2.8 No public sewer utilities have been identified to date from utility returns for the Norwich and Bramford Substations, further investigations are required.

RG Overhead Line Alignment (in Sections A and B)

3.2.9 Along the RG Overhead Line Alignment, eight Anglian Water foul sewer lines are crossed as well as an Anglian Water treated effluent line 1 km south of Forncett End.

JC Overhead Line Alignment (in Section C)

3.2.10 There is an Anglian Water foul sewer line that crosses the JC Overhead Line Alignment 1.5 km south-east of Bramford Substation.

Dedham Vale National Landscape Underground Cable Alignment (in Section C)

3.2.11 There is an Anglian Water network of sewers in the vicinity of Holton St Mary. The proposed cable route crosses one combined Anglian Water sewer within this network north of Sandpits Lane. Due to the unknown nature of the asset, further design development and survey data would be required to confirm the crossing interface.

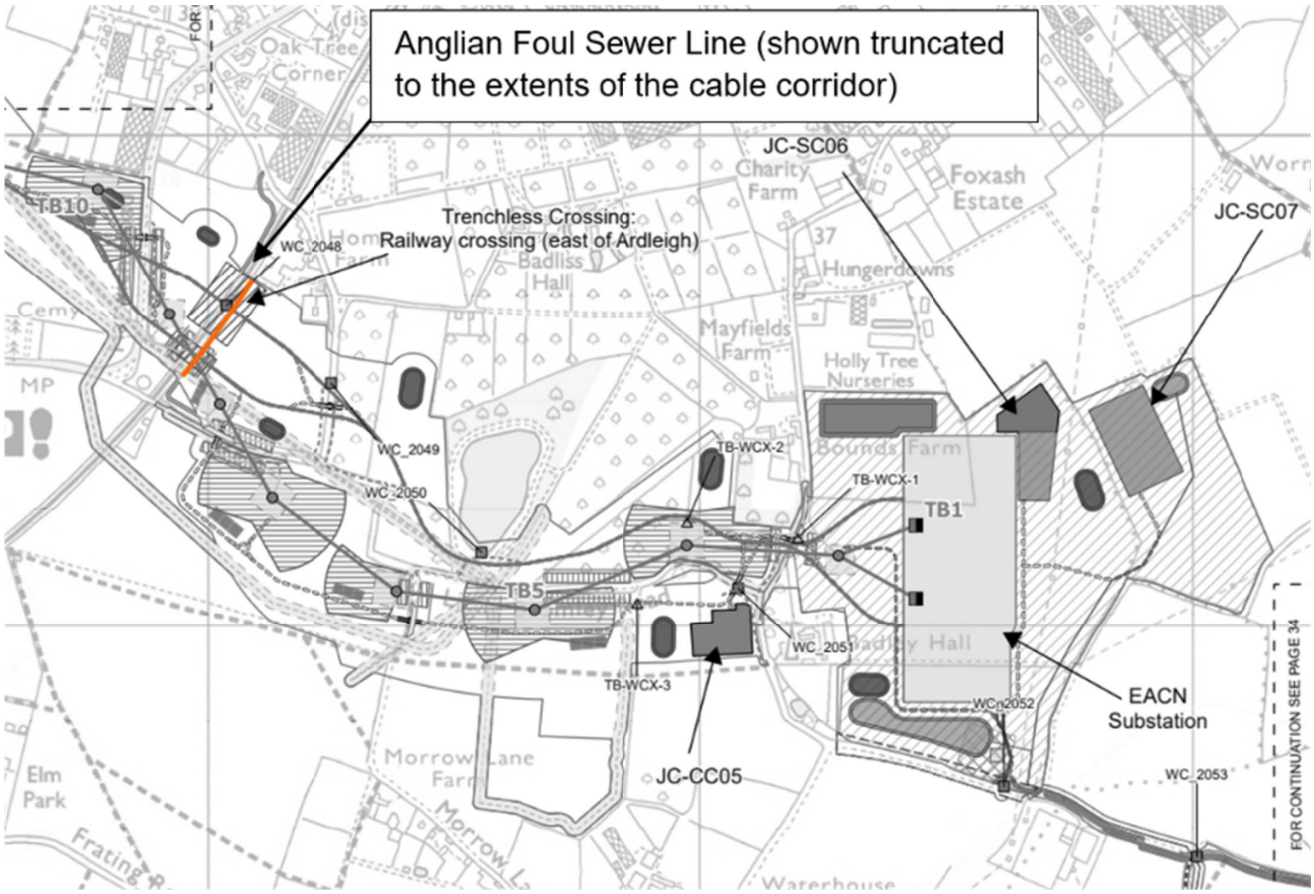
3.2.12 There is also an Anglian Water network of sewers south-east of Raydon. The proposed cable route crosses one combined Anglian Water sewer within this network, west of the B1070. Since an open cut or trenchless crossing is proposed for this area, this sewer is of little concern.

3.2.13 To the east of Ardleigh there is an Anglian Water foul water sewer line along the existing railway line that is crossed by the Project. This is approximately 2 km north-west of the proposed substation, as indicated in Image 3.1.

EACN Substation (in Section C)

3.2.14 As stated in the paragraph above, there is an Anglian Water foul water sewer line approximately 2 km north-west of the proposed EACN Substation.

Image 3.1 Closest foul water sewer drainage to EACN Substation



Source: ***6.4.F1 Environmental Statement Figure 4.1 - Proposed Project Design [~~APP-130~~REP4-109]***

TB Overhead Line Alignment (in Sections D, E, F, G and H)

3.2.15 The TB Overhead Line Alignment crosses 18 Anglian Water sewer lines.

Great Horkesley Underground Cable Alignment (in Section D)

3.2.16 In the Great Horkesley section of the Project there are a total of 10 sewer crossings, all of which are owned by Anglian Water. At this stage, the diameters and pipe materials of these assets are unknown.

Fairstead Underground Cable Alignment (in Section E)

3.2.17 No sewer crossings have been identified in the Fairstead section.

Tilbury North Substation (in Section H)

3.2.18 In the Tilbury North Substation area there is one Anglian Water 225 mm diameter foul sewer crossing.

Modifications to the Existing YYJ Infrastructure (in Section H)

3.2.19 In the vicinity to the existing YYJ infrastructure there are four known sewer crossings.

Existing Substation Drainage

3.2.20 Modifications to existing substations are required as part of the Project. Refer to **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]** for further information on the likely works.

Norwich Main Substation

3.2.21 The existing drainage network for the Norwich Main Substation is served by separate surface water and foul water sewers. The existing surface water drainage network has one known outfall that discharges into a ditch on the north-eastern side of the substation perimeter. Any proposed drainage related to the extension of Norwich Main Substation is to be completed by others. This may require modifications to the existing surface water drainage, also to be completed by them.

Bramford Substation

3.2.22 The current drainage network at the existing Bramford Substation is served by separate surface water and foul water sewers. The existing drainage network has several outfalls that discharge to the south-western side of the substation perimeter. The existing surface water drainage may need to be modified, subject to detailed design.

Existing Field Drainage

3.2.23 Locations and details of existing field drainage systems are unknown at this stage and a review of natural overland flow paths on steeply sloping ground has not been undertaken. This will be undertaken as part of commitments AS05 and W14 in **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**. A preliminary assessment of the likelihood of field drainage presence is provided in Table 3.3. This assessment is based upon ground profiles and ground conditions.

3.2.24 The Rural Sustainable Drainage Systems guidance from the Environment Agency states the average drain depth is 0.9 m approx. where the average drain spacing is approximately between 15–30 m. Most field drainage is implemented where there are clay soils, with the majority of schemes using mole ploughing and filter drain drainage techniques.

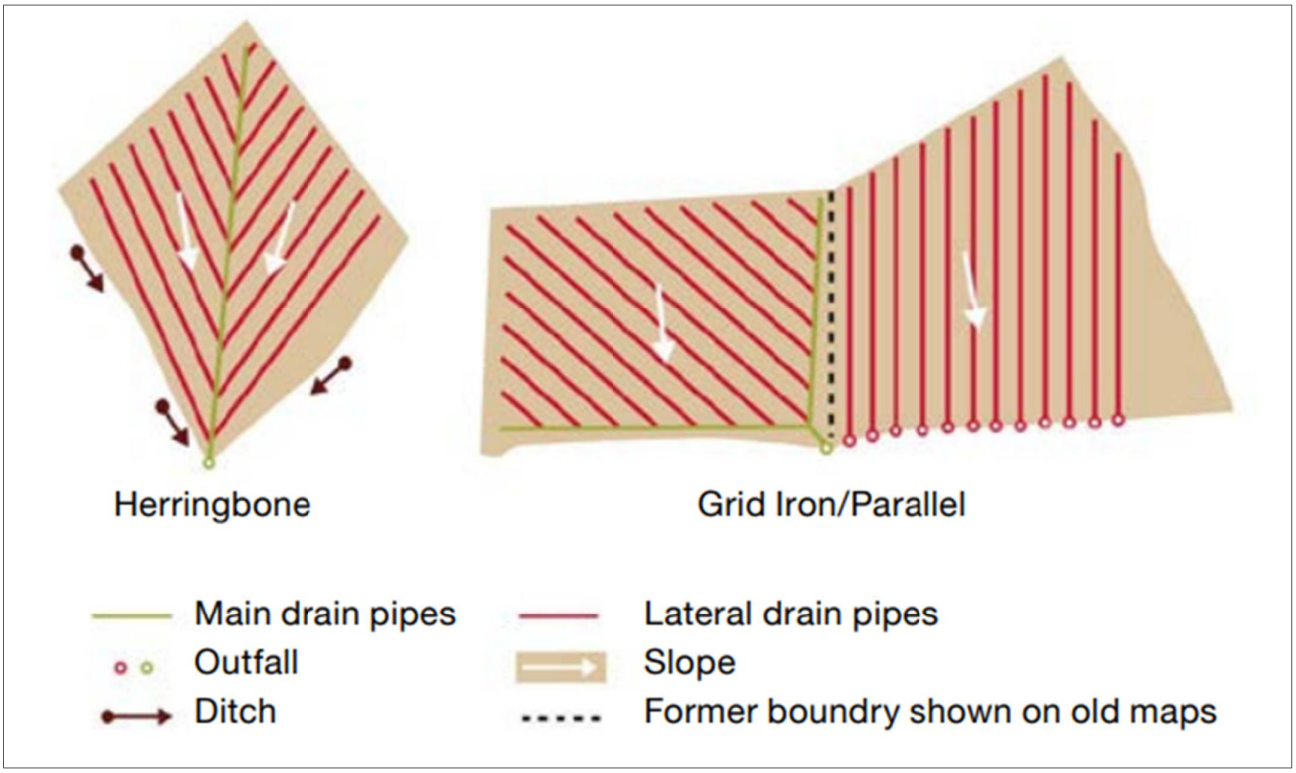
Table 3.3 Field drainage

Section	Likelihood of field drainage presence
Section A	Fairly High
Section B	Fairly High
Section C	High (in some areas), Low (in some areas)
Section D	High

Section	Likelihood of field drainage presence
Section E	Fairly High
Section F	Medium
Section G	Medium
Section H	Low

3.2.25 A field can contain a combination of different drain layouts or be drained irregularly, depending on the surface slopes across the field. If smaller fields have been merged into one, the outfalls may be found at the low points of each original field and not the current field. Typical drainage layouts are shown in Image 3.2.

Image 3.2 Typical field drainage layouts



Source: Field drainage guide by Agriculture and Horticulture Development Board (2022)

Flood Zones

3.2.26 The **7.9 Flood Risk Assessment [APP-331]** assesses the impact of the Project on flood risk from surface water, fluvial, coastal and groundwater sources, and any changes to flood risk in the surrounding areas affected by the Project. To produce this drainage strategy, a review of the Environment Agency flood risk mapping has been undertaken to ensure that the Project does not increase fluvial flood risk to the site or elsewhere and where practicable reduces flood risk over the lifetime of the development. Mapping of flood risk is provided in **6.12.F2 Environmental Statement Figure 12.2 - Flood Risk Areas [APP-224]**.

3.3 Ground Conditions

Geology

3.3.1 Intrusive site surveys have not been undertaken for this drainage strategy (in accordance with the tiered approach outlined in Land Contamination Risk Management guidance (Environment Agency, 2023)), as described within the methodology proposed in the **6.19 Scoping Report - including appendices B to K (Final Issue A) [APP-296]**. Preliminary ground investigation is currently being undertaken for the Project and will continue to be progressed to support the detailed design of the Project and appropriate risk assessments in accordance with the commitments included within the **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**.The following sources of information for existing geology have been reviewed as part of this preliminary stage of design:

- **6.9 Environmental Statement Chapter 9 - Contaminated Land Geology and Hydrogeology [~~APP-181~~Revision B]**
- **6.9.A3 Environmental Statement Appendix 9.3 - Groundwater Baseline and Qualitative Groundwater Risk Assessment [~~APP-184~~Revision B]**
- **6.9.F1 Environmental Statement Figure 9.1 - Superficial Geology [APP-186]**
- **6.9.F2 Environmental Statement Figure 9.2 - Bedrock Geology [APP-187]**
- BGS geological maps and borehole records
- LandIS Soilscapes Viewer Interactive Map.

3.3.2 Table 3.4 describes ground conditions for all sections of the Project using the sources of information above, in respect of whether infiltration is likely to be feasible.

Table 3.4 Project superficial geology description

Section	Ability to Infiltrate	Explanation
Norwich Main Substation (in Section A)	Unlikely	The existing superficial deposits across the Project are shown as mainly Lowestoft Formation (Diamicton). Lowestoft Formation (Diamicton) deposits are described as chalky till with outwash sands and gravels, silts, and clays. This indicates that infiltration is not likely to be feasible via the superficial layers.
RG Overhead Line Alignment (in Sections A and B)	Unlikely	The superficial geology of the RG Overhead Line Alignment comprises mostly of the Lowestoft Formation, which indicates infiltration is not likely to be feasible. Where the alignment crosses river valleys, Lowestoft Formation (Sand and Gravel) Alluvium, River Terrace Deposits, and Kesgrave Catchment Subgroup superficial deposits are encountered and are described as gravelly medium, sand and gravel and very fine-grained sand allowing infiltration in small areas along the alignment.

Section	Ability to Infiltrate	Explanation
		Head Deposits are also found at river valleys which are recorded to mainly comprise very silty clay, silty clayey fine to medium sand and fine to coarse gravel, anticipated to be a poor infiltration medium.
Bramford Substation (in Section B)	Unlikely	The existing superficial deposits across Bramford Substation are shown as Lowestoft Formation (Diamicton), which are described as chalky till with outwash sands and gravels, silts, and clays, indicating that infiltration is unlikely via the current superficial layers.
JC Overhead Line Alignment (in Section C)	Unlikely	The superficial geology within JC Overhead Line Alignment mainly comprises of Lowestoft Formation (Diamicton), which are described as chalky till with outwash sands and gravels, silts, and clays, indicating that infiltration is unlikely via the current superficial layers.
Dedham Vale National Landscape Underground Cable Alignment (in Section C)	Likely	There is a range of superficial deposits along the Dedham Vale National Landscape Underground Cable Alignment including Lowestoft Formation Sands and Gravels, Kesgrave Sands and Gravels, River Terrace Deposits, Head and Cover Sands. All deposits other than Head Deposits are permeable layers as per **6.9.A3 Environmental Statement Appendix 9.3 - Groundwater Baseline and Qualitative Groundwater Risk Assessment [~~APP-184~~Revision B]** paragraph 9.2.6 to 9.2.12, therefore providing a good infiltration medium.
EACN Substation (in Section C)	Likely	The superficial geology within the EACN Substation mainly comprises of Cover Sand which is described according to the BGS mapping as gravelly medium, sand and gravel and very fine-grained sand. As per **6.9.A3 Environmental Statement Appendix 9.3 - Groundwater Baseline and Qualitative Groundwater Risk Assessment [~~APP-184~~Revision B]** Cover Sands are classified as lower permeability layers, meaning infiltration may be possible**.**
TB Overhead Line Alignment (in Sections D, E, F, G and H)	Unlikely	The superficial geology of the TB Overhead Line Alignment comprises mostly of the Lowestoft Formation, which indicates infiltration is not likely to be feasible. Where the alignment crosses river valleys, Lowestoft Formation (Sand and Gravel) Alluvium, River Terrace Deposits, and Kesgrave Catchment Subgroup superficial deposits are encountered and are described in the BGS mapping as gravelly medium, sand and gravel and very fine-grained sand, allowing infiltration in small areas along the alignment. Head Deposits are also found at river valleys which are recorded to mainly comprise very silty clay, silty clayey fine to medium sand and fine to coarse gravel, anticipated to be a poor infiltration medium

Section	Ability to Infiltrate	Explanation
Great Horkesley Underground Cable Alignment (in Section D)	Unlikely	The Great Horkesley Underground Cable Alignment superficial geology comprises mostly of the Lowestoft Formation, which indicates infiltration is not likely to be feasible. Where the alignment crosses river valleys, Lowestoft Formation (Sand and Gravel) Alluvium, River Terrace Deposits, and Kesgrave Catchment Subgroup superficial deposits are encountered and are described as gravelly medium, sand and gravel and very fine-grained sand, allowing infiltration in small areas along the alignment
Fairstead Underground Cable Alignment (in Section E)	Unlikely	The existing superficial deposits where drainage attenuation storage areas are proposed to be located are shown as Lowestoft Formation (Diamicton) overlying Glaciofluvial Deposits (Mid Pleistocene). Based on the descriptions given, infiltration is not likely to be feasible via these superficial layers.
Tilbury North Substation (in Section H)	Likely	The superficial deposits underlying the site area primarily comprise Head Deposits and the Black Park Gravel Member. The lithologies of the Black Park Gravel Member and the Boyn Hill Gravel Member (located to the south) are composed of River Terrace Deposits. Head Deposits on-site are recorded to mainly comprise very silty clay, silty clayey fine to medium sand and fine to coarse gravel. The River Terrace Deposits are fine to coarse, slightly clayey/silty sand with fine to coarse gravels. The permeability is anticipated to be relatively variable in the shallow subsurface. Referring to the reference infiltration rates from CIRIA C753, the River Terrace Deposits may be considered as a good infiltration medium, while the Head Deposits, Thanet formation and Lambeth group may be anticipated to be a poor infiltration medium. Some areas of the proposed substation, however, do not have superficial deposits present according to the BGS maps.
Modifications to the existing YYJ infrastructure (in Section H)	Likely	This area shares the same superficial geology as Tilbury North Substation, comprising Head Deposits and River Terrace Deposits as the main lithologies on-site. Therefore, it is anticipated that the Head Deposits and Thanet formation are likely a poor infiltration medium, while the River Terrace Deposits are considered as a good infiltration medium in the area. Similar to the Tilbury North Substation, some areas do not present superficial deposits according to geological mapping, so a ground investigation will be carried out to confirm the actual deposits and infiltration rates.

Contaminated Land

3.3.3 **6.9.A1 Environmental Statement Appendix 9.1 - Baseline Information and Preliminary Contamination Risk Assessment [~~APP-182~~Revision B]** states that the majority of the Order Limits plus a 250 m buffer Study Area remained as undeveloped or agricultural land since the late 1800s, resulting in very low risk of significant sources of potential contamination. However, within the Study Area there are discrete areas that have history of potentially contaminative land use or where the current use is potentially contaminative.

3.3.4 Potential Sources of Contamination sites with their corresponding score for generating contamination are listed in **6.9.A1 Environmental Statement Appendix 9.1 - Baseline Information and Preliminary Contamination Risk Assessment [~~APP-182~~Revision B]**. Area risk classifications are ranked between very low and very high. Areas of moderate contamination risk and above are highlighted in **6.9.F6 Environmental Statement Figure 9.6 - Sites with a Moderate or Above Risk Classification [APP-191]**.

Groundwater and Source Protection Zones (SPZs)

3.3.5 SPZs are areas designed to protect areas of groundwater that are used for potable water supply. Zone 1 is the most sensitive and Zone 3 the least sensitive. **6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]** indicates that large parts of the Study Area within Sections A, B, C, D, E and H are within a SPZ3; however, there are also parts of these sections which are indicated to be outside of any SPZ.

3.3.6 In addition to the SPZ3, a number of SPZ2 and SPZ1 are crossed by the Order Limits and Study Area, which are described in **6.9.A3 Environmental Statement Appendix 9.3 - Groundwater Baseline and Qualitative Groundwater Risk Assessment [~~APP-184~~Revision B]** and presented on **6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]**.

3.3.7 A small part of the Order Limits in the north of Section A is located within a groundwater Drinking Water Safeguarded Zone which is presented on **6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]**.

3.3.8 Further information with regard to groundwater and SPZs can be found in **6.9 Environmental Statement Chapter 9 - Contaminated Land Geology and Hydrogeology [~~APP-181~~Revision B]**.

3.3.9 The strategy for disposal of surface water runoff via infiltration within these zones is to be agreed with the Environment Agency (and SPZ owner) during subsequent designs stages. However, at this stage the following assumptions have been applied:

- SPZ1 – Inner Protection Zone: No infiltration drainage permitted
- SPZ2 - Outer Protection Zone: Infiltration permitted, but with the application of additional water quality measures (to be reviewed and agreed with the Environment Agency and asset owner)
- SPZ3 - Total Catchment: Infiltration permitted.

3.3.10 Where infiltration is permitted, it is assumed an appropriate level of treatment before infiltrating is needed (e.g. SuDS treatment train).

Section A and B

Norwich Main Substation

3.3.11 **6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]** illustrates that the substation and surrounding fields are located within a SPZ3, and the area of land to the east of the substation in the vicinity of the Environment Agency Main River is indicated as a SPZ2. There is no planned construction in the SPZ2. There is only construction in SPZ3 associated with the connection and termination of the overhead line route. This means infiltration is permitted with an appropriate level of treatment.

3.3.12 From existing BGS borehole data in the vicinity of the substation no groundwater has been encountered in BGS boreholes except in borehole TG20SW39 located at the south-east corner of the existing substation site, where water was struck at 3.05 m below ground level. This is most likely to be found within interbedded sand within the clay strata. Given the shallow excavation depths proposed and small scale of below-ground infrastructure, it is not anticipated that groundwater will be encountered.

RG Overhead Line Alignment

3.3.13 As set out in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**, paragraphs 4.8.42 to 4.8.58, all overhead line works are temporary. Therefore, the permanent impact of the overhead line construction works is considered to be negligible to groundwater. Proposed temporary drainage features outlined in Section 5.6 will manage groundwater risks at the construction stage.

Bramford Substation

3.3.14 The entirety of the substation and the proposed extension lie within a SPZ3 (Total Catchment), as indicated in **6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]**. This means infiltration is permitted with an appropriate level of treatment before infiltrating. However, no infiltration drainage has been proposed.

3.3.15 From existing BGS borehole data in the vicinity of the proposed Project, the water table depth varies between 15 m and 47 m deep. Given the shallow excavation depths proposed for small scale below-ground infrastructure, it is not anticipated that groundwater will be encountered.

Section C, Section D, Section E, Section F, Section G and Section H

JC Overhead Line Alignment

3.3.16 As set out in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**, paragraphs 4.8.42 to 4.8.58, all overhead line works are temporary. Therefore, the permanent impact of the overhead line construction works is considered to be negligible to groundwater. Proposed temporary drainage features outlined in Section 5.6 will manage groundwater risks at the construction stage.

Dedham Vale National Landscape Underground Cable

3.3.17 Most of the proposed cable alignment lies within SPZ3, which means infiltration is permitted with an appropriate level of treatment before infiltrating, with a small section encroaching into SPZ2 and SPZ1 as per **6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]**, where infiltration would require further water quality control measures as stated in Section 6.2. However, the proposed drainage design only proposes ground infiltration in SPZ3.

3.3.18 From existing BGS borehole data in the vicinity of the proposed Project, the water table was generally encountered at depths greater than 5.7 m below ground level; much deeper than the shallow excavation depths proposed (approx. 1.5 m for cable trenches) for small scale below-ground infrastructure.

EACN Substation

3.3.19 The entirety of the EACN Substation sits within SPZ3, which means infiltration is permitted as per **6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]**.

3.3.20 Towards the south-west of the proposed substation site, the water table was encountered at shallower depths between 1.62 m and 2.6 m below ground level. In order to comply with the CIRIA C753 SuDS Manual, Clause 13.2, infiltration basins will need to be shallow to maintain the minimum distance of 1 m between the base of the infiltration system and the water table, assumed to be 0.5 m pending confirmation of peak seasonal groundwater depth.

TB Overhead Line Alignment

3.3.21 As set out in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**, paragraphs 4.8.42 to 4.8.58, all overhead line works are temporary. Therefore, the permanent impact of the overhead line construction works is considered to be negligible to groundwater. Proposed temporary drainage features outlined in Section 5.6 will manage groundwater risks at the construction stage.

Great Horkesley Underground Cable Alignment

3.3.22 The entirety of the proposed cable alignment lies within SPZ3, which means infiltration is permitted as per **6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]**.

3.3.23 From existing BGS borehole data in the vicinity of the proposed Great Horkesley Underground Cable Alignment, the water table was encountered at 4 m below ground level; deeper than the shallow excavation depths proposed (approx. 1.5 m for cable trenches) and small scale below-ground infrastructure.

Fairstead Underground Cable Alignment

3.3.24 The entirety of the proposed cable alignment lies within SPZ3, which means infiltration is permitted as per **6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]**.

3.3.25 The limited groundwater information appears to suggest groundwater is present within the bedrock. It is anticipated that groundwater will not be encountered within the superficial deposits (<5 m below ground level). However, ground investigation will be carried out to confirm the groundwater conditions in the vicinity of the site.

Tilbury North Substation

3.3.26 All three subsections of Tilbury sit within SPZ3. This means infiltration is permitted with an appropriate level of treatment before infiltrating. There are limited BGS historical boreholes in the vicinity of the site area which recorded groundwater.

3.3.27 Notably, borehole TQ68SE34 in the western margin of the site recorded a rest water level of 15.4 m below ground level situated within the Chalk. Another borehole, TQ67NE33 located approximately 370 m to the east of the site, recorded a groundwater level at approximately 7.9 m below ground level, situating within the Thanet Formation.

3.3.28 The limited groundwater information appears to suggest groundwater is present within the bedrock. It is anticipated that groundwater will not be encountered within the superficial deposits (<5 m below ground level). However, ground investigation will be carried out to confirm the groundwater conditions in the vicinity of the site.

Modifications to the Existing YYJ Infrastructure

3.3.29 The majority of the site sits within SPZ3, meaning infiltration is permitted. However, there is a SPZ2 to the east as per **6.9.F5 Environmental Statement Figure 9.5 - Hydrogeology and Hydrogeological Receptors [APP-190]**, meaning infiltration is permitted, but with the application of additional water quality measures.

3.3.30 Borehole TQ68SE34 found groundwater at 15.4 m below ground level. As the YYJ infrastructure lies adjacent to the Tilbury North Substation, it is anticipated that similar groundwater conditions are present within the site boundary. Historical borehole logs from the BGS suggest that groundwater will likely be encountered in the bedrock but not in the superficial deposits.

4. Foul Water Drainage Strategy

4.1 Temporary Foul Drainage

4.1.1 Construction compounds will include portacabins for the staff as part of the on-site welfare facilities.

4.1.2 It is proposed that there will be an independently managed foul drainage system within the construction compounds to contain waste produced from welfare and toilet facilities. It is expected that the foul water will be contained on-site and regularly pumped, emptied, and transported off-site. Therefore, currently there is no requirement for any formal below ground foul drainage on site or any off-site connections. However, if practicable and feasible the Main Works Contractor may establish connections to the existing foul water sewers for some of the construction compounds. This would be confirmed in the detailed design and set out in the Main Works Contractor's Surface Water Management Plan as secured in commitment GG22, in **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**.

4.2 Permanent Foul Water

4.2.1 As all working areas for the overhead line sections are temporary, no permanent foul water facilities are required. Only permanent infrastructure such as substations and CSE compounds require permanent foul water facilities.

Norwich Main and Bramford Substations

4.2.2 Both Norwich Main and Bramford Substation currently have operational welfare facilities any further requirements would be defined at a later stage of the Project.

CSE Compounds

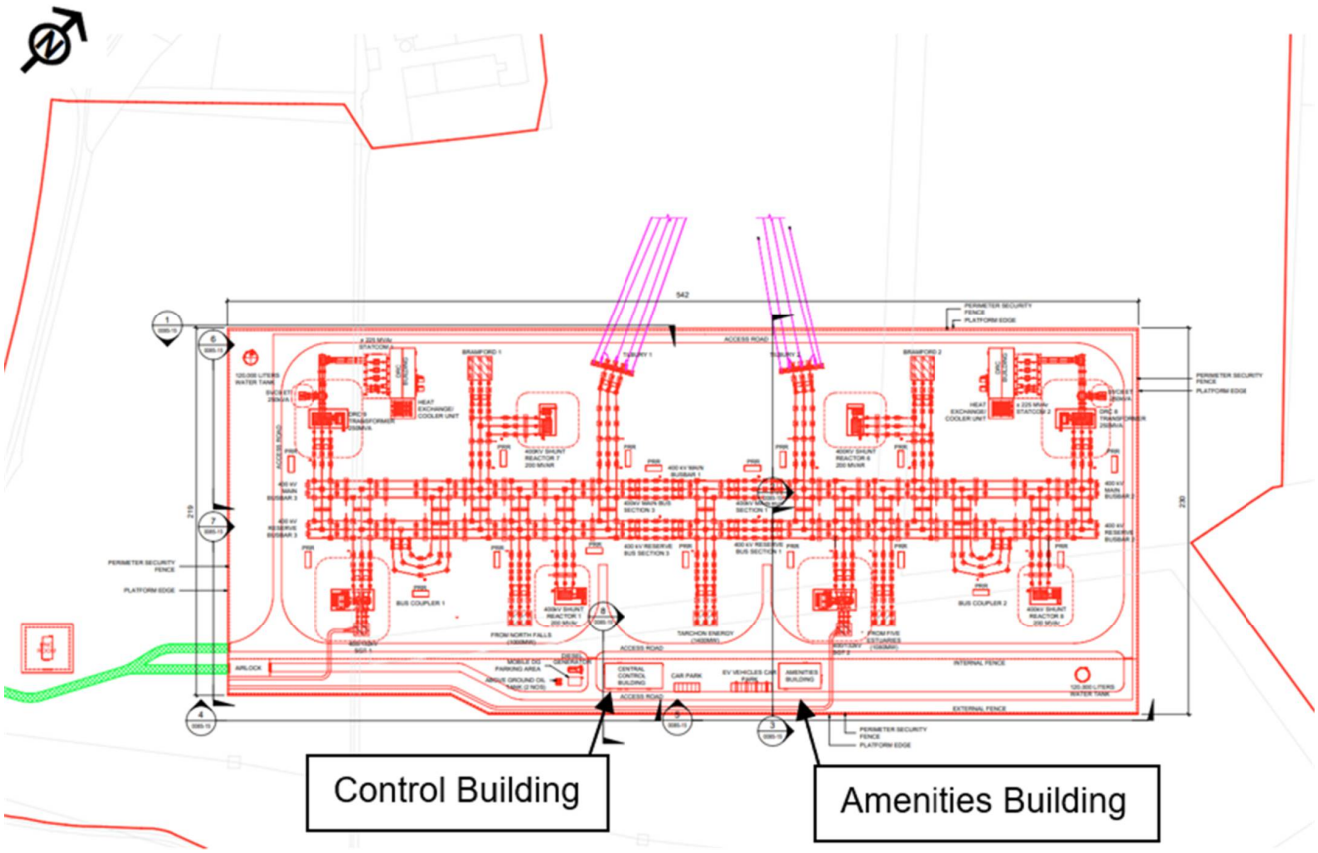
4.2.3 No new permanent welfare facilities are proposed for the CSE compounds, therefore no permanent foul water design is required in those locations.

EACN Substation

4.2.4 Permanent foul sewer drainage is proposed for the operational use of the substation. The substation will contain a control and amenities building with on-site welfare facilities for the staff, including hand basins and WCs, therefore a permanent foul sewer is required. The proposed foul sewer flows from the site will be infrequent and of low volume. Internal layouts of the control and amenities building will be developed at a later stage and consequently, foul sewer drainage has not been shown on drawings.

4.2.5 Refer to **2.6.1 Design and Layout Plans - Subs and Cables [~~Revision D~~REP6-020]** (AENC-MMAC-ENG-DWG-0085-14). An extract of this drawing has been presented in Image 4.1.

Image 4.1 Indicative EACN Substation layout



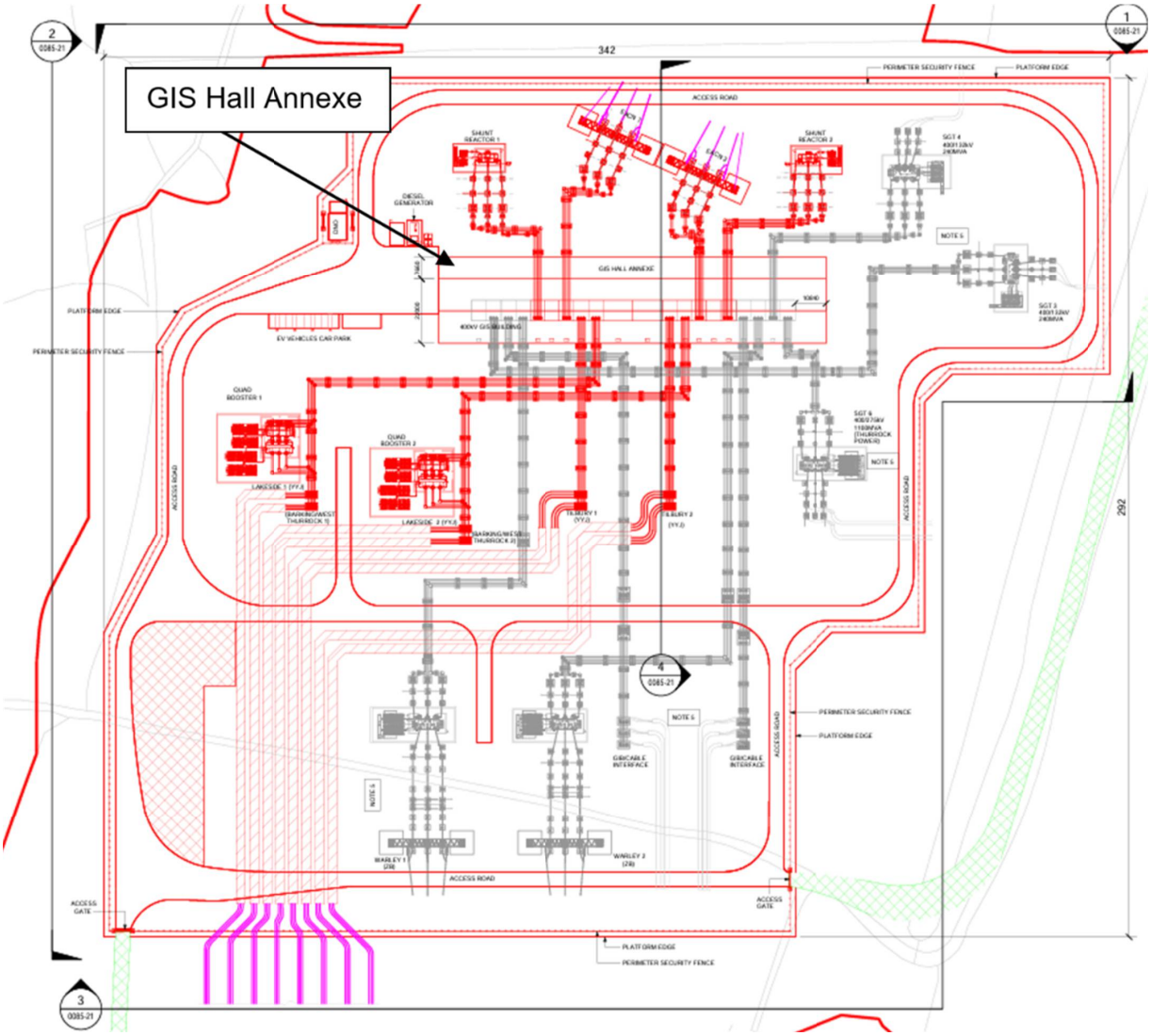
4.2.6 The Building Regulations 2010, part H1 states that foul sewer drainage should be connected to a public foul sewer or combined sewer wherever this is reasonably practicable. The nearest foul sewer drainage to the substation is shown in Image 3.1. This is 2 km north-west of the proposed substation, where a gravity option is not possible. If no other nearby foul or combined sewers are encountered, a package treatment plant (likely to be a rotating biological contactor or an aeration based biological treatment system) will be required. Following treatment, it will be proposed to discharge by gravity to the nearest surface water outfall. Discharge by gravity may not be possible at the EACN Substation, therefore a pumped solution may be required.

Tilbury North Substation

4.2.7 The proposed Tilbury North Substation will require permanent foul sewer drainage. The GIS Hall annexe would contain the control and amenities facilities, and they would provide the on-site welfare facilities for the staff, including hand basins and WCs, therefore permanent foul sewage is required. The proposed foul sewer flows from the Project will be infrequent and of low volume. Internal layouts of the control and amenities facilities will be developed at a later stage and consequently, foul sewer drainage has not been shown on drawings.

4.2.8 Refer to **2.6.1 Design and Layout Plans - Subs and Cables [~~Revision D~~REP6-020]** (AENC-MMAC-ENG-DWG-0085-20). An extract of this drawing has been presented in Image 4.2.

Image 4.2 Indicative Tilbury North Substation layout



4.2.9 The Building Regulations 2010, part H1 state that foul sewer drainage should be connected to a public foul sewer or combined sewer wherever this is reasonably practicable. There is an Anglian Water foul sewer approximately 1 km south of the substation. It may be feasible to connect into this existing sewer via gravity; however, it would require a significant length of pipework for a connection to be constructed. If the connection is deemed to be too long and no other nearby foul sewer drainage or combined sewers are encountered, a package treatment plant (likely to be a rotating biological contactor or an aeration based biological treatment system) will be required. Following treatment, it will be proposed to discharge by gravity to the nearest surface water outfall. If required, this would likely be the same outfall that is proposed for the surface water drainage system.

5. Surface Water Drainage Strategy

5.1 Overview

5.1.1 This section gives the proposed drainage design strategy for each component of the Project. This strategy elaborates upon the requirements of the **7.2 Outline Code of Construction Practice [Revision ~~F~~G]** and follows the design guidance from each drainage stakeholder as outlined in Section 2.3. Details of each drainage catchment are summarised in Appendix A. Indicative drainage figures are included in **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]**.

5.2 Design Storm Events

Permanent Works

5.2.1 The permanent works include the normal features of substations, CSE compounds and pylons: buildings, internal roads, car parks and external access roads. The drainage criteria for permanent work will follow the design requirements of the National Grid design document TS 2.10.09. Design storm events are detailed in Table 5.2.

5.2.2 None of the elements in the overhead line alignment are seen as needing permanent surface water drainage, because the impermeable area of the pylons are considered negligible.

Temporary Works

Norfolk County Council

5.2.3 The Norfolk Lead Local Flood Authority Guidance for Developers requires the use of a 1 in 100-year return period with no allowance for climate change (providing construction takes less than 10 years). Norfolk County Council guidance requires an allowance for climate change to be applied, a 20% allowance in accordance with the 'central allowance' uplift for the 2050s epoch is considered to be appropriate.

Suffolk County Council

5.2.4 The Suffolk Local Flood Risk Management Strategy Appendix A Sustainable Drainage Systems (SuDS): A Local Design Guide requires the use of a 1 in 100-year return period with no allowance for climate change (providing construction takes less than 10 years) for any development within Suffolk. Suffolk County Council guidance does not require an allowance for climate change but, a 20% allowance in accordance with the 'central allowance' uplift for the 2050s epoch is considered to be appropriate.

Essex County Council

5.2.5 During engagement with Essex County Council, it was agreed that drainage serving temporary works would accommodate runoff generated during a 1 in 100-year rainstorm plus a 20% climate change allowance.

Thurrock Council

~~5.2.6 No further responses from Thurrock Council have been received. Therefore, design criteria will be used as per the guidance provided by Essex County Council. This may be updated upon further engagement with Thurrock Council.~~

5.2.6 Historically the design criteria used was as per the guidance provided by Essex County Council. During engagement with Thurrock Council, it was agreed that temporary works drainage would be designed to accommodate runoff from a 1 in 30-year rainfall event with a 25% climate change allowance. This requirement is encompassed by the design standard already adopted for the Project (in accordance with the Essex County Council engagement), namely a 1 in 100-year rainfall event with a 20% climate change allowance.

Climate Change

5.2.7 The National Planning Policy requires that there should be no increase in the rate of surface water emanating from a newly developed site above that of any previous development. In addition, all drainage systems should be sized to accommodate the runoff arising from a 1 in 100-year rainfall event and should include a further allowance to account for the effects of climate change, using the peak rainfall allowances provided by the Environment Agency.

5.2.8 Peak rainfall allowances from the Environment Agency are shown in Table 5.1; all values are for the 2070s epoch (based on a minimum 50-year design life), with conservative upper end allowances utilised.

Table 5.1 Environment Agency peak rainfall allowances (for permanent infrastructure)

Site	Climate Change Allowance (%)
Norwich Main Substation	45
Bramford Substation	45
Wenham Grove CSE Compound	45
EACN Substation	45
Great Horkesley CSE Compounds	45
Fairstead CSE Compounds	45
Tilbury North Substation	45
CSE compound related to modifications to the existing YYJ infrastructure	45

5.2.9 Table 5.2 summarises the design storm events used in the drainage designs. The climate change percentage is 45% in all areas, as a conservative value has been applied for consistency purposes.

Table 5.2 Design storm events and climate change allowances

		Permanent		Temporary		
Area	**LLFA**	**Event**	**Climate Change (%)**	**Event**	**Climate Change (%)**	**FSR / IH24**
Overhead line sections	Several	N/A	N/A	1:100	25*	As per LLFA Reqs
Norwich Main Substation	Norfolk	1:100	45	1:100	20	IH24
Bramford Substation	Suffolk	1:100	45	1:100	20	IH24
Dedham Vale National Landscape	Suffolk	1:100	45	1:100	20	IH24
Dedham Vale National Landscape	Essex	1:100	45	1:100	20	FSR
Great Horkesley	Essex	1:100	45	1:100	20	FSR
Fairstead	Essex	1:100	45	1:100	20	FSR
Tilbury North Substation	Thurrock	1:100	45	1:30	25	As per Essex
Modifications to the existing YYJ Infrastructure	Thurrock	1:100	45	1:30	25	As per Essex

*Refer to paragraph 5.4.42 for further information.

Source: LLFA Guidance (see Table 2.3)

5.2.10 Table 5.3 summarises the greenfield runoff rates used in the drainage design. The greenfield runoff is either Qbar or the 1 in 1 year greenfield depending on the authority subject to a maximum of 2 l/s/ha (1.4 l/s/ha in areas of IDB catchment).

Table 5.3 Greenfield runoff rates

Infrastructure	**Runoff Limit Per Hectare**
Permanent	2 l/s
Temporary Cables	2 l/s
Temporary Overhead Line	2 l/s (1.4 l/s in areas of IDB catchment)

Source: LLFA Guidance (see Table 2.3)

5.3 Runoff Destination

5.3.1 It should be acknowledged that the satisfactory collection, control, and discharge of storm water is a principal planning and design consideration.

5.3.2 Sustainable approaches to surface water drainage management have been followed by the Project including, where appropriate:

- Source control measures including rainwater recycling and drainage
- Satisfactory collection, control, treatment and discharge of surface water
- Infiltration devices to allow water to soak into the ground, that can include individual soakaways and communal facilities
- Filter strips and swales, which are vegetated features that hold and drain water downhill mimicking natural drainage patterns
- Filter drains and porous pavements to allow rainwater and runoff to infiltrate into permeable material below ground and provide storage if needed
- Basins, ponds and tanks to hold excess water after rain and allow controlled discharge that avoids flooding
- Flood routes to carry and direct excess water through development to minimise the effect of severe rainfall flooding.

5.3.3 SuDS should mimic natural drainage and reduce the amount and rate of water flow by:

- Infiltration into the ground
- Holding water in storage areas
- Slowing the flow of water.

5.3.4 The design will meet the following discharge hierarchy (with acceptable justification for moving between levels) by the National Standards for Sustainable Drainage guidance:

- Water to be reused, where practicable (on and off site) (most preferred)
- Infiltration to the maximum extent that is practical – where it is safe and acceptable to do so
- Discharge to surface waters
- Discharge to surface water sewer
- Discharge to combined sewer (last resort).

5.3.5 The design has applied the above discharge hierarchy in principle by replicating the natural drainage processes of each catchment as closely as possible. Since specific locations proposed for ponds/basins have not all been tested for infiltration potential. Desktop study has indicated that these sites are likely not suitable, therefore the design has sought to include a viable drainage option in these instances. The proposed discharge methodology per drainage feature is set out in Appendix A and

shown in the drainage plans provided in **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]** illustrate the respective proposed discharge methodologies.

5.3.6 Where practicable the design may collect surface water runoff for use, however this is not expected to be viable solution in all scenarios.

5.3.7 The detailed design may adopt additional surface water discharge/management methods, once the discharge hierarchy has been exhausted. These will be confirmed at the detailed design stage and included in the Main Works Contractor's Surface Water Management Plan, secured by Commitment GG22 in **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**. These methods may include:

- Cascading surface water runoff between drainage features
- Overground diffuse outfalls
- Surface water runoff may be tankered off-site as a backstop solution for all temporary works as a last resort.

5.4 Management of Extreme Rainfall and Flooding

5.4.1 The proposed surface water drainage strategy is to replicate as closely as possible the natural runoff characteristics of the existing site, intercepting all flows from the permanent works and temporary works, prior to discharging them in line hierarchy set out in Section 5.3.

5.4.2 Where applicable management of extreme rainfall and flooding is to be coordinated with other developers, including Lower Thames Crossing. Further engagement with the LLFAs, Environment Agency and relevant statutory undertakers and developers is required throughout the detailed design.

Construction and Operational Discharge

5.4.3 The existing conditions, constraints and available data sources that have been set out in this report will be used to identify the catchment areas and drainage discharge routes. The above hierarchy is a summary of the potential discharge routes which could be utilised at each site. The respective site layouts are shown in **6.4.F1 Environmental Statement Figure 4.1 - Proposed Project Design [REP4-109]** and **6.4.F2 Environmental Statement Figure 4.2 - Proposed Project Design -Permanent Features [REP4-110]** and the proposed discharge methodology per drainage feature is shown in Appendix A. Indicative drainage figures are included in **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]**; these figures illustrate the indicative Project overland flows.

5.4.4 **3.1 Draft Development Consent Order [~~REVISON F~~Revision G]**, Article 20 must be adhered to with regards to the discharge of water for the Project. Discharge rates to Water Management Alliance (WMA) watercourses have been agreed through engagement with the WMA.

Water Reuse

5.4.5 Every opportunity to capture water for reuse will be taken both during construction and in the operational phase. Water reuse will be developed liaising with the Lead Local Flood Authorities (LLFAs) and relevant statutory undertakers with ongoing dialogue during implementation of the measures.

Discharge via Infiltration

5.4.6 The viability of a soakaway or other infiltration system is dependent on the conditions that are specific to each site. Specifically, the infiltration rate of the underlying soil, groundwater conditions, possible contaminants and spatial constraints should all be considered.

5.4.7 The permeability of the existing ground and underlying geology of the Project is discussed in Section 3.3 of this report. A ground investigation to confirm infiltration capabilities and groundwater rates at the location of proposed attenuation areas has not been carried out and will be produced at a later stage, where appropriate.

5.4.8 Infiltration features should discharge from full to half full within 24 hours for the 3.33% + climate change (cc) AEP storm with space for an additional 10% + cc AEP storm if it exceeds 24 hours so that the risk of it not being able to manage a subsequent rainfall event is minimised.

5.4.9 Infiltration features located within Suffolk are to be in accordance with the Suffolk County Council Managing Runoff guidance. Where shallow infiltration (circa 2m deep) is proposed, all trial pits across the site are to be carried out to BRE365 specification with minimum infiltration rate of 10mm/hr (2.78x10-6 m/s) if infiltration is to be the sole method of drainage.

Discharge to a Watercourse

5.4.10 The sites are currently undeveloped, therefore, in line with guidance from the LLFAs, the flow restriction from the developed site shall be based on either the estimated ‘greenfield’ runoff rate for Norfolk and Suffolk or the estimated 1in1 year ‘greenfield’ runoff rate for Essex and Thurrock, both limited to a maximum rate of 2 l/s/ha. In locations along the overhead line alignment running through IDB catchment, the discharge rate is 1.4 l/s/ha in accordance with the WMA’s requirement.

5.4.11 The proposed discharge rate would be controlled by a vortex flow control chamber or an orifice control.

5.4.12 Constructing an outfall to the water course would require consent from the Environment Agency where an outfall is to a Main River, and the LLFA or IDB where an outfall is to an Ordinary Watercourse, depending on whether the outfall is within an IDB district.

Discharge to an Existing Reservoir / Water Body

5.4.13 Where discharging to the nearest watercourse is not practical, due to long outfall pipe requirements or constraint crossings for example, discharging into the closest lake or reservoir at a restricted rate is proposed.

5.4.14 Constructing an outfall to the water body or utilising the water body for attenuation would require consent from the owner.

Discharge to Existing Drain or Public Sewer

5.4.15 There are no public sewers in a suitable location for disposal of surface water flows from the Project, as indicated in Section 3.2 of this report. Disposal of extreme rainfall to public combined/foul sewers is not suitable. Existing surface water sewers

are unlikely to be used for Project drainage, but where necessary, permission would be sought from the applicable water supplier before connection to the existing sewer.

Estimated Storage Volumes

5.4.16 The MicroDrainage Source Control Module has been used to design an initial estimate of attenuation / infiltration storage volume that would be required to limit runoff from work sites to the greenfield runoff rates.

5.4.17 A minimum freeboard value of 300 mm has been used for all attenuation/infiltration storage areas as a starting presumption. In accordance with the SuDS manual guidance temporary drainage basins where appropriate may be designed to a smaller freeboard depth. Where necessary this approach will be utilised at detailed design, with each design agreed liaising with the Lead Local Flood Authorities (LLFAs) and relevant statutory undertakers.

5.4.18 The drainage calculations were performed using the following input data:

- The proposed catchment areas have been extracted from the Project plans and assigned the appropriate design criteria (for temporary or permanent design)
- The discharge rates have been associated to each catchment area according to their individual impermeable areas following the criteria for the post-development discharge rate discussed in Section 5.4 of this report.

5.4.19 MicroDrainage has been used along with the respective FSR or FEH Point Data to calculate the drainage storage volumes.

5.4.20 For Suffolk County Council and Norfolk County Council, the MicroDrainage 'Rural Runoff' functionality has been used with FEH catchment data to calculate the Qbar runoff rate values for each catchment. For Essex County Council and Thurrock Council the HR Wallingford Tool[20] was used to calculate the 1in1 year greenfield runoff rates for the underground cable sections. FEH catchment data has been used for the overhead line sections within Essex County Council and Thurrock Council.

Impervious Values

5.4.21 Impervious values have been identified for all components in the Project; these are to be confirmed at detailed design. Final percentages have been conservatively rounded up to the nearest 5%. Component impermeability percentages are shown in Table 5.4.

Table 5.4 Component permeable / impervious rates

Component	Type	Impermeability (%)
Buildings	N/A	100
Roads / Parking	Asphalt	100
Haul Roads	Type 1 Compacted Granular Material	80

[20] https://www.uksuds.com/

Component	Type	Impermeability (%)
Plat / Cable Drum Storage	Type 3 Gravel	30
Spoil / Laydown Areas	N/A	20
Cable Trenches	N/A	20

5.4.22 Project elements are made up of a combination of the components. Therefore, Project element percentage impervious values have been calculated on the percentage area occupied by each component as indicated on standard details and cross sections. For example, construction compounds will consist of a combination of cabins (on asphalt areas), roads, parking, storage and spoil / laydown areas. Therefore, Project elements within the allocated drainage catchment areas will be assumed to have the percentage impervious rates given in Table 5.5. Indicative and illustrative layouts for the Project elements can be seen presented in **2.6.1 Design and Layout Plans - Subs and Cables [~~Revision D~~REP6-020]** and **2.6.2 Design and Layout Plans - Overhead Lines [APP-042]**.

Table 5.5 Project element permeable / impermeable rates

Project Elements	Impermeability (%)
Substation	50
CSE compound	50
Main Works Compound / Primary Construction Compound	60
Satellite compounds / Substation and CSE compounds / Secondary Compounds / Concrete batching plant compounds	75
Underground Cable Construction Swathe	15
Overhead Line Construction Swathe	15

5.4.23 For the Overhead line construction swathe, at this stage, a 100% impervious value has been used for the full width of the haul road swathe as a conservative assumption (21 m wide). The total Overhead line alignment construction swathe is typically 100–130 m wide, so the approximate percentage impermeability is 15%.

5.4.24 Further information and descriptions of each Project element can be found in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**.

Proposed Surface Water Drainage Networks

5.4.25 The strategy for the drainage is established via three independent networks as per the quality of the water to be collected.

Temporary 'Dirty Water' Drainage Network

5.4.26 Runoff from temporary features during the construction stage is considered 'dirty water' due to the possibility of contamination with oils and silts. Where appropriate

the design shall include pollution controls and treatment, and the contractor shall implement suitable mitigation measures to manage this risk during construction. Pollution controls and treatment, if required, would be identified following the methodologies as set out in Section 6.

Temporary/Permanent 'Clean Water' Drainage Network

5.4.27 Greenfield runoff from existing overland flows that are intersected by the substations, compound platforms, access roads and construction compounds is considered 'clean water'. Header drains are proposed to run along the perimeter of the proposed platforms and construction swathe to intercept overland flows. These will discharge to the nearest watercourse without flow restriction if the size of the overland flow catchment is minor or with flow restriction via an attenuation basin if the overland flow catchment is larger. If no suitable route can be identified to discharge by gravity, pumping could be required. These drainage features have not been individually specified at this stage.

5.4.28 If 'clean water' drainage networks are combined with 'dirty water' drainage networks, the appropriate pollution controls and treatment shall be implemented.

Permanent Surface Water Drainage Network

5.4.29 Runoff from the permanent features considers surface water drainage of the substation plot, including transformers, buildings and internal roads, and the external access road.

Temporary Works

5.4.30 It should be noted that all temporary features described in this section will be removed and reinstated to the previous land use. As set out in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**, paragraphs 4.8.104 to 4.8.106. Commitment W14 within **7.2 Outline Code of Construction Practice [Revision ~~F~~G]** secures that '*once the Project has been constructed, the working areas will be removed. Any stripped topsoil will be subject to decompaction prior to being reinstated, and the site will be returned to its former use, subject to any planting restrictions or agreements with landowners. Temporary bridges and culverts (associated with the construction haul roads) will only be retained by exception e.g. if the new temporary structure has replaced an existing one in poor repair. When these locations are confirmed, crossings would be designed to reflect their permanence e.g. culvert sizing to accommodate climate change allowance. Replacement drainage schemes will be installed where appropriate. A specialised drainage contractor(s) will review the drainage designs and the relevant LLFA will be consulted on proposals (where it is not simply a replacement of the existing drainage run). The specialist contractor(s) will provide advice to National Grid and the Main Works Contractor(s) during all relevant construction and reinstatement activities. Permanent records of the land drainage locations will be made and passed to the landowners/occupiers'.*

5.4.31 Temporary works are to be installed for approximately five years.

Construction Compound Sites

5.4.32 As set out in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**, paragraphs 4.8.2 to 4.8.11, construction compounds may include areas

of hardstanding, lay down and storage areas for construction materials and equipment, areas for vehicular parking, welfare facilities, wheel washing facilities, workshop facilities, and temporary fencing or other means of enclosure. At this stage, construction compounds have been assumed to have 60–75% of their gross site area as impervious, based on the typical compound layouts as presented in **2.6.1 Design and Layout Plans - Subs and Cables [~~Revision D~~REP6-020]** and **2.6.2 Design and Layout Plans - Overhead Lines [APP-042]**. Soil bunds surrounding the compounds have been excluded from the compound drainage design. In line with commitment W13 within the **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**, the contractor is to manage runoff from compounds and laydown sites using suitable SuDS that will provide the appropriate attenuation and treatment of runoff, including where required, oil separators or bunding procedures to control pollution risks.

5.4.33 Any fuelling areas within the compound will be bunded and managed separately. For further details, refer to Section 6.2.

Haul Roads

5.4.34 As set out in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**, paragraphs 4.8.13 to 4.8.30, the haul roads are used to facilitate access to the Project from the public highway, and from construction compounds to working areas.

5.4.35 For overhead line construction, the haul roads would be typically 6 m wide, with passing places (widening to 8 m) provided at typical intervals of 200 m. The frequency of passing places would be determined by site-specific conditions at the detailed design stage and the forward visibility along the haul roads.

5.4.36 For the construction of underground cables, CSE compounds and substations, the haul roads would be typically 8 m wide to allow for the delivery and movement of larger equipment using Abnormal Indivisible Load vehicles.

5.4.37 The typical cross section of the haul road construction swathe would be 21 m wide. The swathe is wide enough to accommodate the haul road, in addition to topsoil and subsoil storage, drainage, and demarcation fencing. A standard detail showing the typical layout of the haul road is shown on **2.6.3 Design and Layout Plans - Traffic and Transport [APP-043]**.

5.4.38 It is proposed that a ‘dirty’ channel drain along the edges of the haul road will collect runoff from the haul road and avoid any possible pollutants draining into the ground during construction. This channel drain will discharge into the proposed attenuation basins which include a treatment element to clean anticipated pollutants from the road. In order to locate the proposed attenuation basins to drain the haul roads, the haul road has been subdivided into sections based on the existing longitudinal ground profile and anticipated low points along the route.

Overhead Line

5.4.39 As set out in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**, paragraphs 4.8.42 to 4.8.58, all overhead line works are temporary and only have a temporary impact on surface water runoff. Therefore, the permanent impact of the overhead line works is considered to be negligible to surface water

flood risk. It should be noted that there may need to be localised land drainage diversions to facilitate the pylons.

5.4.40 A suite of illustrative design drawings are presented in **2.6.2 Design and Layout Plans - Overhead Lines [APP-042]**, including details on the illustrative pylon working areas and other examples of key components of the temporary construction phase such as temporary compounds, works areas and access. It is determined that the stone haul road, stone working areas and temporary compounds have the potential to alter the existing surface water flow regime. Therefore, these Project elements have been included within the estimated overhead line percentage impervious rates given in Table 5.5.

5.4.41 All overhead line works are temporary, and a sustainable drainage strategy has been proposed to mitigate the potential increase in runoff rate as a result of the increase in impermeable area, and the potential increase in pollution due to vehicle movements. To provide a conservative assessment the impermeable area has been determined from the full width of the haul road swathe (21 m wide).

5.4.42 SuDS provide storage for the 100 year plus 25% climate change event for the overhead line route alignment. This value was determined by the most stringent guidance from all stakeholders on the overhead line sections, which in this case is the Essex Combined Management Catchment. The LLFAs expect the SuDS to be designed to the 100 year plus 20% climate change event at a minimum. The climate change allowance has been determined in accordance with the duration of the construction phase (assumed to be up to five years for this assessment), in accordance with the Environment Agency peak rainfall allowances.

5.4.43 Surface water runoff originating from the haul road, pylon work sites, and temporary construction compounds along the overhead line routes will be managed via piped drainage, swales, or filter drains, directing flows into surface water storage basins.

5.4.44 Infiltration SuDS such as soakaways or infiltration basins would only be used where it can be demonstrated that infiltration is viable within the ground conditions and they will not pose a risk to the water environment.

5.4.45 If infiltration is not achievable the drainage hierarchy is followed, and surface water runoff is discharged to a water body at a rate agreed with stakeholders as seen in Table 5.2.

5.4.46 To manage the potential for pollution from sedimentation from the trafficked haul road, pylon working areas or temporary construction compounds, pollution controls and treatment shall be implemented, where appropriate as set out in Section 6.

Substations and CSE Compounds

5.4.47 No specific temporary drainage is installed for substation and CSE compounds. Permanent drainage installation is phased to collect surface water runoff as the substations and CSE compounds are being constructed.

Underground Cables

5.4.48 The underground cables are described in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**, paragraphs 4.8.65 to 4.8.78. The proposed High Voltage Alternating Current (HVAC) construction swathe details are demonstrated in **2.6.1 Design and Layout Plans - Subs and Cables [~~Revision D~~REP6-020]**. This assessment considers the 120 m-wide swathe, containing an 8 m-wide haul road along its centreline. The remainder of the proposed 120 m-wide construction swathe has been assumed to be permeable, but an additional allowance of impermeable area has been added to reduce the potential for impacts associated with changes to surface water runoff and flood risk during construction. The HVAC construction swathe is considered to be 15% impervious within its gross site area. This assumption aims to reduce the potential for impacts associated with changes to surface water runoff and flood risk during construction.

5.4.49 Either side of the haul road will be bunded from the spoil excavated during the installation of the below ground cables which has the potential to interrupt natural flow paths in some locations. Header drains will collect this ‘clean’ surface water and direct it to the nearest watercourse.

5.4.50 The cable trenches are located within the HVAC construction swathe. The cable trenches could require to be drained during construction only, when the ground on top of the trenches is not yet re-instated. Any water that enters the trenches would be pumped to the attenuation / infiltration basins that drain the construction swathe.

Jointing Bays

5.4.51 Jointing bays will be located at locations along the cable route as described in **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]**, paragraphs 4.8.67 and 4.8.69, in each of the trenches along with associated above ground pillars. A reinforced concrete slab will support the joint units with drainage sumps either end and backfilled as per the NGET technical specifications. The joint units are resilient to flooding, and access to the joint link boxes is typically required every four to five years for inspection.

Permanent Works

Drainage in the New Substations and Substation Extension Sites

5.4.52 The drainage of these sites will be designed to restrict runoff to greenfield rates and convey it to attenuation ponds before discharging to the nearest watercourse. The attenuation volumes quoted are solely to balance stormwater runoff.

5.4.53 The surface water drainage strategy for the substations is informed by the **7.9 Flood Risk Assessment [APP-331]** and information fed in from the LLFA.

5.4.54 This report considers estimating the volume of attenuation storage required for the scenario where 50% of the footprint is permeable.

5.4.55 The finished platform levels are proposed to be stone surfacing, laid in accordance with National Grid Design Standards, consisting of a minimum 300 mm deep unbound free draining subbase and a minimum 75 mm top layer of stone chippings, allowing for storage of storm water during a storm event and drainage to existing ground.

Drainage in the CSE Compounds

5.4.56 The drainage of these sites will be designed to restrict runoff to greenfield rates and convey it to attenuation ponds before discharging to the nearest watercourse. The attenuation volumes quoted are solely to balance stormwater runoff.

5.4.57 The surface water drainage strategy for the CSE compounds will be informed by the **7.9 Flood Risk Assessment [APP-331]** and information fed in from the LLFA. The current drainage design of the CSE compounds considers the plot only and not the details of the layout since they are not complete at this stage of the design.

5.4.58 This report considers estimating the volume of attenuation storage required for the scenario of the site being partially permeable (50% of the footprint permeable).

5.4.59 The finished platform levels are proposed to be stone surfacing laid in accordance with National Grid Design Standards, consisting of a minimum 300 mm deep unbound free draining subbase and a minimum 75 mm top layer of stone chippings which will allow storage of storm water during a storm event and drainage to existing ground.

Access Roads and Bellmouths

5.4.60 Permanent access is required to infrastructure during the operational phase of the Project, for operational and maintenance purposes. It is assumed in the ES (Volume 6 of the DCO application) that these would be constructed using a bound solution (asphalt or concrete pavement as a worst-case); however, this would be determined at the detailed design stage. Access roads have been assumed to be 100% impermeable at this stage. This allows for the most conservative drainage design, allowing for worst-case land take estimates. Whilst this has been considered, in areas anticipated to be lightly trafficked a permeable road solution may be presented as an opportunity at a later stage, as per National Grid TS 2.10.08.

5.4.61 Bellmouths are required to allow vehicles to turn safely at all locations where the temporary haul roads or permanent access roads interface with the existing public highway. There are a significant number of proposed bellmouths across the Project of varying sizes which will be constructed from an impermeable material to interface with existing public highways. Where bellmouths are required only for temporary haul road accesses and cross overs, these would be removed and the land reinstated at the completion of the works. In some locations, bellmouths are required for both temporary access via the haul road, and permanent access to permanent infrastructure such as Cable Sealing End compounds. In these instances, the bellmouths will be retained.

5.4.62 Runoff from the access roads and bellmouths is proposed to be collected via infiltration drains/ditches along the edge and will be attenuated via the

attenuation/infiltration ponds with a controlled discharge to the nearest existing watercourse or drainage ditch.

Outfalls

5.4.63 All outfall locations are indicative as they are based on the OS Terrain 5, LiDAR data and mapping data obtained. Outfall locations will be reviewed and revised when information, such as detailed topographic data, is received at the next stage of the Project's design. Indicative outfall locations where they are currently identified are indicated in **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]**. Indicative outfall locations for the overhead line attenuation features have not currently been illustrated, however discharge from these features would follow the hierarchy set out in Section 5.3. Outfall locations where required, would discharge to locations within the Order Limits.

5.4.64 In accordance with TS 2.10.09, headwalls would be provided at all positions where a temporary or permanent drainage system discharges into open water. All outfalls to proposed detention basins are to consist of headwalls with a flap valve and all outlets from proposed detention basins are headwalls with a sluice gate. Scour protection should be provided for permanent and temporary outfalls. Outfalls should be angled at 45° to the water flow; small pipes (less than 300 mm diameter) can be at a maximum of 90° to the flow.

5.4.65 All attenuation and infiltration features are to be below existing ground level with a minimum 300 mm freeboard to ground level, as a starting presumption. In accordance with the SuDS manual guidance temporary drainage basins where appropriate may be designed to a smaller freeboard depth. Where necessary this approach will be utilised at detailed design, with each design agreed liaising with the Lead Local Flood Authorities (LLFAs) and relevant statutory undertakers. Overland flow arrows are illustrated in **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]**. Residual risks are negligible for the considered design events, with extreme exceedance events being considered at next stage. Where necessary, overland flow control structures will be considered further at detailed design. Locations where this may be required are noted on the drawings.

5.4.66 Commitment W15 from the **7.2 Outline ~~Construction~~ Code of Construction Practice [Revision ~~F~~G]** should be adhered to when constructing the drainage outfalls.

5.4.67 Water quality mitigations for discharging to watercourses are explained in Section 6.

5.5 Management of Everyday Rainfall (Interception)

5.5.1 The proposed SuDS features would allow interception of the first 5 mm of rainfall where possible, reducing runoff from the site into surface water or piped drainage systems.

5.5.2 Proposed attenuation basins containing standing water do not offer any interception as per Standard 2 of the National Standards for SuDS, therefore other SuDS approaches have been used to comply with the interception of everyday rainfall, where infiltration rates allow within the Project.

5.5.3 The substation platform and construction compounds would be constructed with permeable material, therefore offering interception of everyday rainfall. The permeable platform construction shall passively retain runoff, after which runoff will

be lost to the soils or the atmosphere. Where used for attenuation, permeable platforms shall have a contained permeable fill, and the discharge from the platform shall follow the discharge hierarchy, and if discharged to a watercourse will be a flow controlled discharge.

5.5.4 Filter drains with infiltration capabilities and swales, where possible, shall be placed along access roads and bellmouths to intercept everyday runoff. For swales to be suitable for interception they must comply with the following as per Standard 2 of the National Standards for SuDS:

- A longitudinal gradient of less than 1:100
- At least 500 mm of suitable base material
- A vegetated base surface area receiving runoff which is five times less than the impermeable area it serves, whether lined or unlined
- When infiltration capability is greater than $1x10^{-6}$ m/s and the swale is unlined, it shall be assumed that the vegetated base area of the swale can contribute to an impermeable area of up to 25 times its size
- Interception shall not be deemed to have been provided for impermeable areas draining to an unlined swale within 5 m from the swale outlet, unless the swale is flat and has a slightly raised outlet to create a temporary storage zone to encourage infiltration before runoff takes place.

5.5.5 As infiltration is often limited, everyday rainfall shall be captured, conveyed and stored within SuDS features, where runoff will be 'lost' to soils or the atmosphere.

5.6 Proposed Drainage Features

5.6.1 The construction swathe has been subdivided into sections based on the existing longitudinal ground profile, anticipated low points along the route and/or road/watercourse crossings. Attenuation storage has been sized based on these subdivisions and a further review is required once the vertical geometry of the haul road has been confirmed, which may increase or decrease the sizes of storage required. Illustrative typical details are presented in Appendix C.

Attenuation Storage

5.6.2 Two types of storage are considered – for the temporary construction phase and for the permanent operational phase:

- Permanent ponds only receive clean water from the permanent elements (substation and access road), and they do not have a designated volume for treatment
- Temporary basins receive water from construction compounds and haul roads and have a designated treatment volume. For each basin there will be area included for settlement of silts.

5.6.3 The spatial representation of the attenuation storage areas has been simplified to be elliptical areas along the cable route and three adjoining rectangular areas in the overhead line sections of the Project, as illustrated in **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]**.

5.6.4 An additional buffer of 5 m around the attenuation buffers has been included for access and maintenance and to allow for side slopes. The maximum depth of the attenuation storage is restricted due to the uncertainty of the groundwater table. Proposed attenuation storage depths vary from 0.5 m to 1 m, based on currently available elevation and groundwater data. Following further assessments, the depth of the attenuation storage may vary.

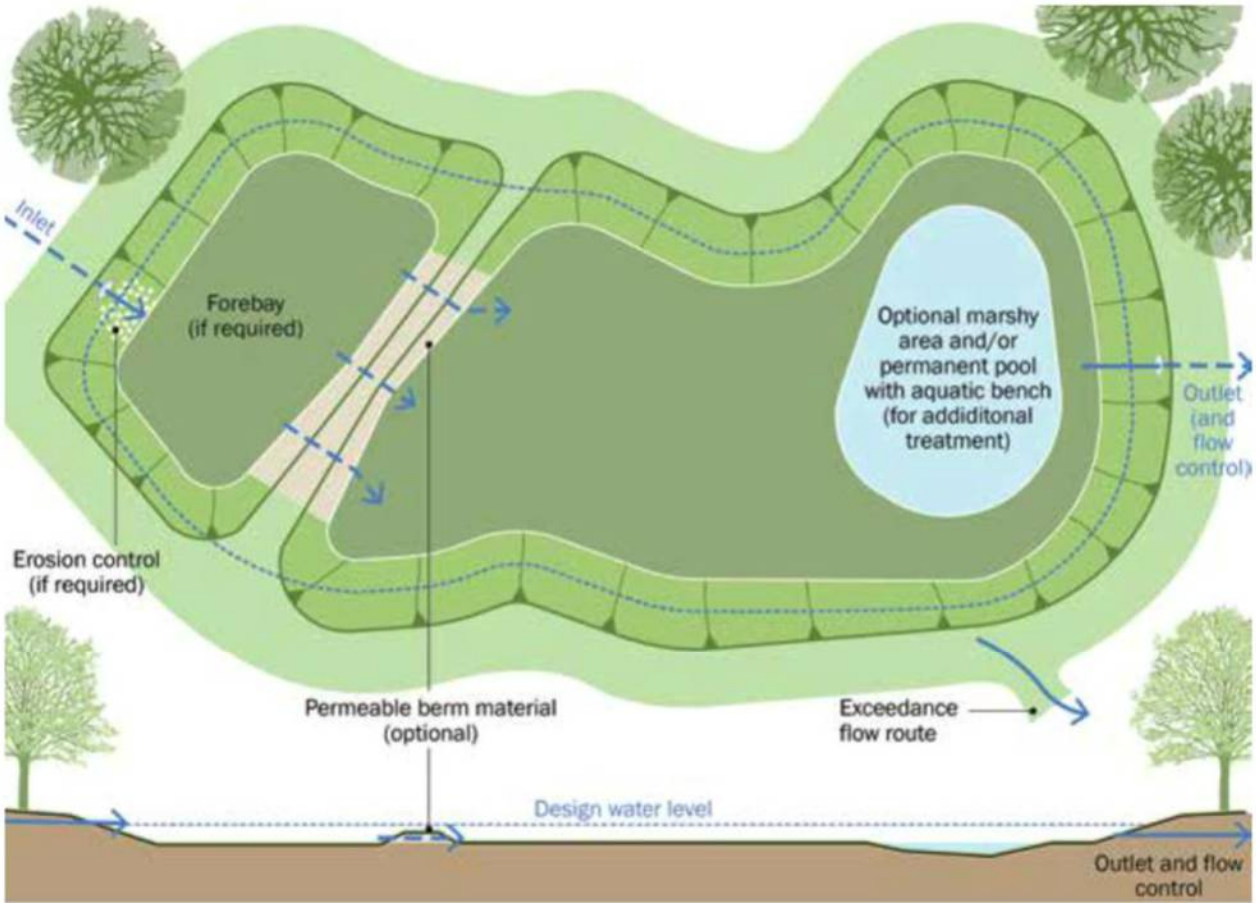
5.6.5 In low-lying areas where the elevation is flat and there is proximity to a watercourse, the currently available topographic data may not allow for gravity-fed drainage to the outfall location. In these cases, the attenuation storage depth has been limited to 0.5 m, which also reduces the risk of groundwater ingress from the likely high water table. For the rest of the Project, a general attenuation depth of 1 m is proposed. More detailed, topographic data will be obtained from ground surveys at a later stage.

5.6.6 Where infiltration features are proposed, the maximum acceptable depth is 2 m below ground level, with a minimum of 1.2 m clearance between the base of the infiltration feature and peak seasonal groundwater levels.

5.6.7 Attenuation storage areas will be designed with maximum gradient 1:3 slopes, be vegetated, and have a non-permeable geo-textile lined inlet forebay. This will provide treatment of the runoff by allowing for settlement of silts, heavy metals and the removal of oxygen demanding material.

5.6.8 When the proposed attenuation basin/ponds are used for temporary sediment control during construction, a settling basin or vegetated forebay within the main basin/pond should be included to trap sediments and prevent clogging of the main infiltration basin/pond. The sediment trap should be approximately 20% of the pool volume as per the CIRIA 753 SuDS Manual. Where a basin with a forebay element is retained for the permanent phase, the forebay will be removed at the end of the construction phase if appropriate. The general arrangement of the construction basin/pond is shown in Image 5.1, extracted from the CIRIA 753 SuDS Manual.

Image 5.1 Typical plan view for the design of a detention basin/pond



Source: CIRIA 753 SuDS Manual (CIRIA, 2015)

Header, Filter Drains and Swales

5.6.9 Header drains are to be used along the Project to intercept the clean surface water runoff coming from upslope catchments. Depending on the nature of the works, header, filter drains and swales may be permanent or temporary features.

5.6.10 These drains will prevent the water from crossing the haul road or construction compounds and becoming silty. They run parallel to the haul roads and access roads; and through the perimeter of the construction compounds and substations; and discharge into the nearest watercourse along the route.

5.6.11 Filter drains or swales are proposed to be used on either side of the haul road. They collect dirty runoff from the haul road and discharge into various ‘dirty water’ basins (which include a settlement basin) along the route.

5.6.12 The rainwater runoff from the substations, CSE compounds and construction compounds will be treated within the subbase. Some areas of the construction compounds have a high pollution risk and therefore require proprietary treatment with oil water separators. These are the plant refuelling areas, parking areas and wheel washes. The plant refuelling areas will have a concrete bund and run through an oil separator before entering the dirty filter drains. Runoff from wheel washes will be collected in a sump and then run into the dirty filter drains. Further water quality measures are discussed in Section 6.

5.6.13 All filter drains, swales, and header drains which are within source protection zones are to have an impermeable liner to prevent contamination of groundwater. Except any feature which is dedicated to 'clean water' interception.

Permeable Paving / Subbase Storage

5.6.14 In some locations subbase storage will be utilised as part of attenuating the flows. This effectively creates a permeable pavement. These compounds are to have a subbase formed of a permeable Type 3 material, with 30% voids for water storage.

5.7 Field Drainage Management

5.7.1 Where the existing field drainage is affected by the temporary works and permanent works, the field drainage must be correctly managed with the agricultural owner or manager of the agricultural land affected by the Project. As stated in Section 3.2, field drainage is expected to be present in agricultural fields where the ground presents low permeability capacity.

5.7.2 Should diversion of existing field drainage systems be required, or where natural overland runoff flow paths are diverted due to the construction swathe header drains, clean water balancing features may be required to mitigate flood risk at receiving watercourses. This will need to be addressed following engagement with the local landowners and farmers to help obtain existing field drainage information. This commitment is captured in **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**, AS05 and W14.

5.7.3 During construction, field drainage should be diverted, rather than truncated, to avoid water backing up the system and flooding upstream areas, via header drains and a similar principle can be applied for linear obstacles considered in this study. Land drains should be sealed, upslope and downslope, where they cross the Project and care taken to ensure that the land upslope will not become waterlogged or flood as a result.

Affected Field Drainage in Permanent Works

5.7.4 The permanent works include the normal features of a substation/CSE compound and external access roads.

5.7.5 External access roads are expected to reach a depth between 0.5 m and 0.7 m depending on ground conditions and vertical road profiles. Therefore, the risk of the proposed roads affecting the existing land drainage is low, as the depth of the existing land drainage is approximately is 0.9 m as stated in paragraph 3.2.24. Diversion and protection of existing land drainage may be required where/if it is affected by the access roads. This is secured by commitments W14 and AS05 within the **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**).

5.7.6 Substation/CSE compounds are sited on agricultural land, therefore diversion of existing land drainage may be required.

Affected Field Drainage in Temporary Works During Construction Phase

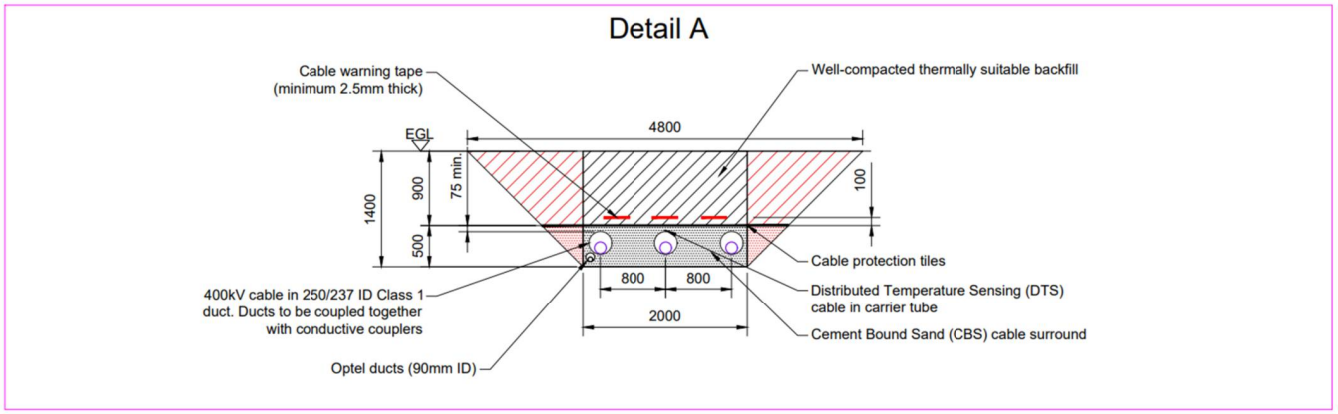
5.7.7 Temporary works consist of the haul roads and construction compounds required for Project construction.

5.7.8 Haul roads are expected to be constructed to a depth between 0.2 m and 0.7 m depending on ground conditions. The risk of haul roads affecting existing land drainage networks is low. Diversion of land drainage may be required where/if it is affected by the haul roads.

5.7.9 Construction compounds sit on agricultural land. They are formed on top of existing ground on a raised horizontal platform. The risk of the construction compounds affecting the existing land drainage is low. If any land drains are affected by the footprint of the construction compound, they will be diverted to maintain the continuity of the existing land drainage network.

5.7.10 The cable trench within the cable swathe will typically be at a depth of approximately 1.4 m, where the initial 0.9 m depth is suitable backfill (see Image 5.2). Any field drainage affected by installation of the cable trench will be diverted during the construction phase. For the permanent phase, it is assumed that any field drainage affected by the cable trench installation will be reinstated within the suitable backfill material layer that sits above the proposed cables.

Image 5.2 Illustrative direct buried cable trench cross-section



Source: ***2.6.1 Design and Layout Plans - Subs and Cables [~~Revision D~~REP6-020]***

5.7.11 During the installation of the cables, field drainage should be diverted, rather than truncated, to avoid water backing up the system and flooding upstream areas, via header drains. Diverted field drains should discharge to the closest watercourse or via balancing basins if required to mitigate flood risk at receiving watercourses. These balancing basins are not currently included in the drainage design and will need to be addressed at a future stage.

New Field Drainage

5.7.12 If it is necessary to install land drainage, the following guidance shall be followed, in line with **7.2 Outline Code of Construction Practice [Revision ~~F~~G]** commitment AS05.

5.7.13 Newly installed field drains should not drain working areas that have been stripped of topsoil. Where the drains may present a pollution risk, solid (not perforated) pipe should be used and in-line filters and sumps installed, as referenced in CIRIA 648 – Control of water pollution from linear construction projects.

5.7.14 CIRIA 648 notes that the main contractor can be held responsible for the quality of water diverted through the works and discharged from an outfall used during construction. The contractor must therefore be aware of any activities upstream (such as muck-spreading or plough) that may cause polluted water to enter the diverted land drains. In order to avoid polluted water to enter into the land drains due to the works upstream the diversion, the contractor should install attenuation/sediment control ponds/basins on the line of the diversion, upstream of the receiving watercourse, to mitigate the risk of pollutants entering the watercourse.

5.8 Groundwater Management Features

5.8.1 Existing groundwater conditions are discussed in Section 3.3 of this report. From **6.9.A3 Environmental Statement Appendix 9.3 - Groundwater Baseline and Qualitative Groundwater Risk Assessment [~~APP-184~~Revision B]**, the water table depth varies between 0.5 m and 35 m below ground level. If groundwater is encountered during the construction of the Project and proposed drainage features, the proposed mitigations are described below. Groundwater management for overhead line sections and haul roads is negligible, so mitigations are not included.

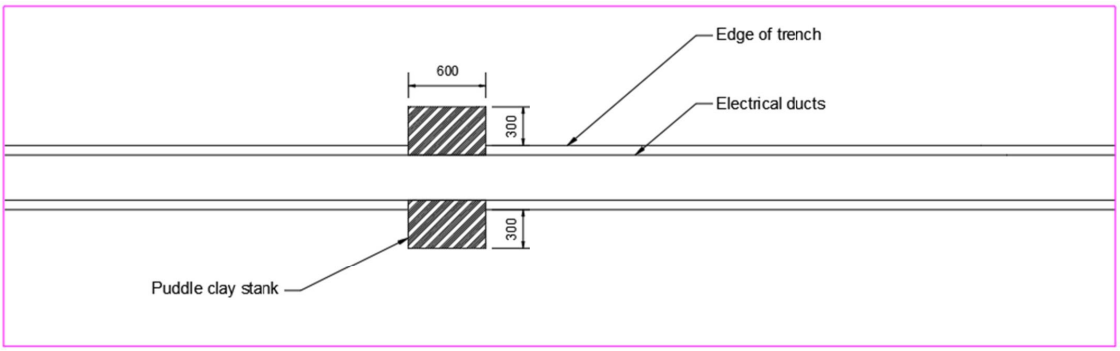
5.8.2 All groundwater management would be completed in accordance with the following commitments: GG21, GG23, GH01, GH09, GH11, and GH14 from the **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**.

Cable Trenches

5.8.3 The cables will typically be at a depth of approximately 1.2 m and held within trenches approximately 1.5 m deep and 2 m wide. The cables would typically be installed in a UPVC duct, surrounded by sand wrapped in a geotextile, the trenches backfilled and the ground re-instated. Foundation depths have not been confirmed but are expected to be similar to the haul road with a depth between 0.2 m and 0.7 m depending on ground conditions.

5.8.4 Depending on the porosity of the backfill and the geotextile, the trenches may act as a channel and convey water elsewhere. It is expected that this can be managed through the use of regularly spaced puddle stanks to prevent groundwater conveyance within the backfill (see Image 5.3). An alternative solution to avoid conveyance of the groundwater within the backfill is if the backfill is well-compacted to prevent voids that would convey groundwater.

Image 5.3 Illustrative spaced puddle clay stanks along the cable route in the areas prone to groundwater risk



Illustrative puddle clay stank to prevent groundwater conveyance within the backfill

Jointing Bays

5.8.5 All jointing bays along the cable route will be protected from groundwater. A reinforced concrete slab will support the joint units with drainage sumps either end, and backfilled as per the NGET technical specifications. The joint units are resilient to flooding, and typically need access every four to five years for inspection. The jointing bays will follow the same drainage strategy as the underground cables. At cable joint bays, sumps are provided to soak any water that may fall into them or groundwater that could enter them during construction. Upon construction, joint bays are backfilled, so no standing water is assumed to remain within them. Thus, it is considered the cables have sufficient protection against flooding. Furthermore, joint bays would be located within areas of higher ground and areas at low risk of flooding from all sources where possible.

5.8.6 Subject to this mitigation, installation of the cables is not expected to increase flood risk or cause any localised raising of the groundwater levels.

Attenuation Ponds/Basins

5.8.7 The bases of all proposed attenuation ponds/basins are generally expected to be above groundwater levels. Where groundwater is elevated, lining of the ponds/basins with an impermeable liner may be necessary to mitigate groundwater ingress, and anchoring of the liner may be required to manage buoyancy and prevent uplift.

6. Water Quality

6.1 Overview

6.1.1 This Drainage Strategy is required to demonstrate that the Project will not cause unacceptable deterioration to water quality and will improve water quality via a sustainable drainage system.

6.1.2 The contractor usually applies for applicable licences after detailed design, in accordance with the Project commitment W01, secured in **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**.

6.1.3 The temporary and permanent drainage systems on-site will be designed to meet the water quality design criteria and good practice pollution control measures as outlined in the CIRIA SuDS Manual and the National Standards for Sustainable Drainage. The simple index approach will be used to assess pollution risk for each area. This will be reviewed for all discharges, whether infiltrating, to be confirmed on site, or discharge to a watercourse. Water quality management is to be finalised when construction compound layouts are confirmed as this will allow any high-risk areas to be identified and managed. For high-risk areas a water quality risk assessment would be completed in accordance with the Environment Agency requirements, this is secured by Commitment GH10 in **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**. The different areas of the Project will be categorised by the appropriate pollution hazard level from Table 26.2 of the SuDS Manual C753 (CIRIA, 2015).

6.1.4 As the design progresses, water quality control measures would also be considered throughout the subsequent design stages.

6.1.5 At this stage proprietary treatment has not been shown on the drawings.

6.2 Water and Sediment Quality During Construction Phase

6.2.1 CIRIA C648 Control of water pollution from linear construction projects has been consulted. This guidance provides regulations for constructors and designers to minimise the water pollution before and during construction stage.

6.2.2 Surface water and groundwater are highly vulnerable to pollution and the impacts of construction activities.

6.2.3 During construction, the contractor will need to ensure water quality control measures are implemented to comply with national regulations as well as any specific Project and stakeholder requirements. This may involve interim periods of mobile sedimentation control units being used when longer term drainage systems are not in place.

6.2.4 The following construction activities require specific mitigations for water pollution:

- Uncontrolled sediment erosion and contaminated silty runoff
- Refuelling facilities and handling areas

- Polluted drainage from the Project
- Works within water
- Excavations in a SPZ.

6.2.5 Mitigations are not limited to these activities, and it should be noted that the contractor is responsible for managing risk of water pollution from all activities during the construction phase. The potential mitigation measures that could be considered to avoid water pollution are (these are to be considered on a case-by-case basis):

- Using prefabricated concrete products for outfalls and bridge piers
- Using stone gabions for bank reinforcement
- Designing shallow slopes in cutting/embankments to reduce the runoff, increase infiltration and trap sediment
- Establishing riparian buffers to protect watercourses and use of silt fences
- Filtration (silt traps in form of hay bales) units to intercept silt-laden water from the Project to be discharged into the ditch
- Sediment filter logs: A temporary sediment barrier of excelsior or coconut fibre used to intercept sediment runoff and help stabilise slopes. Protects storm drains, runoff ditches, brooks, streams, rivers, lakes and riparian banks
- Using erosion control blankets on embankments to reduce concentrated flows, also protect existing ditches and swales from discharge flows
- Proposing sealed manholes will reduce the risk of water spillage in the case that contaminated water enters the drainage system from the construction elements (construction compound or haul road) and the system becomes surcharged
- When discharging water from a dewatering system (generally clean), there is a likely to be potential for silt or other contamination; water should discharge into a settlement pond/basin before discharging into a watercourse.

6.2.6 A number of management plans will be set out for the contractor to manage environmental risks associated with the construction phase:

1) **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**
2) A Surface Water and Drainage Management Plan should be prepared which describes the approach to surface water and foul water drainage, and water supply during construction phase
3) A Flood Warning and Evacuation Plan for the construction phase
4) Construction Method Statements for Protection of Onshore Water
5) Watercourse Crossing Method Statement
6) Groundwater Protection Method Statement.

Water Quality in a Floodplain

6.2.7 Where construction working areas are within Flood Zone 2 or 3, additional measures should be taken to minimise pollution risk during periods of extreme weather (i.e. flooding):

- Works in the floodplain would be completed in accordance with commitments W07, W10 and W11 from **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**
- Works may not be permitted during the fish spawning season, which runs from around mid-October to mid-April. This is to be confirmed on a case-by-case basis in accordance with commitment B11 of **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**
- Certain construction methodologies may be required in order to safeguard the integrity of canals, designated ecological sites or amenity interests
- Works in the floodplain should be completed in the shortest possible timeframe
- Construction should be scheduled to avoid works in flood-prone areas during the winter.

Water Quality in Construction Compounds

6.2.8 Construction compounds are proposed to facilitate the works. Early planning for the storage of potentially polluting materials, for supply and disposal of water, and for controlling runoff will reduce the risks of water pollution on-site. Refer to commitments W01, W02, W05, GG21, GG23, GH09 and GH11 from **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**. The following has been considered in the proposed Project to identify and eliminate water quality issues where possible:

- Locate the compound away from watercourses (including ditches) and aquifers
- Avoid SPZs where practicable
- Identify areas with permitted access by public main road (reducing the need for haul roads)
- Identify locations that have services in place (e.g. hardstanding, water supply, power and connection to foul drainage system).

6.2.9 The construction compounds will require:

- Agreements for wastewater disposal
- Selection of locations for cesspits or package plants where no foul connection is available
- Selecting suitable refuelling area(s) on hardstanding with drainage via oil interceptor
- Provision of adequate measures to control runoff from compounds and haul routes
- Provision of a suitable vehicle wash area on hardstanding and draining to foul sewer.

6.2.10 The following measures are recommended to minimise the pollution in construction compounds in accordance with **7.2 Outline ~~Construction~~ Code of Construction Practice [Revision ~~F~~G]** ~~mitigations~~commitments GG23, B02, W01, W05, W07 and W13:

- Settlement ponds/basins would be used as the treatment method for sediment control. This could be in the form of a 'forebay' as indicated in Image 5.1. All settlement ponds/basins are to be provided with oil absorbents to absorb any hydrocarbons accumulated. Settlement ponds/basins can provide a good source of water for general construction activities such as concrete washout, dust suppression and vehicle washing
- Runoff from adjacent ground will be intercepted before entering Project sites, as this creates additional polluted waste
- Treated water from settlement ponds/basins could be pumped into a bowser and used to damp down haul roads and site compounds to prevent the generation of dust
- Storage areas should sit away from sensitive receptors.

Water Quality Along Haul Roads and at Site Access Points

6.2.11 **7.2 Outline ~~Construction~~ Code of Construction Practice [Revision ~~F~~G]** commitments B02, B03, W01, W07, W12, W13 and W18 provide a framework for mitigating watercourse pollution. The following are methods that could be utilised at detailed design to comply with the **7.2 Outline ~~Construction~~ Code of Construction Practice [Revision ~~F~~G]**:

- Ditches/swales to be constructed on either side, or on the downslope side, of haul roads to channel water to a treatment area (settlement pond/basin). Lateral trenches could also be used to filter silts from haul road runoff
- Haul road crossing a stream: Straw bales to be positioned at either end of the culvert to prevent suspended solids moving along the watercourse
- Where an existing bridge structure is used for a haul road, mud and debris is not to be allowed to build up. Straw bales or sandbags should be placed along the edge of the existing bridge to prevent silty water running off into the water below
- Check dams and sediment traps across a swale or a drainage ditch to reduce the runoff velocity and promote the sedimentation. Swales can remove hydrocarbons.

Seasonal Influences

6.2.12 Flooding is often seasonally related. Proposing works within Flood Zone 2/3 in summer, where practicable, when the water table is typically lower, is likely to reduce the flood risk to construction.

Discharging Water into a River

6.2.13 To avoid existing water becoming contaminated by suspended sediment, the exit velocity at the outfall should be reduced using baffles, blocks in the outfall apron or an energy-dissipater. The same consideration should be taken when over pumping water along a watercourse. As stated in Section 5.6, proposed attenuation areas are used for temporary sediment control providing additional protection prior to discharge into watercourses.

6.2.14 Penstock valves should be installed to permanent and temporary outfalls to close or isolate the outfall in the event of a pollution incident.

6.3 Water and Sediment Quality During Operational Phase

6.3.1 During operation of the permanent sites, the proposed surface water drainage system intends to improve the water quality from the Project prior to discharge to local watercourses. This will be done by using a treatment chain where each subsequent system within the proposed drainage network is treated to improve water quality.

6.3.2 The surface water treatment stage will depend on the potential hazards of the Project and the sensitivity of the receiving water body to pollution.

6.3.3 All oily water, including transformer bunds, should drain into oil water separator tanks that discharge into the underground network. In line with National Grid Standard TS 2.10.01, all transformers shall have a totally sealed bund with a sump which has a water control unit to pump any water out. This will be directed through an oil water separator to pick up any potential small levels of residual oil before being discharged into the main operational platform drainage system.

6.3.4 Access roads are proposed to drain into a filter drain system or the permeable platform. During the operational phase of the substation, the access roads are expected to have occasional vehicular maintenance visits and will not be heavily trafficked. Therefore, no significant risk of discharge of pollutants is expected. The filter drains are to clean any possible pollutant as the water seeps through, providing an adequate level of water quality treatment.

6.4 Water Quality in SPZs

6.4.1 Good practice pollution control measures are to be implemented in the area in order to minimise the risk of groundwater contamination. This may include the following measures, as well as commitment GH09 from **7.2 Outline ~~Construction~~ Code of Construction Practice [Revision ~~F~~G]**:

- Run off to be intercepted by filter / 'header' drains along the edge of the haul roads; these will pass to an attenuation storage area prior to being discharged to appropriate surface watercourses
- No refuelling to take place in SPZ1 or SPZ2 (refuelling will be limited to designated areas within the construction compound; located in SPZ3). Regardless, all hydrocarbons are to be stored in bunded areas with sealed drainage systems. Likewise, refuelling is to take place on hardstanding (or sealed) areas with sealed drainage and discharge via an oil water separator. The Contractor shall implement best practice measures for the management of any leaks/spills
- The works will conform with the pollution prevention for business guidance (Defra, 2024)[21]

[21] https://www.gov.uk/guidance/pollution-prevention-for-businesses

- Should infiltration rates be favourable, then infiltration of surface water from the proposed construction may be permitted within SPZ3 and SPZ2 with an appropriate level of treatment before infiltrating. Infiltrations in SPZ2 would require the application of additional water quality measures to be reviewed and agreed with the Environment Agency.

6.5 Consents

6.5.1 Licences and consents required from drainage stakeholders should be applied for and granted before construction activities start. This is in accordance with **3.1 Draft Development Consent Order [~~REVISON F~~Revision G]** and **7.2 Outline ~~Construction~~ Code of Construction Practice [Revision ~~F~~G]** commitments, GG22, GG23, W01, W08, W14 and GH11. Section 5 of **7.2 Outline ~~Construction~~ Code of Construction Practice [Revision ~~F~~G]** provides further information on the consents, commitments and permissions for the Project.

6.5.2 These consents establish the requirements for the following activities:

- Discharging sewage to ground or to a foul sewer
- Discharging water to surface water (water body or sewer) or groundwater
- Pumping water from surface water or groundwater
- Working in or near water.

Discharging to Foul Water Sewer

6.5.3 To discharge to a public foul sewer, permission from the statutory sewerage undertaker is required via a trade effluent consent.

Discharging to Surface Water (Water Body or Sewer) or Groundwater

6.5.4 The discharge of any matter to surface or groundwater requires a written 'discharge consent' issued under the Environmental Permitting (England and Wales) Regulations 2016 or the Water Resources Act 1991 or the Land Drainage Act 1991 by the Environment Agency, LLFA or the sewerage undertaker. If water is being abstracted prior to discharge (e.g. from an excavation or through dewatering to lower the water table), a transfer licence may be required. These consents include agreement of the type of treatment prior to discharge, the volume and rate of discharge, and the nature of the discharge (from groundwater or surface water).

6.5.5 Works within 8 (EA) or 7 or 9 (IDB) metres from the top of a watercourse bank may also require consent. Consultation should be undertaken with the Environment Agency and Internal Drainage Board (where within an Internal Drainage District) to determine whether consent is needed. 'Works' include temporary works, haul road, culvert, stream diversion, clear span bridges as well as permanent works,

6.5.6 There shall be no storage of spoil directly on watercourse banks. Spoil will be set back from watercourses in accordance with the Outline Construction Code of Practice requirements. This will prevent excessive loading on the watercourse banks and minimise the risk of stored material entering the watercourses.

6.5.7 Buffer strips should be installed near to watercourses. These strips slow runoff and trap sediment. The buffer strips should be proportional to the bed width of the river, ranging from a minimum of 6 m and up to 20 m for major rivers.

Abstracting and Dewatering

6.5.8 In accordance with **7.2 Outline ~~Construction~~ Code of Construction Practice [Revision ~~F~~G]** commitments GH07 and GH14, for dewatering or pumping out of water that has collected in an excavation or shaft, an abstraction licence is not required. However, a discharge consent may be required from the Environment Agency to dispose of or transfer the dewatered water.

6.5.9 Before any dewatering to lower the water table takes place, the environmental regulator must be consulted so it can issue an appropriate authorisation.

6.5.10 When working in or near water (including outfall and bank-side structures), the Land Drainage Act 1991 typically requires that a consent is applied for and granted by the relevant water authority for the following activities:

- Works in, over or under any Main River
- Works in, over or under all other watercourses (Ordinary Watercourses) if the flow is likely to be affected
- Temporary works affecting the channel of Main Rivers or Ordinary Watercourses
- Temporary and permanent works in the floodplain of Main Rivers.

7. Amenity

7.1.1 Standard 5 of the National Standards for SuDS states that '*A SuDS approach shall be adopted that maximises benefits for amenity through the creation of multi-functional places and landscapes*'.

7.1.2 To achieve this, the design of SuDS components seeks to enhance the provision of high quality, attractive public space which can help provide health and wellbeing benefits, improve liveability for local communities and contribute to improving the climate resilience of new developments.

7.1.3 The guidance within Standard 5 explains how SuDS can add amenity value by contributing towards:

- Making a multifunctional space, positively contributing to placemaking and environmental enhancement
- Taking influence from the landscape character to ensure public acceptability and maximising amenity benefits
- Reducing hazards from climate change
- Promoting the safety and well-being of site users
- Educating the public on the benefits and function of proposed SuDS components.

7.1.4 The drainage design seeks to make multifunctional use of the civil drainage infrastructure, by making many of the attenuation features open-air in the form of basins, which add environmental enhancements to the Project. It should be noted that the sites of the Project are not inherently public amenity spaces.

7.1.5 Whilst the sites of the Project are not public amenity space, the drainage design is intended to reflect the landscape character, by avoiding unnecessary earthworks and infrastructure wherever possible.

7.1.6 As the drainage design accommodates a climate change uplift to rainfall, it inherently seeks to reduce the hazards of climate change.

7.1.7 Adjacent to access roads, filter drains are proposed wherever possible to facilitate a safe working environment, as open ditches would increase the risks to construction traffic.

8. Biodiversity

8.1.1 Standard 6 of the National Standards for SuDS states that '*A SuDS approach shall be adopted to ensure the surface water drainage system maximises biodiversity benefits throughout the development lifecycle*'.

8.1.2 The surface water drainage design shall add biodiversity value by:

- Creating diverse, self-sustaining, resilient local ecosystems which contribute to net gains in biodiversity
- Supporting and promoting natural local habit and species
- Contributing to the delivery of local biodiversity strategies
- Contributing to habitat connectivity.

8.1.3 **6.8 Environmental Statement Chapter 8 - Ecology and Biodiversity [~~AS-026~~Revision C]** identifies scale and ecological sensitivity of the site and potential areas of habitat loss. Proposed SuDS for the development assist in mitigating biodiversity impacts of the development and support improvements to biodiversity.

8.1.4 While the ES states that there are habitat losses due to the development, these are largely not permanent losses and will be reinstated. There would be extensive habitat creation as part of the Project with National Grid being committed to delivering at least 10% BNG with wider environmental and societal benefits as per **7.1 Biodiversity Net Gain Report [~~APP-299~~Revision B]**.

8.1.5 In addition to the reinstated habitats across the route, there would also be 'Environmental Areas' located around the new/extended National Grid permanent assets shown on **6.4.F1 Environmental Statement Figure 4.1 - Proposed Project Design [REP4-109]**. An indicative landscape design has been created for these areas as described and illustrated in the **7.4 Outline Landscape and Ecological Management Plan [~~AS-046~~Revision G]**. The habitats to be created and/or enhanced in these areas have been designed to provide landscape and visual benefits while also offering ecological value.

8.1.6 Wherever practicable, habitat connectivity will be retained by using existing access routes, reducing working widths through biodiversity receptors, and maintaining connectivity through watercourses.

8.1.7 An example of habitat creation as stated in the **7.1 Biodiversity Net Gain Report [~~APP-299~~Revision B]**, is retaining the temporary attenuation basin at the EACN Substation to create a wetland habitat to introduce habitat diversity.

9. Design of Drainage for Construction, Operation, Maintenance, Decommissioning and Structural Integrity

9.1 Overview

9.1.1 Standard 7 of the National SuDS Standards requires that:

- All elements of the surface water drainage system should be designed so that they can be constructed easily, safely, cost-effectively, in a timely manner, and minimising negative impacts on the environment
- All elements of the surface water drainage system should be designed so that maintenance and operation can be undertaken easily, safely, cost-effectively, in a timely manner, and minimising embedded carbon
- The surface water drainage system should be designed to ensure structural integrity of all elements over the design life
- The surface water drainage system will be designed and detailed in accordance with current best practice and guidance to meet this standard.

9.2 Maintenance

9.2.1 As per commitment W08 in **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**, measures to manage surface water runoff from operational above ground infrastructure and to maintain existing overland flow routes, will be developed liaising with the LLFAs. Such measures will be managed in accordance with the requirements and standards of the relevant LLFA and maintained for the Project's lifetime.

9.2.2 The operator will be responsible for maintaining the SuDS within the development. Section 32.4 of the SuDS Manual categorises maintenance work as follows:

- Regular maintenance – includes basic tasks which should be carried out to a frequent and predictable schedule
- Occasional maintenance – includes tasks that are likely to be required on a regular basis but at a less frequent rate compared to regular maintenance
- Remedial maintenance – includes tasks that may be required to rectify faults associated with the system. Although the amount of remedial maintenance can be reduced via good design and construction, unforeseen issues can occur. Remedial maintenance may be required due to site-specific characteristic or unforeseen events.

9.2.3 As part of the design of the SuDS, a SuDS Asset Maintenance Plan will need to be developed that sets out the regime for their maintenance and a schedule for each of the maintenance tasks. An example Maintenance Plan for the currently proposed SuDS assets is provided in Table 9.1.

Table 9.1 SuDS Maintenance Plan

SuDS Type	Maintenance Type	Description
Infiltration Basin	Routine/ Regular Maintenance	Remove litter and debris Cut grass Inspect inlets and overflow blockages and clear if required Inspect for sediment build-up at inlets and across the basin floor Check any penstocks and other mechanical devices
	Occasional Maintenance	Remove sediment when required.
	Remedial Maintenance	Repair/rehabilitate inlets and overflows. Remove accumulated sediment if infiltration performance is significantly reduced. Restoration of infiltration capacity - Undertake more intensive measures such as deep scarification, soil replacement, or infiltration trenching if the basin no longer drains effectively.
Attenuation Basin	Routine/ Regular Maintenance	Remove litter and debris Cut grass Inspect inlets, outlets and overflow blockages and clear if required Check any penstocks and other mechanical devices
	Occasional Maintenance	Remove sediment when required.
	Remedial Maintenance	Repair/rehabilitate inlets, outlets and overflows.
Filter Drains	Routine/ Regular Maintenance	Mow grassed edge surrounding the drain monthly or as required.
	Occasional Maintenance	Hand pull weed growth in filter drain as required, ensuring no weed killer enters the filter drain.
	Remedial Maintenance	When there is silt at the surface of the filter drain, remove and replace the surface stone layer. Additionally, replace and remove the perforated HDPE pipe as required.
Swales	Routine/ Regular Maintenance	Mow swale grass to 100 mm with 150 mm max to filter and control runoff, remove cutoffs to wildlife piles on-site monthly or as required. Where wetland develops in the swale due to wet conditions, cut annually or as required.
	Occasional Maintenance	When there is a build-up of silts above the swale

SuDS Type	Maintenance Type	Description
		design level, remove and spread on-site as required.
	Remedial Maintenance	Any damage to swales to be repaired to design profile as required.

9.3 Reinstatement

9.3.1 Once the Project has been constructed and commissioned, the temporary construction working areas would be removed and the site reinstated. Haul roads (including temporary bridges and culverts) are likely to be removed unless identified as offering a long-term improvement to the environment and land usage during the detailed design (and agreed with the landowner, LLFA and/or the Environment Agency (where required)). Within Internal Drainage Board Districts, any such proposals would require consultation and agreement with the relevant Internal Drainage Board. Temporary features such as site welfare, working areas, fencing and scaffolding would be removed, as well as the removal of temporary drainage features, including cross drains and filter drains. Any stripped topsoil would be reinstated, and the site would be returned to its former use, subject to any planting restrictions or agreements with landowners.

9.4 Decommissioning

9.4.1 Section 4.11 of **6.4 Environmental Statement Chapter 4 - Project Description [APP-130]** sets out the likely works required to decommission the permanent features of the Project.

9.4.2 Permanent Project drainage assets such as surface water networks would be decommissioned or replaced at the end of their design life.

9.5 Structural Integrity

9.5.1 All materials and components used within the surface water drainage system shall be suitable to resist all imposed design loadings with appropriate factors of safety and shall have equivalent design life to the Project or have a replacement plan accounted for in the maintenance plan.

9.5.2 A separation distance of 1.2 m is specified between the crown of the pipes to the FFL to protect piping below, as per the Sewerage Sector Guidance – Appendix C - Design and Construction Guidance[22]. If this separation distance cannot be achieved, concrete surrounds of pipes shall be proposed.

9.5.3 When proposed infiltration systems are within 5 m of any existing or proposed buildings, roads, embankments or other infrastructure, applicable risk shall be assessed and measures applied if required. Infiltration systems in ground which is unstable may need to be an additional 5 m away from the existing or proposed infrastructure.

[22] https://www.water.org.uk/sewerage-sector-guidance-approved-documents

10. Conclusions

10.1 Overview

10.1.1 Drainage stakeholder engagement meetings have taken place throughout design development; the resultant design requirements have been stated in Section 2.3 and are captured within the Statements of Common Ground.

10.1.2 A drainage design has been developed that satisfies the requirements of lead stakeholders and National Grid's internal requirements.

10.1.3 The drainage strategy presented herein complies with national drainage design standards and the Project's **7.9 Flood Risk Assessment [APP-331]**.

10.1.4 Commitment GG22, from **7.2 Outline Code of Construction Practice [Revision ~~F~~G]**, states that the 'Main Works Contractor(s) will prepare a Surface Water Management Plan to inform discharge of the DCO Requirement'. The Main Works Contractor shall further develop this high-level drainage strategy. Commitment GG22, also states 'construction drainage measures will be developed liaising with the Lead Local Flood Authorities (LLFAs) and statutory undertakers including Anglian Water (where relevant), with ongoing dialogue during implementation of the measures'.

10.2 Assumptions and Risks

10.2.1 Assumptions made throughout are as follows:

- Contributing catchment areas have been calculated based on the following assumptions with regards to percentage permeability of the areas:
  - Construction Compound: 60–75% (depending on type of compound) impervious within their gross site areas
  - Substations and CSE compounds: 50% impervious within their gross site areas
  - Overhead Line Alignment Construction Swathe: to provide a conservative assessment at this stage with a 100% impervious value determined from the full width of the haul road swathe (21 m wide). The total Overhead Line Construction Swathe is typically 100–130 m wide, so the approximate percentage impermeability is 15%
  - Underground Cable Construction Swathe: 15% impervious relative within the swathe
  - An initial assessment of the percentage permeability has been completed to calculate the above values (refer to Table 5.5); however, this could still be refined at a later design stage. Once the design is progressed further contributing areas could be defined on a catchment specific basis.

- All outfalls identified during the production of this report are based on the limited watercourse data currently available (OS mapping, Bing maps, Environment Agency Main River maps)
- All attenuation storage areas should have a clearance from overhead line pylons defined by the Overhead Electrical Engineer. The current design conservatively considers that all storage areas have a clearance of 15 m from existing pylons
- The proposed locations for the attenuation storage areas have been based on the existing ground level and a gravity system where practicable (i.e. following the fall of the land)
- The proposed attenuation volumes do not include the attenuation through filter drains or swales. The proposed infiltration storage areas should consider the infiltration of the base at later stage, when location specific infiltration data has been obtained. Consequently, the attenuation/infiltration volumes of the storage areas will be refined at later stage
- The risk of ground instability, subsidence or heave due to infiltration and its impacts has not been considered at this stage
- Existing highway drainage will remain in situ and operational while the cables are installed
- Shallow cover to pipes is anticipated in several areas. This may result in ductile iron pipework being utilised, or the build-up of existing ground levels to provide sufficient cover. Likewise, there are areas where pipes are anticipated to have shallow fall which will mean self-cleansing velocity will not be achievable
- All attenuation and infiltration features are to be below existing ground level with a minimum 300 mm freeboard to ground level, as a starting presumption. Therefore, overflow control structures have not been considered at this stage of design. In accordance with the SuDS manual guidance, temporary drainage basins where appropriate may be designed to a smaller freeboard depth. Where necessary this approach will be utilised at detailed design, with each design agreed liaising with the Lead Local Flood Authorities (LLFAs) and relevant statutory undertakers.
- The haul roads will be elevated and sometimes pipes will be placed under the road. This measure is described in the **7.9 Flood Risk Assessment [APP-331]** as ‘ducting’ to maintain floodplain flood flow
- A high-level assessment of overland flow from adjacent fields has been carried out. Where overland flow entering the construction swathe is expected to cause issues, appropriate mitigation will be put in place. A full assessment of overland flow, and subsequent drainage to manage overland flow and divert as necessary is to be carried out at detailed design.

10.2.2 Ongoing design risks are given in Table 10.1.

Table 10.1 Site-specific risks

Location	Full Reference
All Sections	Permanent access roads have not been allowed for in drainage feature sizing where impermeable surfacing is already assumed

Location	Full Reference
	present at the pre-existing substations.
All Sections	Where drainage outlets cross utilities or public roads, deeper excavations may be required. Ground levels vary between the attenuation storage areas and outfalls, so the levels would need to work in order to discharge flows by gravity. Alternative solutions would be to pump flows from site if levels do not work.
All Sections	Surface water drainage would need to be pumped into attenuation storage areas in limited areas across the Project due to constraints and insufficient space to obtain required levels.
All Sections	Where there is unfavourable topography the available fall between the proposed attenuation storage areas and the indicated outfalls may be very limited. Where the outfall pipe gradient is extremely low, it precludes water in the system from reaching a self-cleansing velocity. Therefore, for these systems to work they may need to utilise a pumped network unless a rigorous maintenance regime is applied. However, this would require regular maintenance throughout the lifespan of the network. A low voltage connection would be required for pumps in this scenario.
All Sections	In areas with low confidence in outfalls levels, topographical surveys would be required to determine levels during the detailed design development.
All Sections	Further earthworks may be required for the construction of the attenuation storage areas, where there are large topographical differences across the attenuation location.
All sections	A high-level assessment of overland flows indicates that large volumes of surface water runoff will flow across sections of the Project. A full assessment of overland flow, and subsequent drainage to manage overland flow and divert as necessary is to be carried out at detailed design.

10.3 Opportunities

10.3.1 Efficient haul road stabilisation has the potential to reduce on-site erosion, reducing the sediment that may pollute nearby streams or be transported off-site. Current haul road design assumes an impermeable stone (Type 1 material). There is potential for geogrid layers or types of soil additives to be used for stabilisation. To minimise environmental impact, the following could be considered:

- Control of runoff: After addition of binders – ensure fully mixed, fully compacted and curing protection applied
- Dust will be controlled to avoid contamination of nearby watercourses.

10.3.2 Haul road surfacing could be constructed using permeable materials where no groundwater is encountered, but consideration should be given to clogging of the permeable pavement by sediments which is very likely on a construction site. Permeable paving is particularly effective at removing the main pollutants: suspended solids, hydrocarbons, and metals.

Abbreviations

Abbreviation	Full Reference
AONB	Area of Outstanding Natural Beauty
BGS	British Geological Survey
BNG	Biodiversity Net Gain
CIRIA	Construction Industry Research and Information Association
CSE	Cable Sealing End
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EACN	East Anglia Connection Node
EIA	Environmental Impact Assessment
ES	Environmental Statement
FEH	Flood Estimation Handbook
FFL	Finished Floor Level
FRA	Flood Risk Assessment
FSR	Flood Studies Report
GIS	Gas Insulated Switchgear
HVAC	High Voltage Alternating Current
IDB	Internal Drainage Board
kV	Kilovolt
LiDAR	Light Detection and Ranging
LLFA	Lead Local Flood Authority
mAOD	Metres Above Ordnance Datum
NGET	National Grid Electricity Transmission
NPPF	National Planning Policy Framework
SPZ	Source Protection Zone
SuDS	Sustainable Drainage Systems
TCPA	Town and Country Planning Act
TS	National Grid Technical Specifications

Abbreviation	Full Reference
WMA	Water Management Alliance

Glossary

Term	Description
Alignment	The proposed overhead line and underground cable route.
Bedrock Geology	Solid rock formations underlying superficial deposits
Biodiversity	The variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems.
Biodiversity Net Gain	An approach for developments to ensure habitats for wildlife are left in a measurably better state than they were before the development.
Cable	An insulated conductor designed for underground installation.
Cable Sealing End compound	Electrical infrastructure used as the transition point between overhead lines and underground cables. A compound on the ground acts as the principal transition point.
Code of Construction Practice	A code of construction practice sets out the standards and procedures to which a developer (and its contractors) must adhere in order to manage the potential effects of construction works.
Commitments	Measures that a developer commits to delivering as part of a project, with the purpose of limiting, mitigating or compensating potential effects of the project.
Contaminated Land	Land where a substance or contaminant is in or under the land which has the potential to cause significant harm or the significant possibility of significant harm to human health, property or protected species, or significant pollution or the significant possibility of significant pollution to controlled waters.
Culvert	A channel or pipe that carries water below the level of the ground.
Development Consent Order	A statutory instrument which grants consents and other rights to build a Nationally Significant Infrastructure Project, as defined by the Planning Act 2008.
Environmental Impact Assessment (EIA)	An assessment of the likely effects of a development project on the environment, which is reported in an Environmental Statement that is publicised and consulted on and taken into account in the decision on whether a project should proceed.
Environmental Areas	These are locations identified for environmental embedded measures, mitigation and/or Biodiversity Net Gain/environmental enhancement.
Environmental Statement (ES)	The main output from the EIA process, an ES is the report required to accompany an application for development consent (under the Infrastructure Planning (EIA) Regulations 2017) to inform public and

Term	Description
	stakeholder consultation and the decision on whether a project should be allowed to proceed. The EIA Regulations set out specific requirements for the contents of an ES for Nationally Significant Infrastructure Projects.
Flood Risk Assessment	A Flood Risk Assessment is an assessment of the risk of flooding, particularly in relation to residential, commercial and industrial land use. In England and Wales, the Environment Agency requires a Flood Risk Assessment to be submitted alongside planning applications in areas that are known to be at risk of flooding.
Internal Drainage Board (IDB)	An IDB is defined as a Risk Management Authority under the Flood and Water Management Act 2010, and also constituted under the Land Drainage Act 1991 (as amended) to undertake water level management and flood risk functions in their designated catchment areas.
Groundwater	Water that is in the ground. This is usually referring to water in the saturated zone below the water table.
Lead Local Flood Authority	A specific organisation, typically a county, council or unitary authority, designated under the Flood and Water Management Act 2010 to manage local flood risks.
National Landscape (an Area of Outstanding Natural Beauty)	Formally designated under the National Parks and Access to the Countryside Act of 1949 to protect areas of the countryside of high scenic quality that cannot be selected for National Park status due to their lack of opportunities for outdoor recreation (an essential objective of National Parks). As of November 2023, all AONBs became 'National Landscapes'. This reflects ambitions for the areas to play a key part in the international '30 by 30' commitment (to protect and conserve a minimum of 30% of land and sea for biodiversity by 2030).
Nationally Significant Infrastructure Project	Typically a large scale development of national importance that requires development consent from the Secretary of State, under the Planning Act 2008.
Order Limits	The maximum extent of land within which the authorised development may take place.
Overhead Line	Conductor (wire) carrying electric current, strung from pylon to pylon.
Project Section	Geographical 'sections' have been identified that break the Project down into smaller units for ease of description within the documentation. These Project Sections are broken down into eight sections based largely on Local Planning Authority boundaries.
Source Protection Zone	A zone placed around a groundwater source, such as a well, borehole or spring, by the Environment Agency to protect a drinking water supply from pollution.
Substations	Substations are used to control the flow of power through the electricity system. They are also used to change (or transform) the voltage from a higher to lower voltage to allow it to be transmitted to local homes and businesses.
Superficial Geology	Uncemented sediments, such as alluvium, immediately beneath the

Term	Description
	soil and above the bedrock.
Sustainable Drainage Systems	Sustainable Drainage Systems (SuDS) are drainage solutions designed to manage surface water in a way that mimics natural processes, promoting sustainability by reducing flood risk, improving water quality and enhancing the environment.
Trenchless Crossing	A crossing installation method that has limited above-ground disturbance which is used to avoid a sensitive feature such as an environmental feature.
Underground Cabling	An insulated conductor carrying electric current designed for underground installation. Underground cables link together two Cable Sealing End compounds
Water Management Alliance (WMA)	The Water Management Alliance is a consortium of seven Internal Drainage Boards (IDBs): the Broads IDB, East Suffolk Water Management Board, King's Lynn IDB, Norfolk Rivers IDB, South Holland IDB, Waveney, Lower Yare and Lothingland Drainage Board, and Pevensey and Cuckmere Water Level Management Board.

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Appendix A. Preliminary Drainage Design Summary

Appendix A
Preliminary Drainage Design Summary

A.1.1 The following tables provide information on the design of all drainage ponds and basins on the Project, these are to be read in conjunction with the figures provided in **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]**.

A.1.2 Points to note:

- The tables have been ordered by Section, but not in sequence north-south (or vice versa).
- Where it is stated “Infiltration may be deemed possible after infiltration test”, this has been stated due to the fact that specific locations proposed for ponds/basins have not all been tested for infiltration potential. Desktop study has indicated that these sites are likely not suitable, therefore the scheme design has sought to include a viable drainage option in these instances.
- The discharge rates provided are indicative, and are subject to increases should they fall below the maximum l/s/ha figures required by stakeholders. The discharge rate is linked to the respective greenfield run off rate for the contributing catchment.

A.1.3 Pond/Basin Reference name:

- TC: Temporary Catchment
- PC: Permanent Catchment
- INPN: Infiltration Pond/Basin
- ATPN: Attenuation Pond/Basin

A.1.4 The drainage figures included in **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]**, illustrate the indicative Project overland flows.

- These plans show the Order Limits and potential location for the works. Due to the need for future flexibility, National Grid will be applying for Limits of Deviation within its Development Consent Order, within which the drainage designs sits
- The details shown on this plan are indicative only, and are intended to demonstrate that there is suitable space within the Order Limits to accommodate suitable drainage infrastructure for the temporary works and permanent assets. Drainage collection systems are not shown on the plan, as these will be detailed at a later design stage and are assumed to be accommodated within the asset footprints shown on the plan
- These plans illustrate the indicative Project overland flow routes. These routes connect with the theoretical Environment Agency (EA) probable overland flow pathway dataset that is shown on this plan. As the dataset has been produced by a third party, the contents of the dataset shown are indicative only
- The EA probable overland flow pathways are a polyline vector dataset that describes the probable locations accumulation of water over the Earth’s surface where it is assumed that there is no absorption of water through the soil. © Environment Agency copyright and/or database right 2023. All rights reserved

- Overland flow residual risks are negligible for the considered design events, with extreme exceedance events being considered at next stage. Where necessary, overland flow control structures will be considered further at detailed design. Locations where this may be required are noted on the drawings
- Indicative outfall locations for the overhead line attenuation features have not currently been illustrated, however discharge from these features would follow the hierarchy set out in Section 5.3. Outfall locations where required, would discharge to locations within the Order Limits
- For additional scheme detail, refer to **6.4.F1 Environmental Statement Figure 4.1 - Proposed Project Design [REP4-109]**. Refer also to the **Guide to the Plans [REP4-004]**, and the other plans located in the Volume 2 of the DCO application.

Table A.1 Section A and B (Norwich Main Substation, RG Overhead Line Alignment, Bramford Substation)

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-Main-Compound-TC-ATPN-OHL	5.390	3614.8	7.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-Sate1-Compound-TC-ATPN-OHL	1.430	1129.7	2.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-Sate2-Compound-TC-ATPN-OHL	1.520	1194.8	2.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
EEPK-C1-Compound-TC-ATPN-OHL	0.160	117.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
EEPK-C2-Compound-TC-	0.160	117.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

[23] The discharge of each drainage feature will follow the discharge hierarchy set out in Section 5.3 with appropriate justification provided for any progression between hierarchy levels.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions
			Indicative Discharge Rate (L/S)	Consenting Body	
ATPN-OHL					ordinary watercourse after infiltration test.
PI-C1-Compound-TC-ATPN-OHL	0.160	117.3	1.0	SCC	Infiltration of surface groundwater not iden ordinary watercourse after infiltration test.
PI-C2-Compound-TC-ATPN-OHL	0.160	117.3	1.0	SCC	Infiltration of surface groundwater not iden ordinary watercourse after infiltration test.
PKF-C1-Compound-TC-ATPN-OHL	0.160	117.3	1.0	SCC	Infiltration of surface groundwater not iden ordinary watercourse after infiltration test.
PKF-C2-Compound-TC-ATPN-OHL	0.160	117.3	1.0	SCC	Infiltration of surface groundwater not iden ordinary watercourse after infiltration test.
PLD-C1-Compound-TC-ATPN-OHL	0.160	117.3	1.0	SCC	Infiltration of surface groundwater not iden ordinary watercourse after infiltration test.
PHB-C1-Compound-TC-ATPN-OHL	0.160	117.3	1.0	SCC	Infiltration of surface groundwater not iden ordinary watercourse after infiltration test.
PHB-C2-Com	0.160	117.3	1.0	SCC	Infiltration of surface

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
pound-TC-ATPN-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-1	1.257	1160.0	4.4	NCC	Assumptions: National Grid is in the process of undertaking the substation extension works under a separate Town and Country Planning Application (TCPA). This drainage design has been updated to suit. This mainly uses a combination of swales and infiltration trenches. This basin has been coordinated with the drainage strategy of other developers which have used the FEH rainfall calculation method. In line with the SuDS hierarchy, it now uses linear drainage features. The basin is not illustrated in **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]**.
RG-TC-ATPN-1-OHL	-	-	-	NCC	Basin has been descoped from design due to layout changes.
RG-TC-ATPN-2-OHL	1.020	913.0	1.4	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-3-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-3-OHL	1.000	893.9	1.4	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-4-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP	1.060	946.6	1.5	NCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-4-OHL					groundwater not identified. Water to cascade into RG-TC-ATPN-6-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-5-OHL	0.620	483.2	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-7-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-6-OHL	0.590	460.0	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-8-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-7-OHL	0.830	647.0	1.2	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-8-OHL	0.470	369.6	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-9-OHL	1.160	888.7	1.6	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-10-OHL	0.890	691.0	1.2	NCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-INPN-11-OHL	0.890	693.1	1.3	NCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-INPN-12-OHL	1.300	991.4	1.8	NCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-INPN-13-OHL	0.170	131.4	1.0	NCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-INPN-14-OHL	0.390	354.2	1.0	NCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-15-OHL	0.750	589.5	1.1	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-16-OHL	1.330	1008.8	1.9	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-17-OHL	0.530	478.4	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-18-OHL	0.430	334.5	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-19-OHL	1.370	1209.7	1.9	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-20-OHL	1.130	864.1	1.6	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-TC-ATPN-21-OHL	0.870	677.1	1.2	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-20-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-22-OHL	1.060	816.1	1.5	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-23-OHL	0.620	483.7	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-24-OHL	1.360	1036.1	1.9	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-25-OHL	0.600	472.2	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-26-OHL	0.680	535.7	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-27-OHL	0.490	382.6	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					after infiltration test.
RG-TC-ATPN-28-OHL	0.340	266.0	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-29-OHL	0.310	240.7	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-30-OHL	0.900	809.7	1.3	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-31-OHL	0.070	59.8	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-32-OHL	0.990	887.9	1.4	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-33-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-33-OHL	0.710	558.2	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-34-OHL	0.740	666.6	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-35-OHL	0.840	753.4	1.2	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-34-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-36-OHL	0.180	143.0	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-37-OHL	1.120	992.5	1.6	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-38-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-38-OHL	1.330	1174.4	1.9	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-39-OHL	0.790	712.5	1.1	NCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-40-OHL	1.110	855.6	1.6	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-41-OHL	1.170	899.9	1.6	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-42-OHL	1.110	853.4	1.6	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-43-OHL	0.510	459.8	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-42-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-44-OHL	1.130	999.7	1.6	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-45-OHL	1.050	811.8	1.5	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-46-OHL	0.900	694.8	1.3	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-47-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP	1.180	1042.6	1.6	NCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-47-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-48-OHL	0.400	362.4	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-49-OHL	0.680	617.4	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-50-OHL	0.480	436.1	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-51-OHL	0.570	515.0	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-52-OHL	0.240	185.5	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-53-OHL	0.050	39.8	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-TC-ATPN-54-OHL	0.790	616.0	1.1	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-55-OHL	0.450	405.3	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-56-OHL	0.820	736.5	1.1	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-57-OHL	0.230	181.0	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-58-OHL	0.700	631.7	1.0	NCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-59-OHL	0.290	262.7	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-60-OHL catchment. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-TC-ATPN-60-OHL	0.090	77.3	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-61-OHL	1.040	927.6	1.5	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-62-OHL	1.120	856.5	1.6	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-63-OHL	1.460	1107.7	2.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-64-OHL	0.470	380.0	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-65-OHL	0.520	473.4	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-66-OHL	1.130	979.2	1.6	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					after infiltration test.
RG-TC-ATPN-67-OHL	0.840	752.1	1.2	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-67-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-68-OHL	1.210	1073.4	1.7	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-68-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-70-OHL	0.070	65.3	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-71-OHL	0.650	588.1	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-72-OHL	0.410	368.3	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-73-OHL	0.810	725.5	1.1	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-74-OHL	1.480	1293.5	2.1	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-75-OHL	1.240	1094.0	1.7	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-76-OHL	0.870	678.7	1.2	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-77-OHL	0.780	703.4	1.1	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-78-OHL	1.250	1102.8	1.7	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-79-OHL	1.440	1281.2	2.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-80-OHL	1.000	896.0	1.4	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP	0.890	799.8	1.3	NCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-81-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-82-OHL	1.090	838.4	1.5	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-83-OHL	0.450	402.2	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-84-OHL	1.010	899.3	1.4	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-85-OHL	1.060	815.2	1.5	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-86-OHL	0.990	767.9	1.4	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-87-OHL	1.330	1012.7	1.9	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-TC-ATPN-88-OHL	0.690	542.9	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-89-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-89-OHL	1.100	844.7	1.5	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-90-OHL	1.020	906.5	1.4	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-91-OHL	0.490	441.6	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-92-OHL	1.020	787.5	1.4	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-93-OHL	0.690	542.5	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-94-OHL	0.230	207.2	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					after infiltration test.
RG-TC-ATPN-95-OHL	1.250	954.6	1.8	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-96-OHL	1.280	1127.3	1.8	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-97-OHL	0.370	337.3	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-98-OHL	0.880	684.0	1.2	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-99-OHL	0.920	713.5	1.3	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-100-OHL	1.280	977.8	1.8	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-101-OHL	0.230	183.2	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-102-OHL	0.310	245.2	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-103-OHL	1.000	775.2	1.4	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-104-OHL	0.810	726.0	1.1	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-105-OHL	1.090	966.2	1.5	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-106-OHL	0.960	746.9	1.3	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-107-OHL	0.880	687.5	1.2	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP	0.950	739.4	1.3	NCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-108-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-109-OHL	1.240	1096.0	1.7	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-110-OHL	0.290	258.3	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-111-OHL	0.790	614.7	1.1	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-112-OHL	0.350	274.0	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-113-OHL	0.170	130.2	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-114-OHL	0.560	503.6	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-TC-ATPN-115-OHL	0.320	287.1	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-116-OHL	0.820	638.0	1.1	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-117-OHL	0.230	207.6	1.0	NCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-118-OHL	0.610	548.8	0.9	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-119-OHL	0.150	131.5	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-120-OHL	0.970	870.0	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-121-OHL	0.440	400.7	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					after infiltration test.
RG-TC-ATPN-122-OHL	1.050	809.5	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-123-OHL	0.670	609.2	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-124-OHL	0.470	367.2	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-125-OHL	0.310	279.6	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-126-OHL	0.850	766.3	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-127-OHL	1.060	816.3	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-126-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-128-OHL	0.380	339.4	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-129-OHL	1.510	1318.5	2.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-130-OHL	0.530	415.8	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-131-OHL	0.510	403.6	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-132-OHL	0.150	115.6	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-133-OHL	0.590	532.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-134-OHL	1.040	928.6	1.5	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-INPN-135-OHL	0.180	163.3	1.0	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-136-OHL	0.550	495.0	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-137-OHL	0.730	661.0	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-138-OHL	0.610	552.0	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-139-OHL	0.440	401.8	0.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-140-OHL	0.690	620.6	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-141-OHL	1.310	1151.3	1.8	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-142-OHL	0.600	545.4	0.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-143-OHL	1.110	985.3	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-144-OHL	0.990	887.7	0.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-145-OHL	1.180	1043.5	1.7	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-146-OHL	1.160	1025.4	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP	1.100	848.2	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-147-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-148-OHL	1.040	803.9	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-149-OHL	0.830	746.0	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-150-OHL	0.730	570.2	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-151-OHL	0.670	527.9	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-152-OHL	0.640	576.2	0.9	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-153-OHL	1.760	1526.5	2.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-TC-ATPN-154-OHL	1.120	989.6	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-155-OHL	1.440	1277.4	2.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-156-OHL	1.160	889.7	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-157-OHL	1.370	1203.3	1.9	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-158-OHL	1.200	1065.0	1.7	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-159-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-159-OHL	0.880	686.5	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-160-OHL	0.830	745.6	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					after infiltration test.
RG-TC-ATPN-161-OHL	0.330	297.4	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-162-OHL	0.750	677.2	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-163-OHL	1.330	1014.0	1.9	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-164-OHL	0.650	509.8	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-165-OHL	1.020	790.0	1.4	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-166-OHL	1.150	1018.5	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					after infiltration test.
RG-TC-ATPN-167-OHL	2.270	1926.3	3.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-168-OHL	1.280	1132.9	1.8	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-169-OHL	0.680	615.8	0.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-170-OHL	0.410	374.0	0.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-171-OHL	1.500	1308.6	2.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-172-OHL	0.360	325.0	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-173-OHL	1.690	1463.8	2.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-174-OHL	1.360	1195.9	1.9	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-INPN-175-OHL	0.690	538.8	1.0	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-INPN-176-OHL	0.330	259.6	1.0	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-177-OHL	0.880	685.3	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-178-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP	0.790	709.3	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-178-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-179-OHL	1.490	1129.1	2.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-180-OHL	1.020	785.5	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-181-OHL	0.150	116.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-182-OHL	1.010	779.9	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-181-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-183-OHL	1.190	1049.7	1.7	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-184-OHL	1.190	1048.9	1.7	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-TC-ATPN-185-OHL	0.620	483.6	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-186-OHL	0.640	576.1	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-187-OHL	1.040	926.3	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-188-OHL	1.140	1009.5	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-189-OHL	0.790	711.0	1.1	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-190-OHL	1.350	1187.2	1.9	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-TC-ATPN-191-OHL	0.900	700.9	1.3	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-192-OHL	0.870	674.2	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-193-OHL	1.160	887.6	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-194-OHL	0.610	547.5	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-195-OHL	0.840	751.5	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-196-OHL	1.050	810.9	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-197-OHL	1.170	901.4	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					after infiltration test.
RG-TC-ATPN-198-OHL	1.220	935.4	1.7	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-199-OHL	1.180	906.5	1.7	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-200-OHL	0.840	652.7	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-201-OHL	0.490	446.7	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-202-OHL	0.650	588.9	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-203-OHL	0.550	501.0	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-204-OHL	1.190	914.1	1.7	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-205-OHL	0.740	578.1	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-206-OHL	0.820	639.3	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-205-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-207-OHL	0.630	497.0	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-208-OHL	0.830	745.4	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-209-OHL	0.900	697.6	1.3	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-210-OHL	1.110	988.6	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP	0.610	551.8	0.0	SCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-211-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-212-OHL	0.700	552.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-213-OHL	0.360	329.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-214-OHL	0.570	512.0	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-215-OHL	0.550	430.7	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-216-OHL	0.820	641.3	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-217-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-217-OHL	0.670	525.7	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-TC-ATPN-218-OHL	1.060	820.2	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-219-OHL	0.910	815.1	1.3	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-INPN-220-OHL	0.450	410.2	0.6	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-221-OHL	1.520	1327.2	2.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-222-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-222-OHL	0.200	180.2	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP	0.450	407.5	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-223-OHL					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-224-OHL	1.350	1189.6	1.9	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-225-OHL	0.770	696.8	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-226-OHL	0.370	332.8	1.0	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-227-OHL	1.600	1395.8	2.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-228-OHL	0.290	261.5	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-229-OHL	0.980	760.4	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-230-OHL	0.230	183.8	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-231-OHL	0.800	622.1	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-232-OHL	0.730	574.0	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-233-OHL	0.150	114.7	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-234-OHL	1.040	804.0	1.5	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-235-OHL	0.980	760.7	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-236-OHL	0.560	438.7	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-237-OHL	1.120	859.6	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-INPN-238-OHL	0.880	794.2	1.2	SCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
RG-TC-ATPN-239-OHL	0.780	702.2	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-240-OHL	0.300	236.5	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-241-OHL	0.920	717.2	1.3	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-242-OHL	0.660	517.8	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-243-OHL	0.540	419.6	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-244-OHL	0.400	316.1	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-245-OHL	1.310	1000.0	1.8	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-246-OHL	0.600	474.1	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-247-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-247-OHL	0.420	325.5	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP	0.700	547.8	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-248-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-249-OHL	1.270	968.6	1.8	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-250-OHL	1.050	812.6	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-249-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-251-OHL	1.190	1049.0	1.7	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-252-OHL	1.430	1083.8	2.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-253-OHL catchment. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-253-OHL	1.010	860.8	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-254-OHL	1.100	976.1	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into RG-TC-ATPN-255-OHL catchment. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
RG-TC-ATPN-255-OHL	1.160	890.3	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-256-OHL	0.820	641.7	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-257-OHL	0.210	192.6	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-258-OHL	1.290	1138.5	1.8	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-259-OHL	1.050	809.8	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-260-OHL	1.150	880.9	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-261-OHL	0.670	608.5	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					after infiltration test.
RG-TC-ATPN-262-OHL	0.480	375.7	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-263-OHL	0.740	667.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-264-OHL	0.260	238.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-265-OHL	0.860	775.8	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-266-OHL	0.150	139.1	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-267-OHL	0.820	638.9	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-268-OHL	1.180	905.1	1.7	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-269-OHL	1.020	906.7	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-270-OHL	0.900	694.8	1.3	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-271-OHL	1.120	996.5	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-272-OHL	0.970	866.3	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-273-OHL	1.030	917.5	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-274-OHL	1.310	1001.1	1.8	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP	0.410	321.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-275-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-276-OHL	1.110	986.0	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-277-OHL	0.860	776.2	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-278-OHL	0.780	607.5	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-279-OHL	0.440	345.6	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-280-OHL	0.750	677.1	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP N-281-OHL	1.460	1297.9	2.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
RG-TC-ATP					Assumptions:

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-2	2.016	2194.2	7.9	SCC	No ground infiltration. No shallow groundwater. Water to be discharged to existing ordinary watercourse towards the south, identified on OS surveys to lead towards the River Gipping EA main river. Opportunities: Infiltration may be deemed possible after infiltration test.
RG-TC-ATPN-3	0.498	515.8	2.2	SCC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to existing ordinary watercourse towards the south, identified on OS surveys to lead to an unnamed EA main river. Two outfalls (RG-TC-ATPN-03 and RG-PC-ATPN-04) discharge into this watercourse with a combined discharge rate of 5.5 l/s This is acceptable as all discharge rates have been designed to the greenfield run off rate and one of the outfalls are temporary (for 5y installation). Opportunities: Infiltration may be deemed possible after infiltration test. Possibility of tying into existing substation platform drainage system. Survey required to verify existence, location, and outfall of this pipe.
RG-PC-ATPN-4	0.580	739.7	3.3	SCC	Assumptions: No ground infiltration. No shallow groundwater. Albeit groundwater has been identified in close proximity, to be verified through a GI survey. Water to be discharged to existing ordinary watercourse towards the south, identified on OS surveys to lead to an

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall Details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					unnamed EA main river. Two outfalls (RG-TC-ATPN-03 and RG-PC-ATPN-04) discharge into this watercourse with a combined discharge rate of 5.5 l/s This is acceptable as all discharge rates have been designed to the greenfield run off rate and one of the outfalls are temporary (for 5y installation). 45% Climate Change Opportunities: Infiltration may be deemed possible after infiltration test. Possibility of tying into existing substation platform drainage system. Survey required to verify existence, location, and outfall of this pipe.

Table A.2 Section C (JC Overhead Line Alignment, Dedham Vale National Landscape Underground Cable Alignment, EACN Substation)

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
PCB-C1-Compound-TC-ATPN-OHL	0.160	117.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
PCB-C2-Compound-TC-ATPN-OHL	-	-	-	ECC	Basin has been descoped from design due to layout changes.
JC-TC-ATPN	0.900	659.6	1.3	SCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
-1-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-2-OHL	0.770	567.4	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-3-OHL	0.750	555.6	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-5-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-4-OHL	0.540	398.7	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-5-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-5-OHL	1.020	748.1	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-6-OHL	1.020	744.6	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-7-OHL	0.910	663.8	1.3	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
JC-TC-ATPN-8-OHL	0.860	635.4	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-7-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-9-OHL	0.890	655.6	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-10-OHL	0.960	704.3	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-12-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-11-OHL	0.820	605.3	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-13-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-12-OHL	1.160	844.2	1.6	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-13-OHL	0.990	725.8	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-14-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-14-OHL	0.110	82.1	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-15-OHL catchment. Infiltration may be

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					deemed possible after infiltration test.
JC-TC-ATPN-15-OHL	0.150	112.7	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-16-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-16-OHL	0.660	485.9	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-17-OHL	0.390	290.7	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-18-OHL	0.330	244.6	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-17-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-19-OHL	0.410	300.4	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-20-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-20-OHL	0.610	450.9	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-21-OHL	0.800	593.6	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					JC-TC-ATPN-19-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-22-OHL	0.070	50.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-23-OHL	1.050	763.8	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-24-OHL	0.150	112.4	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-25-OHL	0.420	313.2	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-26-OHL	1.010	734.4	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-27-OHL	0.900	656.8	1.3	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-26-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN	0.390	291.3	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
-28-OHL					groundwater not identified. Water to cascade into JC-TC-ATPN-27-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-29-OHL	0.670	496.2	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-28-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-30-OHL	1.080	783.3	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-31-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-31-OHL	0.980	716.7	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-32-OHL	1.000	732.4	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-33-OHL	0.310	228.4	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-34-OHL	0.770	569.4	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
JC-TC-ATPN-35-OHL	1.650	1169.6	2.3	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-36-OHL	0.800	591.4	1.1	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-37-OHL	0.970	707.9	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into JC-TC-ATPN-36-OHL catchment. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-38-OHL	0.490	362.4	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-39-OHL	1.030	750.4	1.4	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-40-OHL	0.870	637.3	1.2	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-41-OHL	1.060	771.6	1.5	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					after infiltration test.
JC-TC-ATPN-42-OHL	0.900	661.9	1.3	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-43-OHL	0.150	114.4	1.0	SCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
JC-TC-ATPN-1	1.172	1177.6	5.9	SCC	Assumptions: No ground infiltration. No shallow groundwater. Albeit groundwater has been identified in close proximity, to be verified through a GI survey. Water to be discharged to ordinary watercourse to the north of the basin. Three outfalls (JC-TC-ATPN-01, JC-PC-ATPN-02 and JC-TC-ATPN-03) discharge into this watercourse with a combined discharge rate of 50.7 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and two of the outfalls are temporary (for 5y installation). Risks: Survey required to verify the location of the watercourse. Drainage outfall alignment crosses a medium pressure gas main which may require deeper excavation. Shallow groundwater could be encountered due to proximity to watercourse. If so, a shallow basin depth of

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					0.5m will be proposed to avoid groundwater seepage into the basin. Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the basin location Lowestoft Formation - Diamicton.
JC-PC-ATPN-2	1.499	1854	7.0	SCC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to ordinary watercourse to the north of the pond. Three outfalls (JC-TC-ATPN-01, JC-PC-ATPN-02 and JC-TC-ATPN-03) discharge into this watercourse with a combined discharge rate of 50.7 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and two of the outfalls are temporary (for 5y installation). 45% Climate Change Risks: Survey required to verify the location of the watercourse. Drainage outfall alignment crosses a medium pressure gas main which may require deeper excavation. Attenuation within the subbase of the CSEC may be required. Shallow groundwater could be encountered due to proximity to watercourse. If so, a shallow pond depth of 0.5m will be proposed to avoid groundwater seepage into the pond.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the pond location Lowestoft Formation - Diamicton.
JC-TC-ATPN-3	3.091	1727	37.8	SCC	Assumptions: Water to be discharged to ordinary watercourse to the north of the basin. Three outfalls (JC-TC-ATPN-01, JC-PC-ATPN-02 and JC-TC-ATPN-03) discharge into this watercourse with a combined discharge rate of 50.7 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and two of the outfalls are temporary (for 5y installation). Ground water may be below base (1m) of attenuation basin. To be verified through a GI survey. Shallow basin depth (0.5m) has been proposed. Risks: Survey required to verify the location of the watercourse. Drainage outfall alignment crosses a medium pressure gas main which may require deeper excavation. Drainage catchment crosses an unnamed road and an existing access track, drainage lines will need to cross the roads, this may require temporary road closures. Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the basin location Lowestoft Formation - Diamicton.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
JC-TC-ATPN-4	1.696	1060.6	12.3	SCC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to ordinary watercourse to the south of the basin. Risks: LiDAR information indicates levels for outfalls and required basin locations are similar, leading to potential difficulties in gravity fed drainage proposals. Ground topographic surveys are required to confirm levels in the area and the proposal shall be reviewed upon receipt of this information. A pumped solution might be required. Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the basin location Lowestoft Formation - Diamicton.
JC-TC-ATPN-5	3.889	3300.7	31.6	SCC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to ordinary watercourse to the south of the basin. Risks: Shallow groundwater could be encountered due to proximity to watercourse. If so, a shallow basin depth of 0.5m will be proposed to avoid groundwater seepage into the basin. Drainage attenuation basin is located on opposite side of Accacia Road, drainage lines will need to cross the road, this may require temporary road closures.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Drainage catchment crosses Accacia Road, drainage lines will need to cross the road, this may require temporary road closures. Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the basin location Lowestoft Formation - Diamicton with high permeability.
JC-TC-INPN-6	2.810	4762	8.5	SCC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000009383m/hr assumed from GI results - IP111a used as nearest result in same strata) Safety Factor = 10 (adjacent to existing highway infrastructure) Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected.
JC-TC-INPN-7	1.582	2670	3.5	SCC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000009383m/hr assumed from GI results - IP111a used as nearest result in same strata) Safety Factor = 10 (adjacent to existing highway infrastructure)

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. Opportunities: JC-TC-INPN-07 and JC-TC-INPN-43 are both proposed to provide drainage for the offline bypass haul road, due to uncertainties in the final elevations of the haul road, both basins have been designed to infiltrate the full requirements of the road. Following further design development of the haul road levels, the size of these basins could be reduced accordingly.
JC-TC-INPN-8	2.433	4137	19.4	SCC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000009383m/hr assumed from GI results - IP111a used as nearest result in same strata) Safety Factor = 10 (adjacent to existing highway infrastructure) Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Drainage catchment crosses the B1070, drainage lines will need to cross the road, this may require temporary road closures.
JC-TC-INPN-9	0.700	1178	4.9	SCC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000009383m/hr assumed from GI results - IP111a used as nearest result in same strata) Safety Factor = 2 Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. Infiltration rates may be lower than expected due to the basins close proximity to an identified watercourse / ditch.
JC-TC-INPN-10	1.640	2670	16.3	SCC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.00036m/hr assumed for Lowestoft Formation superficial deposits / Kesgrave catchment subgroup as no GI available for this strata). Safety Factor = 2 Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks:

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. Basin is located on the edge of the AONB, suggested to design the basin to limit impact on this designated land. Drainage catchment crosses Sandpits Lane, drainage lines will need to cross the road, this may require temporary road closures.
JC-TC-ATPN-11	1.288	1069	12.1	SCC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to ordinary watercourse running through the woodland west of the basin. Risks: Drainage outfall alignment crosses Sandpits Lane, this may require temporary road closures. The outfall is required to discharge inside the AONB due to the limited watercourses in the area. Drainage outfall alignment crosses under an 11kV OHL which may require uplifting / mitigation to allow construction vehicles to operate. Substantial works in existing woodland may be required. Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the basin location Lowestoft Formation - Sand and gravel with high permeability.
JC-TC-ATPN	1.234	1015	12.6	SCC	Assumptions:

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
-12					No ground infiltration. No shallow groundwater. Water to be discharged to identified watercourse south of the basin, this has been identified through surveys as a wet ditch which connects to the ordinary watercourse further south. Three outfalls (JC-TC-ATPN-12, JC-TC-ATPN-13 and JC-TC-ATPN-14) appear to discharge into this watercourse with a combined discharge rate of 45.8 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and all of the outfalls are temporary (for 5y installation). Risks: Drainage catchment crosses the B1068, drainage lines will need to cross the road, this may require temporary road closures. Note earthworks may be required for basin construction. 2m height difference across basin location so earthworks may be required. Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the basin location are Kesgrave Catchment Subgroup - Sand and gravel with high permeability.
JC-TC-ATPN-13	1.412	1123	14.3	SCC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to ordinary watercourse just east of the basin.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Three outfalls (JC-TC-ATPN-12, JC-TC-ATPN-13 and JC-TC-ATPN-14) appear to discharge into this watercourse with a combined discharge rate of 45.8 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and all of the outfalls are temporary (for 5y installation). Risks: Drainage outfall alignment crosses a high-pressure gas main which may require deeper excavation. Opportunities: Infiltration may be deemed possible after infiltration test. The basin sits on Head – Diamicton superficial deposits with potentially high permeability.
JC-TC-ATPN-14	1.916	2191.9	18.9	SCC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to ordinary watercourse along the east of Green Lane. Three outfalls (JC-TC-ATPN-12, JC-TC-ATPN-13 and JC-TC-ATPN-14) appear to discharge into this watercourse with a combined discharge rate of 45.8 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and all of the outfalls are temporary (for 5y installation). Shallow basin depth (0.5m) has been proposed. Risks: Drainage outfall alignment crosses a high-pressure gas main which may require deeper excavation.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Drainage outfall alignment crosses Green Lane, this may require temporary road closures. LiDAR information indicates levels for outfalls and required basin locations are similar, leading to potential difficulties in gravity fed drainage proposals. Ground topographic surveys are required to confirm levels in the area and the proposal shall be reviewed upon receipt of this information. Opportunities: Infiltration may be deemed possible after infiltration test. The basin sits on River Terrace superficial deposits with high permeability.
JC-TC-ATPN-15	2.639	3035.9	24.9	EA / SCC	Assumptions: No ground infiltration (the basin sits on Alluvium deposits). No shallow groundwater. Water to be discharged to EA Main River Stour, south of the basin. Three outfalls (JC-TC-ATPN-15, JC-TC-ATPN-16 and JC-TC-ATPN-17) discharge into this EA Main River with a combined discharge rate of 53.2 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and all of the outfalls are temporary (for 5y installation). Shallow basin depth (0.5m) has been proposed. Risks: Shallow groundwater could be encountered due to proximity to watercourse. If so, a shallow basin depth of

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					0.5m will be proposed to avoid groundwater seepage into the basin. Basin located in the River Stour EA floodplain. LiDAR information indicates levels for outfalls and required basin locations are similar, leading to potential difficulties in gravity fed drainage proposals. Ground topographic surveys are required to confirm levels in the area and the proposal shall be reviewed upon receipt of this information. Drainage basin is in close proximity to existing high pressure gas utility.
JC-TC-ATPN-16	1.026	772	9.5	EA / ECC	Assumptions: No ground infiltration (the basin sits on Alluvium deposits). No shallow groundwater. Water to be discharged to EA Main River Stour, north of the basin. Three outfalls (JC-TC-ATPN-15, JC-PC-ATPN-16 and JC-TC-ATPN-17) discharge into this EA Main River with a combined discharge rate of 53.2 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and all of the outfalls are temporary (for 5y installation). Shallow basin depth (0.5m) has been proposed. Risks: Shallow groundwater could be encountered due to proximity to watercourse. If so, a shallow basin depth of 0.5m will be proposed to avoid groundwater seepage into the basin.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Basin located in the River Stour EA floodplain. LiDAR information indicates levels for outfalls and required basin locations are similar, leading to potential difficulties in gravity fed drainage proposals. Ground topographic surveys are required to confirm levels in the area and the proposal shall be reviewed upon receipt of this information.
JC-TC-ATPN-17	2.082	1567	18.8	EA / ECC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to EA Main River Stour, north of the basin. Three outfalls (JC-TC-ATPN-15, JC-TC-ATPN-16 and JC-TC-ATPN-17) discharge into this EA Main River with a combined discharge rate of 53.2 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and all of the outfalls are temporary (for 5y installation). Risks: Shallow groundwater could be encountered due to proximity to watercourse. If so, a shallow basin depth of 0.5m will be proposed to avoid groundwater seepage into the basin. Basin located in close proximity to the River Stour EA floodplain. Drainage basin is in close proximity to existing high pressure gas utility. Drainage catchment crosses an existing access track,

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					drainage lines will need to cross the track. Opportunities: Infiltration may be deemed possible after infiltration test. The basin sits on River Terrace superficial deposits with potentially high permeability.
JC-TC-ATPN-18	2.992	2299	25.1	ECC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to existing Black Barn Lake, north east of the basin. Identified on OS surveys to lead to the River Stour EA main river. Risks: Shallow groundwater could be encountered due to proximity to watercourse. If so, a shallow basin depth of 0.5m will be proposed to avoid groundwater seepage into the basin. Basin located in close proximity to the River Stour EA floodplain. LiDAR information indicates levels for outfalls and required basin locations are similar, leading to potential difficulties in gravity fed drainage proposals. Ground topographic surveys are required to confirm levels in the area and the proposal shall be reviewed upon receipt of this information. Drainage catchment crosses Water Lane and an existing access track, drainage lines will need to cross the roads, this may require temporary road closures. Opportunities:

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Infiltration may be deemed possible after infiltration test. The basin sits on River Terrace superficial deposits with potentially high permeability.
JC-TC-ATPN-19	3.269	2470	29.1	ECC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to ordinary watercourse, north of the basin. Potentially to lead to the River Stour EA main river Risks: Drainage catchment crosses Water Lane and an unnamed road, drainage lines will need to cross the roads, this may require temporary road closures. Low confidence in outfall. Opportunities: Infiltration may be deemed possible after infiltration test. The basin sits on Head – Diamicton superficial deposits with potentially high permeability.
JC-TC-ATPN-20	7.517	8447	12.1	ECC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to ordinary watercourse, north of the basin. Potentially to lead to the River Stour EA main river Risks: Drainage catchment crosses Dedham Road, drainage lines will need to cross this road, this may require temporary road closures.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the basin location Lowestoft Formation - Sand and gravel with high permeability.
JC-TC-ATPN-21	2.370	2348	6.7	ECC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to the reservoir discharging to the Black Brook ordinary watercourse south of the temporary basin. Identified on OS surveys to lead to an unnamed EA main river. Three outfalls (JC-TC-ATPN-21, JC-TC-ATPN-22 and JC-TC-ATPN-23) discharge into Black Brook with a combined discharge rate of 37.8 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and all of the outfalls are temporary (for 5y installation). Risks: Drainage catchment crosses Dedham Road and Rectory Road, drainage lines will need to cross these roads, this may require temporary road closures. Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the basin location Lowestoft Formation - Sand and gravel with high permeability.
JC-TC-ATPN-22	2.552	1969	20.7	ECC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to the reservoir discharging to the

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Black Brook ordinary watercourse south east of the temporary basin. Identified on OS surveys to lead to an unnamed EA main river. Three outfalls (JC-TC-ATPN-21, JC-PC-ATPN-22 and JC-TC-ATPN-23) discharge into Black Brook with a combined discharge rate of 37.8 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and all of the outfalls are temporary (for 5y installation). Risks: LiDAR information indicates a large difference in levels for opposite ends of the basin. Ground topographic surveys are required to confirm levels in the area and the proposal shall be reviewed upon receipt of this information. A pumped solution is likely to be required. LiDAR information indicates the basin may be situated above areas of the drainage catchment; pumping may be required to drain these areas. Shallow groundwater could be encountered due to proximity to watercourse. If so, a shallow basin depth of 0.5m will be proposed to avoid groundwater seepage into the basin. Drainage outfall alignment crosses under an 11kV OHL which may require uplifting / mitigation to allow construction vehicles to operate. Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the basin location Lowestoft

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Formation - Sand and gravel with high permeability.
JC-TC-ATPN-23	1.335	1033	10.4	ECC	Assumptions: No ground infiltration (the basin sits on Thames Group deposits with low permeability). No shallow groundwater. Identified on OS surveys to lead to an unnamed EA main river. Water to be discharged to Black Brook ordinary watercourse that feeds an irrigation reservoir, north of the temporary basin. Three outfalls (JC-TC-ATPN-21, JC-PC-ATPN-22 and JC-TC-ATPN-23) discharge into Black Brook with a combined discharge rate of 37.8 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and all of the outfalls are temporary (for 5y installation). Risks: Shallow groundwater could be encountered due to proximity to watercourse. If so, a shallow basin depth of 0.5m will be proposed to avoid groundwater seepage into the basin. Basin located in close proximity to the Black Brook EA floodplain. Drainage basin is situated in close proximity to a 33kV OHL which may require uplifting / mitigation to allow construction vehicles to operate. Drainage outfall alignment and drainage catchment crosses the private drive south of Black Brook, drainage lines will need to cross the road, this may require

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					temporary road closures. LiDAR information indicates the basin may be situated above areas of the drainage catchment; pumping may be required to drain these areas.
JC-TC-INPN-24	0.436	598	4.1	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.00036m/hr assumed for Lowestoft Formation superficial deposits as no GI available for this strata). Safety Factor = 10 (adjacent to existing highway infrastructure) Groundwater table to be below base of infiltration basin. To be verified through GI survey. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. Drainage basin is in close proximity to existing high pressure gas utility.
JC-TC-ATPN-25	2.162	1573	21.7	ECC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to existing ordinary watercourse northwest of basin. Risks: Shallow groundwater could be encountered due to proximity to watercourse. If so, a shallow basin depth of 0.5m will be proposed to avoid groundwater seepage into

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					the basin. Earthworks required for basin construction. Basin is well placed for swathe drainage but there is a 4m height difference across the basin itself. Opportunities: Infiltration may be deemed possible after infiltration test. The basin sits on Lowestoft Formation superficial deposits with high permeability.
JC-TC-ATPN-26	1.809	1746	5.1	ECC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to the reservoir discharging to an ordinary watercourse south of the temporary basin. Risks: Drainage outfall alignment crosses under an 33kV OHL which may require uplifting / mitigation to allow construction vehicles to operate. Opportunities: Infiltration may be deemed possible after infiltration test. The superficial deposits of the basin location Lowestoft Formation - Sand and gravel with high permeability.
JC-TC-INPN-27	2.103	2898	18.7	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001308m/hr assumed from GI results - IP102 used as nearest result in same strata) Safety Factor = 2 Groundwater table to be below base of infiltration basin.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
JC-TC-INPN-28	0.845	1165	7.2	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001308m/hr assumed from GI results - IP102 used as nearest result in same strata) Safety Factor = 2 Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
JC-TC-INPN-29	1.326	1827	11.6	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001867m/hr assumed from GI results - IP108 used as nearest result in same strata) Safety Factor = 2 Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. Drainage basin is situated in close proximity to a 11kV OHL which may require uplifting / mitigation to allow construction vehicles to operate. Infiltration pit data used for this basin is in the same strata but is from a considerable distance away.
JC-TC-INPN-30	1.546	2131	13.2	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001867m/hr assumed from GI results - IP108 used as nearest result in same strata) Safety Factor = 10 (adjacent to existing highway infrastructure) Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.
JC-TC-INPN-31	1.424	1962	11.3	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001867m/hr assumed from GI results - IP108 used as nearest result in same strata) Safety Factor = 10 (adjacent to existing highway infrastructure)

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. LiDAR information indicates the catchment area is relatively flat the basin may be situated above areas of the drainage catchment. Pumping may be required to drain these areas.
JC-TC-INPN-32	1.678	2312	7.7	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001867m/hr assumed from GI results - IP108 used as nearest result in same strata) Safety Factor = 10 (adjacent to existing railway infrastructure) Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. LiDAR information indicates the catchment area is relatively flat the basin may be situated above areas of the drainage catchment. Pumping may be required to drain these areas.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
JC-TC-INPN-33	1.391	1917	11.7	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001867m/hr assumed from GI results - IP108 used as nearest result in same strata) Safety Factor = 10 (adjacent to existing highway infrastructure) Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. LiDAR information indicates the catchment area is relatively flat the basin may be situated above areas of the drainage catchment. Pumping may be required to drain these areas.
JC-TC-INPN-34	1.997	2752	16.1	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001867m/hr assumed from GI results - IP108 used as nearest result in same strata) Safety Factor = 2 Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. LiDAR information indicates the catchment area is relatively flat the basin may be situated above areas of the drainage catchment. Pumping may be required to drain these areas.
JC-TC-INPN-35	1.218	1679	9.5	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001355m/hr assumed from GI results - IP109 used as nearest result in same strata) Safety Factor = 2 Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. LiDAR information indicates the catchment area is relatively flat the basin may be situated above areas of the drainage catchment. Pumping may be required to drain these areas.
JC-TC-INPN-36	1.053	1451	2.9	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001355m/hr assumed from GI results - IP109 used as nearest result in same strata)

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Safety Factor = 2 Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. LiDAR information indicates the catchment area is relatively flat the basin may be situated above areas of the drainage catchment. Pumping may be required to drain these areas.
JC-TC-INPN-37	2.309	3182	17.0	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000000935m/hr assumed from GI results - IP102 used as nearest result in same strata) Safety Factor = 2 Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. LiDAR information indicates the catchment area is relatively flat the basin may be situated above areas of the drainage catchment. Pumping may be required to drain these areas.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					Drainage catchment crosses Hungerdown Lane, drainage lines will need to cross this road, this may require temporary road closures.
JC-PC-ATPN-38	10.104	15239	31.8	ECC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to existing ordinary watercourse towards the southeast. Two outfalls (JC-PC-ATPN-38 and JC-TC-ATPN-40) discharge into this watercourse with a combined discharge rate of 40.8 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and one of the outfalls is temporary (for 5y installation). Shallow pond depth (0.5m) has been proposed. The temporary infiltration basin south of EACN has been incorporated within permanent pond JC-PC-ATPN-38. This is required to allow for a 30m planting buffer north of Little Bromley. It is feasible on the basis that the substation base may be constructed during the temp period but assuming the permanent pond only attracts temp conditions during construction i.e. 1:100-year rainfall and 20% climate change, 14% of the pond volume is not utilised and therefore this volume can take the drainage originally designed to go to the temporary basin Risks: LiDAR information indicates levels for outfalls and required pond locations are similar, leading to potential difficulties in gravity fed drainage proposals. Due to unfavourable topography the available fall between the

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					proposed attenuation ponds and the indicated outfall is very limited. This outfall pipe gradient would be approximately 1 in 765, which would preclude water in the system from reaching a self-cleansing velocity. Therefore, for this system to work it would need to be a pumped network. However, this would require regular maintenance throughout the lifespan of the network. Routeing the drainage alignment near the EACN Substation could provide a low voltage connection for the required pumps in this scenario. Drainage outfall alignment interfaces with the customer connection substation drainage proposals. Drainage outfall alignment crosses under multiple LV and HV OHL which may require uplifting / mitigation to allow construction vehicles to operate. Drainage outfall alignment crosses Grange Road and Ardleigh Road, this may require temporary road closures to implement.
JC-TC-INPN-39	1.074	1480	2.5	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001025m/hr assumed from GI results - IP103 used as nearest result in same strata) Safety Factor = 2 Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. LiDAR information indicates the catchment area is relatively flat the basin may be situated above areas of the drainage catchment. Pumping may be required to drain these areas.
JC-TC-ATPN-40	2.833	2650	9.0	ECC	Assumptions: No ground infiltration. No shallow groundwater. Water to be discharged to existing ordinary watercourse towards the southeast. Two outfalls (JC-PC-ATPN-38 and JC-TC-ATPN-40) discharge into this watercourse with a combined discharge rate of 40.8 l/s. This is acceptable as all discharge rates have been designed to the greenfield run off rate and one of the outfalls is temporary (for 5y installation). Shallow basin depth (0.5m) has been proposed. Risks: LiDAR information indicates levels for outfalls and required basin locations are similar, leading to potential difficulties in gravity fed drainage proposals. Due to unfavourable topography the available fall between the proposed attenuation basins and the indicated outfall is very limited. This outfall pipe gradient would be approximately 1 in 765, which would preclude water in the system from reaching a self-cleansing velocity. Therefore, for this system to work it would need to be a pumped network. However, this would require regular maintenance throughout the lifespan of the network. Routeing the

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					drainage alignment near the EACN Substation could provide a low voltage connection for the required pumps in this scenario. Drainage outfall alignment interfaces with the customer connection substation drainage proposals. Drainage outfall alignment crosses under multiple LV and HV OHL which may require uplifting / mitigation to allow construction vehicles to operate. Drainage outfall alignment crosses Grange Road and Ardleigh Road, this may require temporary road closures to implement. Opportunities: Infiltration may be deemed possible after infiltration test. The basin sits on Cover Sand superficial deposits with high permeability.
JC-PC-INPN-41	1.102	1519	2.7	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration pond required (Infiltration rate of 0.0000001025m/hr assumed from GI results - IP103 used as nearest result in same strata) Safety Factor = 2 Groundwater table to be below base of infiltration pond. To be verified through GI survey of pond location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test.

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					LiDAR information indicates the catchment area is relatively flat the pond may be situated above areas of the drainage catchment. Pumping may be required to drain these areas.
JC-TC-INPN-42	0.973	1341	7.1	ECC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000001867m/hr assumed from GI results - IP108 used as nearest result in same strata) Safety Factor = 10 (adjacent to existing highway infrastructure) Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. To be verified through infiltration test. LiDAR information indicates the catchment area is relatively flat the basin may be situated above areas of the drainage catchment. Pumping may be required to drain these areas.
JC-TC-INPN-43	1.582	2670	3.5	SCC	Assumptions: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 0.0000009383m/hr assumed from GI results - IP111a used as nearest result in same strata) Safety Factor = 10 (adjacent to existing highway

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
					infrastructure) Groundwater table to be below base of infiltration basin. To be verified through GI survey of basin location. Risks: Ground conditions may not be favourable, with ground infiltration not possible or infiltration rate lower than expected. Opportunities: JC-TC-INPN-07 and JC-TC-INPN-43 are both proposed to provide drainage for the offline bypass haul road, due to uncertainties in the final elevations of the haul road, both basins have been designed to infiltrate the full requirements of the road. Following further design development of the haul road levels, the size of these basins could be reduced accordingly.

Table A.3 Section C, D,E, F, G ,H (TB Overhead Line Alignment, Great Horkesley Underground Cable Alignment, Fairstead Underground Cable Alignment.)

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
TB-Main-Compound-TC-ATPN-OHL	5.500	3674.3	7.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

TB-Sate1-Compound-TC-ATPN-OHL	1.430	1129.7	2.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-Sate2A-Compound-TC-ATPN-OHL	1.470	1153.3	2.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-Sate2B-Compound-TC-ATPN-OHL	1.430	1129.7	2.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
PSB-C2-Compound-TC-ATPN-OHL	0.160	117.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
PSB-C1-Compound-TC-ATPN-OHL	0.160	117.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
PSC-C1-Compound-TC-ATPN-OHL	0.160	117.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
PAB-C1-Compound-TC-ATPN-OHL	0.160	117.3	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
PAB-C2-Compound-TC-ATPN-OHL	0.160	117.3	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.

PUB-C1-Compound-TC-ATPN-OHL	0.160	117.3	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
PUB-C2-Compound-TC-ATPN-OHL	0.160	117.3	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-005-OHL	1.490	1331.5	2.1	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-006-OHL	1.050	953.8	1.5	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-007-OHL	1.480	1323.1	2.1	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-008-OHL	0.580	536.7	1.0	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-010-OHL	1.100	1002.1	1.5	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-011-OHL	0.970	884.0	1.4	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-012-OHL	0.120	113.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-013-OHL	1.050	949.2	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed

					possible after infiltration test.
TB-TC-ATPN-014-OHL	0.960	874.2	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-015-OHL	1.420	1270.1	2.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-016-OHL	0.830	757.7	1.2	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-017-OHL	1.180	1065.2	1.6	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-018-OHL	1.300	1170.8	1.8	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-019-OHL	1.070	968.5	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-018-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-020-OHL	0.170	156.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-019-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-021-OHL	1.160	1052.7	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-022-OHL	1.100	997.3	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.930	852.5	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow

-023-OHL					groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-024-OHL	0.730	674.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-025-OHL	0.320	298.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-024-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-026-OHL	0.300	278.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-025-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-027-OHL	1.130	1018.7	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-026-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-028-OHL	0.760	694.9	1.1	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-029-OHL	1.400	1255.9	2.0	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-030-OHL	0.760	694.5	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-031-OHL	0.330	307.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-032-OHL	0.900	817.2	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed

					possible after infiltration test.
TB-TC-ATPN-033-OHL	0.800	735.0	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-034-OHL	0.230	209.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-035-OHL	0.430	396.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-036-OHL	0.820	751.9	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-037-OHL	0.200	179.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-038-OHL	0.820	751.6	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-039-OHL	1.110	1007.9	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-040-OHL	1.250	1126.1	1.8	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-058-OHL	0.990	898.4	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-059-OHL	1.180	1066.2	1.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.

TB-TC-ATPN-060-OHL	1.010	913.6	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-061-OHL	0.360	335.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-062-OHL	0.800	734.9	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-063-OHL	0.210	196.7	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-064-OHL	1.340	1200.8	1.9	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-065-OHL	0.910	833.7	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-066-OHL	0.670	617.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-067-OHL	0.360	332.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-068-OHL	0.150	135.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-069-OHL	0.670	619.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-					No nearby watercourses to outfall to, therefore, full

070-OHL	0.480	438.1	1.0	ECC	infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-071-OHL	0.600	551.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-072-OHL	0.900	819.6	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-073-OHL	0.170	154.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-074-OHL	1.000	908.6	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-075-OHL	0.360	330.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-076-OHL	0.930	848.8	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-077-OHL	0.200	186.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-078-OHL	0.210	192.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-079-OHL	0.440	408.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.940	854.7	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed

-080-OHL					possible after infiltration test.
TB-TC-ATPN-081-OHL	0.810	745.5	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-082-OHL	0.380	350.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-083-OHL	0.960	876.9	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-084-OHL	0.980	890.6	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-085-OHL	1.230	1107.1	1.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-086-OHL	1.070	973.0	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-087-OHL	0.790	722.1	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-088-OHL	1.040	941.0	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-089-OHL	0.710	655.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-090-OHL	0.520	477.7	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed

					possible after infiltration test.
TB-TC-INPN-091-OHL	0.610	561.2	1.0	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-092-OHL	0.690	637.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-093-OHL	1.310	1175.0	1.8	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-094-OHL	1.560	1383.1	2.2	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-095-OHL	0.750	690.6	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-096-OHL	0.820	751.5	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-097-OHL	0.250	228.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-098-OHL	0.170	152.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-099-OHL	1.360	1219.8	1.9	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-100-OHL	0.690	632.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-101-OHL catchment. Infiltration may be

					deemed possible after infiltration test.
TB-TC-ATPN-101-OHL	0.390	358.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-102-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-102-OHL	0.710	650.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-103-OHL	0.400	366.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-104-OHL	1.250	1128.1	1.8	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-105-OHL	0.760	692.6	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-106-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-106-OHL	1.100	999.7	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-107-OHL	0.950	866.2	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-108-OHL	1.760	1548.6	2.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-109-OHL	0.200	187.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.560	512.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-110-OHL					groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-111-OHL	0.420	389.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-112-OHL	0.480	436.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-113-OHL	0.950	865.8	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-114-OHL	1.380	1239.5	1.9	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-115-OHL	1.070	969.6	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-116-OHL	0.150	141.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-117-OHL	0.810	740.1	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-118-OHL	0.490	450.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-119-OHL	0.720	663.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.230	211.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into

-120-OHL					TB-TC-ATPN-119-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-121-OHL	0.270	248.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-122-OHL	0.910	826.4	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-123-OHL	0.540	500.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-124-OHL	0.550	502.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-125-OHL	1.950	1709.0	2.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-126-OHL	0.780	719.0	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-127-OHL	0.540	493.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-128-OHL	0.870	789.0	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-129-OHL	1.260	1135.7	1.8	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.900	820.4	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed

-130-OHL					possible after infiltration test.
TB-TC-ATPN-131-OHL	1.150	1038.8	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-130-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-132-OHL	1.390	1244.3	1.9	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-133-OHL	0.910	829.9	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-132-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-134-OHL	0.610	563.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-135-OHL	1.700	1501.4	2.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-136-OHL	0.850	778.6	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-137-OHL	0.140	128.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-138-OHL	1.050	949.6	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-139-OHL	0.350	323.7	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN					Infiltration of surface water considered unsuitable. Shallow

-140-OHL	0.830	755.0	1.2	ECC	groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-141-OHL	1.780	1572.2	2.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-142-OHL	0.410	374.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-143-OHL	0.780	715.2	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-144-OHL	1.150	1037.6	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-145-OHL	0.640	587.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-146-OHL	0.490	449.7	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-147-OHL	0.970	883.6	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-148-OHL	1.920	1685.6	2.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-149-OHL	0.510	470.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.810	745.7	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed

-150-OHL					possible after infiltration test.
TB-TC-ATPN-151-OHL	0.120	112.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-152-OHL	0.590	546.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-153-OHL	0.840	767.3	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-154-OHL	1.010	916.1	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-155-OHL	1.170	1058.5	1.6	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-156-OHL	0.720	665.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-157-OHL	1.460	1304.4	2.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-158-OHL	0.780	718.6	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-157-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-159-OHL	1.080	975.7	1.5	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.740	682.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-160-OHL					groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-161-OHL	1.160	1049.5	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-162-OHL	1.000	905.9	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-165-OHL	0.370	339.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-166-OHL	0.800	737.6	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-167-OHL	0.400	363.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-166-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-168-OHL	0.850	778.7	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-167-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-169-OHL	1.060	959.8	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-170-OHL	0.250	226.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-171-OHL	0.770	709.4	1.1	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.

TB-TC-ATPN-172-OHL	1.040	943.3	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-173-OHL	0.260	234.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-174-OHL	0.870	789.7	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-175-OHL	0.530	489.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-176-OHL	0.870	796.0	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-177-OHL	1.220	1100.9	1.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-178-OHL	0.420	384.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-179-OHL	0.390	354.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-180-OHL	1.390	1244.5	1.9	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-181-OHL	0.240	221.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-182-OHL catchment. Infiltration may be deemed possible after infiltration test.

TB-TC-ATPN-182-OHL	1.110	1006.8	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-183-OHL	1.000	908.7	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-184-OHL	0.340	312.7	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-185-OHL	0.080	72.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-186-OHL	0.290	265.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-INPN-187-OHL	1.220	1100.1	1.7	ECC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-188-OHL	0.940	853.8	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-189-OHL	0.980	891.5	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-190-OHL	1.020	930.9	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-191-OHL	0.610	563.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN					Infiltration of surface water considered unsuitable. Shallow

-192-OHL	0.290	265.2	1.0	ECC	groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-193-OHL	1.340	1197.3	1.9	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-194-OHL	0.780	715.2	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-196-OHL	1.280	1150.8	1.8	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-197-OHL	0.510	471.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-198-OHL	0.470	433.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-199-OHL	0.490	450.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-200-OHL	1.190	1074.6	1.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-201-OHL	0.970	881.1	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-200-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-202-OHL	0.210	189.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.710	656.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-203-OHL					groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-204a-OHL	1.140	1028.0	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-204b-OHL	1.690	1493.9	2.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-205-OHL	1.210	1086.9	1.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-206-OHL	0.850	778.2	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-207-OHL	0.410	369.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-208-OHL	0.270	244.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-209-OHL	0.540	492.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-210-OHL	0.360	326.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-211-OHL	0.950	867.0	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-212-OHL	0.980	893.1	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-213-OHL	1.080	975.4	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-214-OHL	0.860	789.3	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-215-OHL	1.380	1232.4	1.9	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-216-OHL	0.330	300.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-217-OHL	0.890	809.8	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.830	755.0	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

-218-OHL					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-219-OHL	0.890	812.5	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-220-OHL	0.550	498.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-221-OHL	0.110	100.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-222-OHL	0.620	564.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-223-OHL	0.950	865.0	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-224-OHL	0.300	268.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-225-OHL	0.700	636.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.910	832.3	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow

-226-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-227-OHL	0.310	282.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-228-OHL	0.820	752.2	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-229-OHL	0.850	778.7	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-230-OHL	0.980	891.7	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-231-OHL	1.070	973.6	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-230-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-232-OHL	1.110	1003.5	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-233A-OHL	0.090	82.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	1.080	982.2	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow

-233-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-234-OHL	0.890	811.3	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-235-OHL	0.640	581.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-236-OHL	0.960	871.0	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-237-OHL	0.660	598.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-238-OHL	0.800	735.6	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-239-OHL	0.800	732.7	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-240-OHL	0.560	506.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	1.390	1245.4	2.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-241-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-242-OHL	1.160	1045.7	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-243-OHL	1.140	1028.0	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-244-OHL	1.120	1013.3	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-245-OHL	0.470	425.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-246-OHL	0.860	781.7	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-247-OHL	1.070	970.1	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-248-OHL	1.070	974.2	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.650	592.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-249-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-250-OHL	0.630	571.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-251-OHL	0.880	806.1	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-250-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-252-OHL	1.190	1076.2	1.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-253-OHL	0.250	226.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-254-OHL	0.230	209.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-255-OHL	0.990	903.0	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-256-OHL	1.460	1307.5	2.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.980	892.4	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow

-257-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-258-OHL	0.680	621.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-259-OHL	0.650	590.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-260-OHL	0.830	755.0	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-261-OHL	0.740	668.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-262-OHL	0.640	581.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-261-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-263-OHL	0.290	263.7	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-264-OHL	1.020	931.0	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.380	343.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-265-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-266-OHL	0.730	666.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-267-OHL	0.950	870.2	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-268-OHL	0.940	859.4	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-269-OHL	0.310	283.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-270-OHL	0.970	880.2	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-271-OHL	0.180	164.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-272-OHL	0.980	889.2	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.610	552.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-273-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-274-OHL	1.020	929.2	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-275-OHL	1.090	990.1	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-276-OHL	0.960	873.7	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-277-OHL	0.760	700.4	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-278-OHL	0.360	329.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-277-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-279-OHL	0.490	445.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-280-OHL	0.390	357.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-281-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.650	589.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-281-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN -282-OHL	0.480	438.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN -283-OHL	0.840	763.3	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN -284-OHL	0.980	887.9	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN -285-OHL	0.810	742.7	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN -286-OHL	0.480	436.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN -287-OHL	0.810	741.5	1.1	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN -288-OHL	1.160	1046.2	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.880	805.3	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow

-289-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-290-OHL	0.320	290.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-291-OHL	1.160	1049.3	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-292-OHL	0.150	139.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-295-OHL	0.790	727.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-297-OHL	-	-	-	ECC	Basin has been descoped from design due to layout changes.
TB-TC-ATPN-298-OHL	0.720	650.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-299-OHL	0.610	551.7	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-300-OHL	0.370	335.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-301-OHL	1.180	1065.4	1.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-302-OHL	0.510	460.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-303-OHL	0.900	825.0	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-304-OHL	0.420	379.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-306-OHL	0.600	545.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-307-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-307-OHL	1.040	947.5	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-308-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-308-OHL	0.840	771.1	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.360	324.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to

-309-OHL					ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-310-OHL	1.210	1091.2	1.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-311-OHL	1.130	1024.4	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-312-OHL	0.960	876.1	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-313-OHL	0.300	276.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-314-OHL	1.100	999.1	1.5	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-315-OHL	0.870	790.7	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-314-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-316-OHL	0.310	285.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-317-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.520	471.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-317-OHL					groundwater not identified. Water to cascade into TB-TC-ATPN-318-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-318-OHL	1.040	941.3	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-319-OHL	0.220	198.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-320-OHL	0.730	663.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-321-OHL	0.380	345.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-322-OHL	0.980	888.6	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-323-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-323-OHL	0.890	810.2	1.2	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-324-OHL	0.280	257.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.610	550.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-325-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-326-OHL	0.330	301.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-327-OHL	0.620	559.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-328-OHL	1.010	916.7	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-329-OHL	0.290	266.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-330-OHL	1.240	1116.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-331-OHL	0.880	802.2	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-332-OHL	0.390	357.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.610	557.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-333-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-334-OHL	1.020	929.8	1.4	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-335-OHL	0.240	221.5	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-336-OHL	0.360	328.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-337-OHL	1.220	1100.6	1.7	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-338-OHL	0.320	293.1	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-339-OHL	0.320	289.3	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-340-OHL	0.960	875.3	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.140	125.0	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-341-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-342-OHL	1.170	1055.0	1.6	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-343-OHL	0.510	463.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-344-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-344-OHL	0.320	288.6	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-345-OHL	0.630	572.8	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-346-OHL	0.410	369.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-347-OHL	0.630	570.4	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-348-OHL	0.890	814.8	1.3	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.630	571.7	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow

-349-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-350-OHL	0.680	619.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-351-OHL	0.060	57.9	1.0	ECC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-352-OHL	0.790	725.1	1.1	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-353-OHL	0.700	631.9	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-354-OHL	0.510	459.1	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-355-OHL	0.990	902.1	1.4	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-356-OHL	0.170	150.0	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-355-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.740	670.7	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow

-357-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-358-OHL	0.940	856.1	1.3	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-359-OHL	1.030	937.6	1.4	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-360-OHL	1.160	1052.6	1.6	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-361-OHL	0.450	408.9	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-362-OHL	1.060	960.9	1.5	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-363-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-363-OHL	0.880	807.2	1.2	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-364-OHL	0.850	773.6	1.2	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.430	392.1	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow

-365-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-366-OHL	0.180	163.7	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-367-OHL	0.490	445.5	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-368-OHL	1.500	1332.9	2.1	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-369-OHL	1.150	1037.1	1.6	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-370-OHL	0.840	771.2	1.2	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-372-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-371-OHL	0.750	690.3	1.1	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-372-OHL	0.640	577.7	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.870	799.6	1.2	TCC	Infiltration of surface water considered unsuitable. Shallow

-373-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-374-OHL	1.080	980.4	1.5	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-375-OHL	1.310	1182.2	1.8	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-376-OHL	1.260	1130.0	1.8	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-375-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-377-OHL	0.950	868.1	1.3	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-378-OHL	1.070	969.1	1.5	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-379-OHL	1.150	1037.1	1.6	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-380-OHL	0.750	680.1	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN	0.730	667.3	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow

-381-OHL					groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-382-OHL	1.480	1319.7	2.1	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-383-OHL	1.300	1165.4	1.8	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-384-OHL	0.730	663.7	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to cascade into TB-TC-ATPN-386-OHL catchment. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-385-OHL	0.960	874.1	1.3	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-386-OHL	0.620	561.5	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-387-OHL	0.590	533.2	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Water to be discharged to ordinary watercourse. Infiltration may be deemed possible after infiltration test.
TB-TC-ATPN-233A-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
TB-PC-ATPN-1	1.379	1899.0	2.0	ECC	Assumptions: Ground water to be below base (1m) of attenuation pond.

					To be verified through a GI survey. Outfall is proposed to ponds. Risks: Pond depth limited to 0.5m due to small level difference required to achieve a fall to allow discharge from the pond to the outfall. Opportunities: Infiltration may be possible in this area. The pond sits on Kesgrave catchment subgroup Sand &Gravel superficial deposits with potentially high permeability. To be verified through a GI survey
TB-TC-ATPN-2	5.971	8014.0	2.0	ECC	Assumptions: Ground water to be below base of attenuation basin. To be verified through a GI survey. Outfall is proposed to basins. A road crossing (Broad Lane) is present within the catchment area of the basin. Pipework running underneath the road will be required. Risks: The basin is located within close proximity to Broad Lane. Potential flooding of the basin may also affect the road. Basin depth limited to 0.5m due to small level difference required to achieve a fall to allow discharge from the basin to the outfall. Opportunities: Infiltration may be possible in this area. The basin sits on Kesgrave catchment subgroup Sand &Gravel superficial deposits with potentially high permeability. To be verified through a GI survey
TB-TC-INPN-3	1.714	1841.1	2.0	ECC	Assumptions: Ground water to be below base (1m) of attenuation basin.

					To be verified through a GI survey. Risks: No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 1x10-7 m/s assumed for Cover Sands superficial deposits). Safety Factor =2
TB-TC-INPN-4	1.417	1522.0	2.0	ECC	Assumptions: Ground water to be below base (1m) of attenuation basin. To be verified through a GI survey. No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 1x10-7 m/s assumed for Cover Sands superficial deposits). Safety Factor =2
TB-TC-INPN-5	0.783	840.9	2.0	ECC	Assumptions: Ground water to be below base (1m) of attenuation basin. To be verified through a GI survey. No nearby watercourses to outfall to, therefore, full infiltration basin required (Infiltration rate of 1x10-7 m/s assumed for Cover Sands superficial deposits). Safety Factor =2
TB-TC-ATPN-6	1.647	1953.0	2.0	ECC	Assumptions: Ground water to be below base (1m) of attenuation basin. To be verified through a GI survey. Risks: Infiltration has been assumed not possible in this location (The basin sits on Diamicton superficial deposits).
TB-TC-ATPN-7	2.323	2898.0	2.0	ECC	Assumptions: Ground water to be below base (1m) of attenuation basin. To be verified through a GI survey. Risks: Infiltration has been assumed not possible in this location

					(The basin sits on Diamicton superficial deposits). Should the proposed outfall location be rejected, infiltration is not a viable option.
TB-TC-ATPN-8	1.293	1458.0	2.0	ECC	Assumptions: Ground water to be below base (1m) of attenuation basin. To be verified through a GI survey. Risks: Infiltration has been assumed not possible in this location (The basin sits on Diamicton superficial deposits).
TB-TC-ATPN-9	3.889	5089.0	2.0	ECC	Assumptions: Groundwater table to be below base of attenuation basin. To be verified through GI survey. Two outfalls (see TB-PC-ATPN-9 and TB-PC-ATPN-10) into this watercourse are acceptable with a combined discharge rate of 23.7 l/s as one of the outfalls is temporary (for 5 years installation). Risks: Infiltration has been assumed not possible in this location (The basin sits on Diamicton superficial deposits). There is significant distance between the basin and the nearest available watercourse which is an EA main river. Significant earthworks would be required to facilitate the burial of the outfall pipe and consent from the EA would be required to discharge into the watercourse. Opportunities: The basin is located approximately 170m away from the nearest available watercourse which is an EA main river. There is a potential to discharge here if infiltration is not feasible.
TB-PC-ATPN-10	0.783	954.0	2.0	ECC	Assumptions: Two outfalls (see TB-PC-ATPN-9 and TB-PC-ATPN-10)

					into this watercourse are acceptable with a combined discharge rate of 23.7 l/s as one of the outfalls is temporary (for 5 years installation). Groundwater table to be below base of attenuation pond. To be verified through GI survey. Risks: Infiltration has been assumed not possible in this location (The pond sits on Diamicton superficial deposits).
TB-TC-ATPN-11	0.456	406.0	2.0	ECC	Assumptions: Groundwater table to be below base of attenuation basin. To be verified through GI survey. Risks: Infiltration has been assumed not possible in this location (The basin sits on Diamicton superficial deposits). Should the proposed outfall location be rejected, infiltration is not a viable option.
TB-PC-ATPN-12	0.663	758.0	2.0	ECC	Assumptions: No ground infiltration Water to be discharged to existing ordinary watercourse running parallel to the west of Fairstead Road, identified on OS surveys to lead to the EA main river Ter. Four outfalls (see TB-PC-ATPN-13, TB-TC-ATPN-14 and TB-TC-ATPN-15) into this watercourse are acceptable. A combined discharge rate of 8.4 l/s is acceptable as 4 l/s of this is temporary discharge. Risks: Infiltration has been assumed not possible in this location (The basin sits on Diamicton superficial deposits). Should the proposed outfall location be rejected, infiltration is not a viable option.
TB-PC-ATPN-13	1.209	1614.0	2.0	ECC	Assumptions: No ground infiltration

					Water to be discharged to existing ordinary watercourse running parallel to the east of Fairstead Road, identified on OS surveys to lead to the EA main river Ter. Four outfalls (see TB-PC-ATPN-12, TB-TC-ATPN-14 and TB-TC-ATPN-15) into this watercourse are acceptable. A combined discharge rate of 8.4 l/s is acceptable as 4 l/s of this is temporary discharge. The pond accommodates the catchments of the cable swathe for a worst-case scenario design. Risks: Infiltration has been assumed not possible in this location (The pond sits on Diamicton superficial deposits). Should the proposed outfall location be rejected, infiltration is not a viable option.
TB-TC-ATPN-14	0.435	653.0	2.0	ECC	Assumptions: No ground infiltration Water to be discharged to existing ordinary watercourse running parallel to the east of Fairstead Road, identified on OS surveys to lead to the EA main river Ter. Four outfalls (see TB-PC-ATPN-12, TB-PC-ATPN-13 and TB-TC-ATPN-15) into this watercourse are acceptable. A combined discharge rate of 8.4 l/s is acceptable as 4 l/s of this is temporary discharge. Risks: Infiltration has been assumed not possible in this location (The basin sits on Diamicton superficial deposits). Should the proposed outfall location be rejected, infiltration is not a viable option.
TB-TC-ATPN-15	1.019	1062.0	2.0	ECC	Assumptions: No ground infiltration Water to be discharged to existing ordinary watercourse running parallel to the east of Fairstead Road, identified on OS surveys to lead to the EA main river Ter.

					Four outfalls (see TB-PC-ATPN-12, TB-PC-ATPN-13 and TB-TC-ATPN-14) into this watercourse are acceptable. A combined discharge rate of 8.4 l/s is acceptable as 4 l/s of this is temporary discharge. The basin accommodates the catchments of the cable swathe for a worst-case scenario design. Risks: Infiltration has been assumed not possible in this location (The basin sits on Diamicton superficial deposits). Should the proposed outfall location be rejected, infiltration is not a viable option.
TB-TC-ATPN-16	0.572	532.0	2.0	ECC	Assumptions: No nearby ditch, so outfall to highway drainage system is likely required. Risks: Infiltration has been assumed not possible in this location (The basin sits on Diamicton superficial deposits). Should the proposed outfall location be rejected, infiltration is not a viable option.
TB-PC-ATPN-17	0.793	839.0	6.0	TCC	Assumptions: Outfall of all Tilbury North substation attenuation ponds/basins are to a watercourse to the east of the Substation. Attenuation feature is proposed to be a buried tank or similar. Opportunities: Infiltration may be deemed possible after infiltration test. Pond sits on sand/gravel deposits Groundwater table to be at least 1m below base of the pond.
TB-TC-ATPN-18	-	-	-	TCC	The temporary attenuation basin south of Tilbury North has been incorporated within permanent pond TB-PC-ATPN-17. It is feasible on the basis that the

					substation base may be constructed during the temp period but assuming the permanent pond only attracts temp conditions during construction i.e. 1:100-year rainfall and 20% climate change, 14% of the pond volume is not utilised and therefore this volume can take the drainage originally designed to go to the temporary basin. Alternative drainage methods may still be required, including above-ground attenuation within the compounds and laydown areas. The SuDS hierarchy should be applied at detailed design stage, with other sustainable measures identified where appropriate, including linear drainage techniques. Reducing the number of drainage features around the Substation has not reduced the Order Limits, and therefore should phasing change later, the features could be reinstated.
TB-PC-ATPN-19	5.099	7364.0	18.1	TCC	Assumptions: Outfall of all Tilbury North substation attenuation ponds are to a watercourse to the east of the Substation. Opportunities: Infiltration may be deemed possible after infiltration test. Pond sits on sand/gravel deposits Groundwater table to be at least 1m below base of the pond.
TB-TC-ATPN-20	-	-	-	TCC	The temporary attenuation basin south of Tilbury North has been incorporated within permanent pond TB-PC-ATPN-19. It is feasible on the basis that the substation base may be constructed during the temp period but assuming the permanent pond only attracts temp conditions during construction i.e. 1:100-year rainfall and 20% climate change, 14% of the pond volume is not utilised and therefore this volume can take the drainage originally designed to go to the temporary basin. Alternative drainage methods may still be required, including above-ground attenuation within the compounds and laydown areas. The SuDS hierarchy should be

					applied at detailed design stage, with other sustainable measures identified where appropriate, including linear drainage techniques. Reducing the number of drainage features around the Substation has not reduced the Order Limits, and therefore should phasing change later, the features could be reinstated.

Table A.4 Section H (Tilbury North Substation, Modifications to the existing YYJ infrastructure)

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
YYJ-TC-INPN-1-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INPN-2-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INPN-3-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-ATPN-4-OHL	0.550	557.9	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
YYJ-TC-ATPN-5-OHL	0.310	321.3	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
YYJ-TC-INPN-6-OHL	0.350	352.9	N/A	TCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
YYJ-TC-ATPN-7-OHL	0.230	235.3	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details Indicative Discharge Rate (L/S)	Consenting Body	Notes/Assumptions/Risks[23]
					possible after infiltration test.
YYJ-TC-INPN-8-OHL	2.180	2190.0	N/A	TCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
YYJ-TC-INPN-9-OHL	1.410	1415.7	N/A	TCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
YYJ-TC-INPN-10-OHL	1.690	1673.9	N/A	TCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
YYJ-TC-INPN-11-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INPN-12-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INPN-13-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INPN-14-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INPN-15-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-ATPN-16-OHL	0.380	386.1	1.4	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
YYJ-TC-INP	1.170	1191.0	N/A	TCC	No nearby watercourses to outfall to, therefore, full

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details Indicative Discharge Rate (L/S)	Consenting Body	Notes/Assumptions/Risks[23]
N-17-OHL					infiltration basin required. Infiltration may be deemed possible after infiltration test.
YYJ-TC-ATP N-18-OHL	0.270	279.5	1.0	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
YYJ-TC-ATP N-19-OHL	0.200	199.8	1.1	TCC	Infiltration of surface water considered unsuitable. Shallow groundwater not identified. Infiltration may be deemed possible after infiltration test.
YYJ-TC-INP N-20-OHL	1.060	1086.0	N/A	TCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
YYJ-TC-INP N-21-OHL	0.280	291.1	N/A	TCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
YYJ-TC-INP N-22-OHL	0.120	125.9	N/A	TCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
YYJ-TC-INP N-23-OHL	1.120	1143.8	N/A	TCC	No nearby watercourses to outfall to, therefore, full infiltration basin required. Infiltration may be deemed possible after infiltration test.
YYJ-TC-INP N-24-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INP N-25-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INP	-	-	-	TCC	Basin has been descoped from design due to layout

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details Indicative Discharge Rate (L/S)	Consenting Body	Notes/Assumptions/Risks[23]
N-26-OHL					changes.
YYJ-TC-INPN-1A-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INPN-2B-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INPN-2A-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-TC-INPN-2C-OHL	-	-	-	TCC	Basin has been descoped from design due to layout changes.
YYJ-PC-ATPN-1	1.657	1821.0	6.4	TCC	Assumptions: Outfall of all YYJ attenuation basins/ponds are to a watercourse to the east of YYJ-TC-ATPN-5. Total discharge rate in the permanent case is 6.4l/s (YYJ-PC-ATPN-1). Opportunities: Infiltration may be deemed possible after infiltration test. Pond sits on sand/gravel deposits
YYJ-TC-ATPN-2	3.524	3280.0	10.2	TCC	Assumptions: Outfall of all YYJ attenuation basins/ponds are to a watercourse to the east of YYJ-TC-ATPN-5. A bypass inflow pipe to YYJ-TC-ATPN-5 is provided. Opportunities: Infiltration may be deemed possible after infiltration test. Basin sits on sand/gravel deposits
YYJ-TC-ATP	1.994	1787.0	6.9	TCC	Assumptions:

Reference	Contributing Impermeable Area (HA)	Minimum Attenuation Volume (M3)	Outfall details		Notes/Assumptions/Risks[23]
			Indicative Discharge Rate (L/S)	Consenting Body	
N-3					Outfall of all YYJ attenuation basins/ponds are to a watercourse to the east of YYJ-TC-ATPN-5. A bypass inflow pipe to YYJ-TC-ATPN-5 is provided. Opportunities: Infiltration may be deemed possible after infiltration test. This may remove the need for discharge to watercourse on the other side of Holford Road. Basin sits on sand/gravel deposits
YYJ-PC-ATPN-4	-	-	-	TCC	Pond has been descoped from design due to layout changes.
YYJ-TC-ATPN-5	0.468	420.0	1.6	TCC	Assumptions: Outfall of all YYJ attenuation basins/ponds are to a watercourse to the east of YYJ-TC-ATPN-5. A bypass inflow pipe from YYJ-TC-ATPN-2 and YYJ-TC-ATPN-3 are proposed to YYJ-TC-ATPN-5. Opportunities: Infiltration may be deemed possible after infiltration test. This may remove the need for discharge to watercourse on the other side of Holford Road. Basin sits on sand/gravel deposits Groundwater table to be at least 1m below base of the basin.

Appendix B. Indicative Drainage Figures

Appendix B
Indicative Drainage Figures

B.1.1 Refer to **8.2.1 Drainage Strategy - Appendix B [~~Revision B~~REP6-097]**.

- These plans show the Order Limits and potential location for the works. Due to the need for future flexibility, National Grid will be applying for Limits of Deviation within its Development Consent Order, within which the drainage designs sits
- The details shown on this plan are indicative only, and are intended to demonstrate that there is suitable space within the Order Limits to accommodate suitable drainage infrastructure for the temporary works and permanent assets. Drainage collection systems are not shown on the plan, as these will be detailed at a later design stage and are assumed to be accommodated within the asset footprints shown on the plan
- These plans illustrate the indicative Project overland flow routes. These routes connect with the theoretical Environment Agency (EA) probable overland flow pathway dataset that is shown on this plan. As the dataset has been produced by a third party, the contents of the dataset shown are indicative only
- The EA probable overland flow pathways are a polyline vector dataset that describes the probable locations accumulation of water over the Earth's surface where it is assumed that there is no absorption of water through the soil. © Environment Agency copyright and/or database right 2023. All rights reserved
- Overland flow residual risks are negligible for the considered design events, with extreme exceedance events being considered at next stage. Where necessary, overland flow control structures will be considered further at detailed design. Locations where this may be required are noted on the drawings
- Indicative outfall locations for the overhead line attenuation features have not currently been illustrate, however discharge from these features would follow the hierarchy set out in Section 5.3. Outfall locations where required, would discharge to locations within the Order Limits
- For additional scheme detail, refer to **6.4.F1 Environmental Statement Figure 4.1 - Proposed Project Design [REP4-109]**. Refer also to the **Guide to the Plans [REP4-004]**, and the other plans located in the Volume 2 of the DCO application.

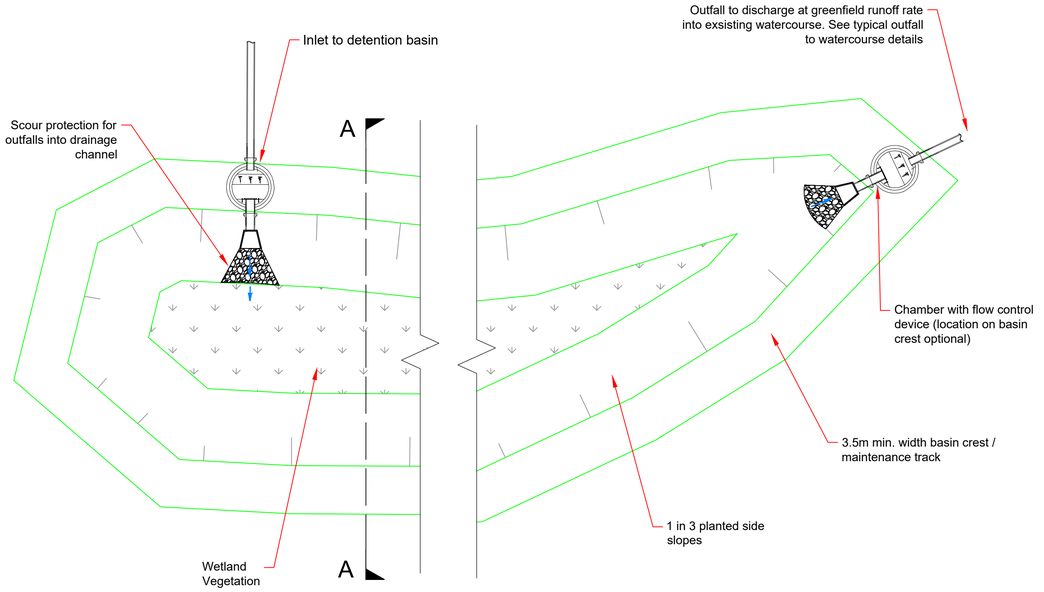
Appendix C. Illustrative Drainage Typical Details

Appendix C
Illustrative Drainage Typical Details

THE NATIONAL GRID
(NORWICH TO TILBURY) ORDER
TYPICAL DRAINAGE DETAILS
REGULATION 5(2)(o)
SHEET 1 OF 1

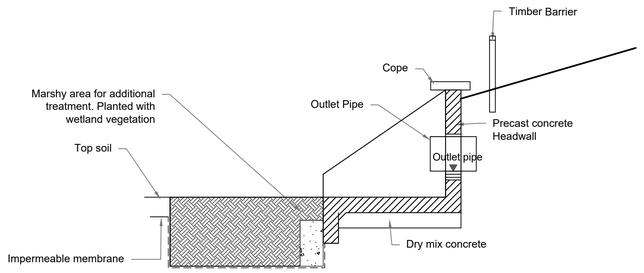
TYPICAL DETENTION BASIN PLAN

NTS



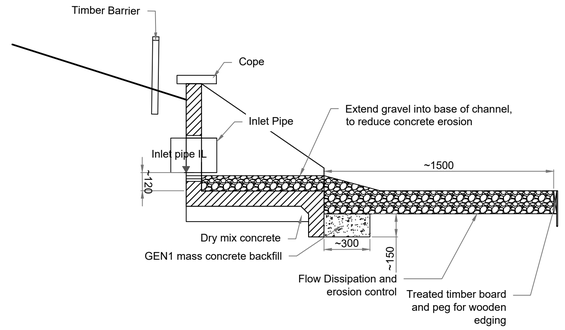
SECTION OF OUTLET HEADWALL FROM DETENTION BASIN

Scale 1:20



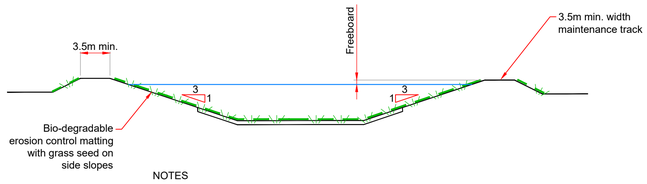
SECTION OF INLET HEADWALL INTO DETENTION BASIN

Scale 1:20



TYPICAL DETENTION BASIN SECTION (SECTION A-A)

NTS

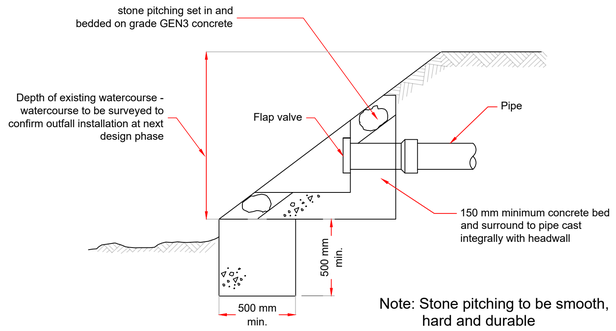


NOTES

1. Bio-degradable erosion control matting to be installed where required.
2. Profile of basin to have natural rounded transition between base, side slopes and adjacent ground.

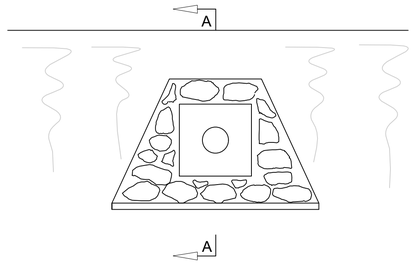
TYPICAL DETAIL OF OUTFALL TO ROAD DITCH

Scale 1:20



Note: Stone pitching to be smooth, hard and durable

SECTION A-A

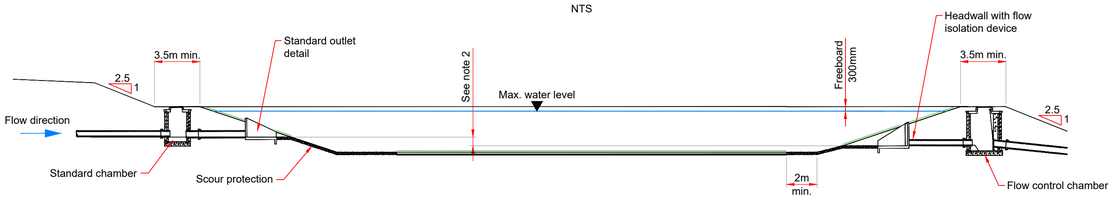


NTS

FRONT ELEVATION

TYPICAL DETENTION BASIN LONG SECTION

NTS

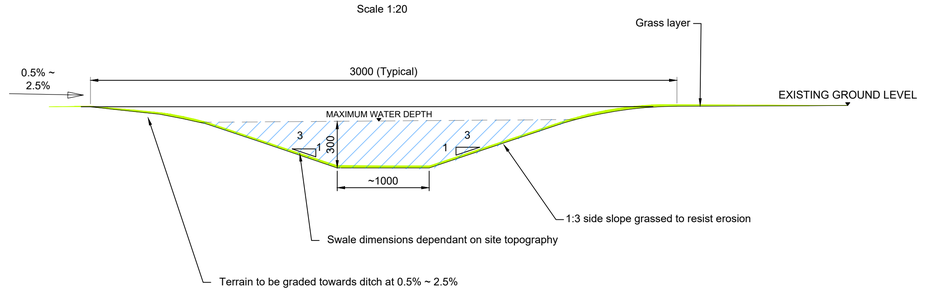


NOTES

1. Profile of basin to have natural rounded transition between base, side slopes and adjacent ground.
2. Difference between inlet and outlet levels should be sufficient to ensure that basin drains as intended (typically 0.5% along flow path).

TYPICAL DRAINAGE SWALE SECTION DETAIL

Scale 1:20



LEGEND

Illustrative as shown

Abbreviations:

- FFL - Finished Floor Level
- C.L. - Cover Level
- NTS - Not To Scale

Notes

1. These plans are illustrative and will sit within the Order Limits. Due to the need for future flexibility, National Grid will be applying for Order Limits and Limits of Deviation within its DCO, within which any final alignment would lie.
2. This drawing is scaled at paper size A1, therefore any prints taken at smaller sizes will affect accuracy of the measurement units and should not be scaled against.

0 0.2 0.4 0.6 0.8 1
METRES 1:20

Issue	Date	Remarks	Drawn	Checked	Approved
A	MAY-2026	For DCO Submission	TL	LS	JW

Title

THE NATIONAL GRID
(NORWICH TO TILBURY) ORDER
TYPICAL DRAINAGE DETAILS
REGULATION 5(2)(o)
SHEET 1 OF 1

nationalgrid

Application Number
EN020027

Drawing Reference
107850-MMD-DCOE-XX-DR-CE-0005

Scale	Sheet Size	Sheet	Issue
As shown	A1	SHEET 1 OF 1	A

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Embedded Graphics (Visio, ChemDraw, Images etc.)	0
Embedded Excel	0
Format changes	0
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