Land at Rayleigh Road, Thundersley

Utilities Appraisal Report

On behalf of

this Land™

A DEVELOPMENT BUSINESS

Project Ref: 332210105 | Rev: | Date: November 2022

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Document Control Sheet

Project Name: **Land at Rayleigh Road, Thundersley**

Project Ref: **332210105**

Report Title: **Utilities Appraisal Report**

Doc Ref:

Date: **November 2022**

	Name	Position	Signature	Date
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For and on behalf of Stantec UK Limited				

Revision	Date	Description	Prepared	Reviewed	Approved

Contents

Figures

No table of figures entries found.

Tables

Appendices

1 Introduction

1.1 The Brief

1.1.1 Stantec has been commissioned by This Land Development Limited ("The Client") to prepare a Utilities Appraisal Report in support of an outline planning application with all matters reserved except access, in relation to the proposed development known as Land at Rayleigh Road, Thundersley, Essex.

1.1.2 The proposed development site is located to the north of the town of Hadleigh and lies within the Castle Point District of Essex County Council. The site currently consists of greenfield (arable) land and is approximately 27.89ha with 13.62ha of developable area. The site is situated to the east of Rayleigh Road, north of Daws Heath Road and south of Stadium Way. There are retail units to the north, and residential areas to the west and south of the proposed development site. A copy of the Site Location Plan can be found in Appendix A.

1.1.3 The development of up to 455 new homes, a multi-use community hall, land for the provision of a healthcare facility, land for a stand-alone early years and childcare nursery, new vehicular/pedestrian access points from Stadium Way in the north and Daws Heath Road in the south, new greenways and green links, multi-functional open space, green infrastructure, surface water attenuation, landscaping, and associated infrastructure. All matters reserved except access. A copy of the Parameter Plan can be found in Appendix B.

1.2 The Study

1.2.1 This Utilities Appraisal will outline and assess the utility issues in relation to the proposed site and will identify the need for new utility infrastructure, potential upgrade/reinforcement works, or the need for further investigation/modelling.

2 Utility Providers

2.1 Introduction

2.1.1 This section provides an overview of the existing utility infrastructure within and adjacent to the site.

2.2 Statutory Undertakers Contact List

2.2.1 The following table identifies the Statutory Undertakers that have been approached for record drawings and summarises the reported presence of utility infrastructure in the vicinity of the site, along with the likely requirement for diversion or protection of any existing infrastructure.

Utility Medium	Statutory Undertaker	Existing Infrastructure On/Near Site	Potential Diversionary Works	Enquiry Date
Electricity	UK Power Networks	Yes	Yes	10/02/22
Gas	Cadent	Yes	Yes	10/02/22
Gas	GTC	No	No	10/02/22
Telecoms	Openreach	Yes	Yes	10/02/22
Telecoms	Vodafone	Yes	Yes	16/02/22
Telecoms	Virgin Media	Yes	Yes	24/02/22
Potable Water	Essex & Suffolk Water	Yes	Yes	14/02/22
Foul Drainage	Anglian Water Services	Yes	No	15/02/22

Table 2 1: Statutory Undertaker Contact List

2.2.2 An Existing Utility Infrastructure Constraints plan (Drawing No. RR-STN-EU-XX-DR-C-0001) has been prepared showing the extent of the existing utility infrastructure within and adjacent to the site, and is contained within Appendix C.

2.2.3 The information on utilities contained within this report has been derived from data provided by the main public utility companies. No information is provided in relation to "private" utility infrastructure that might be present on site.

2.2.4 The Statutory Undertakers that have services within or near to the proposed development are discussed within the following sections.

3 Electricity Infrastructure

UK Power Networks (UKPN)

3.1 Existing Electricity Infrastructure

3.1.1 Mapping obtained from UKPN shows 33kV cables and 11kV cables in Rayleigh Road which will be affected by the construction traffic access.

3.1.2 UKPN have advised their generic easements for the 33kV cable would be 5m centred on the cable i.e., 2.5m either side.

3.1.3 There are 33kV and 11kV cables along the north site boundary and within Stadium Way.

3.1.4 11kV cables and Low Voltage (LV) cables are present in Daws Heath Road and continue to the east and west.

3.1.5 33kV and 11kV cables are present on the west site boundary towards the south of the development site, connecting between Firfield Road and Asquith Avenue.

3.1.6 There are 8 local distribution sub stations locally, and the Hadleigh Primary substation is approximately 1.65km to the south.

3.1.7 The surrounding area is served by UKPN high voltage (HV) and LV infrastructure.

3.2 Diversionary Works

3.2.1 The 11kV underground cables located within the site will need to be diverted to accommodate the proposed masterplan.

3.2.2 The diversion will need to be in line with the proposed masterplan and the route agreed with UKPN. It is suggested that where possible the cables are located within the footpath of the proposed public highway.

3.2.3 UKPN confirm in their letter dated 11 June 2022, ref 8500212240, the 11kV cables within Rayleigh Road can be diverted for the new site access into the grass verge, in Asquith Avenue, the cables to be diverted around the footpath and back to Firfield Road and the cables within Daws Heath Road can be diverted within the footpath to accommodate the site access.

3.2.4 A diversion budget estimate from UKPN dated 25 July 2022 ref 8600025336 has been received for all diversion works required for the 2 x 33kV and 11kV infrastructure. This would require the cables to be diverted into the proposed development through the new carriageways within the masterplan layout.

3.3 Proposed Infrastructure

3.3.1 UKPN have also advised in their budget estimate dated 29 April 2022, ref 8500212239, that offsite reinforcement would need to be carried out to provide a supply of 4,742kVA to the new development. This would require extension of the existing switchboard with 2No. circuit breakers and new cabling to Hadleigh Primary Substation, which is 1.65km from the development site to the south.

3.3.2 5No x 1MVA ground mounted electricity substation will need to be established within the proposed development. The proposed substation footprint, excluding external access

provision, is 5m x 5m. In addition, 24-hour vehicle access will be required for access and maintenance purposes. The location and detail of the proposed electricity substation will need to be agreed with UKPN and form part of the reserved matters application at detailed design stage.

3.3.3 There should be a minimum 10m "stand-off" to any proposed residential dwellings due to potential noise disturbance from the substation enclosure.

3.3.4 In addition, low voltage cable feeds would emanate from the substation for supply purposes. The layout of this infrastructure is dependent on the final design of the proposed development.

4 Gas

Cadent

4.1 Existing Gas Infrastructure

4.1.1 No Cadent assets are recorded within the proposed site boundary.

4.1.2 There is a 12in Medium Pressure (MP) gas main in the east side of Rayleigh Road and a 180mm MP gas main in the south side of Daws Heath Road.

4.1.3 A 90mm Low Pressure (LP) gas main is present on the north side of Stadium Way. A 14in LP gas main is in the west side of Rayleigh Road and 90mm LP gas mains are present in the south side of Daws Heath Road.

4.2 Diversionary Works

4.2.1 Discussions are progressing with Cadent in respect of protection requirements for the 12in MP gas main in Rayleigh Road.

4.2.2 Cadent have advised it would be high risk to make any local diversion of the existing gas main due to the existing fragile construction material. To achieve a safe diversion of the gas main this would require 2km of new gas main, which would not be economically viable.

4.3 Proposed Infrastructure

4.3.1 No gas supply is required for the development site.

5 Telecommunication

Openreach

5.1 Existing Telecommunication Infrastructure

5.1.1 Openreach overhead lines provide supply to the existing depot within the site boundary, and these will need to be retained and diverted underground to continue supply.

5.1.2 Openreach asset records show underground cables within the east and west sides of Rayleigh Road, the north side of Stadium Way and north side of Daws Heath Road.

5.2 Diversionary Works

5.2.1 The existing telecoms supply to the depot building will need to be diverted and accommodated within the masterplan layout.

5.2.2 Diversion may be required for the cables present within Rayleigh Road and Daws Heath Road to accommodate the site accesses.

5.2.3 An indicative budget estimate from Openreach will need to be requested.

Vodafone

5.3 Existing Telecommunication Infrastructure

5.3.1 No Vodafone assets are recorded within the proposed site boundary.

5.3.2 Vodafone asset records show an underground cable along the east side of Rayleigh Road.

5.4 Diversionary Works

5.4.1 Diversion may be required for the cables to the east side of Rayleigh Road, however this will depend on the actual location of the cables and the chambers and may require diversion or protection depending on the construction traffic site access design.

5.4.2 We have requested an indicative budget estimate from Vodafone and the information is currently outstanding.

Virgin Media

5.5 Existing Telecommunication Infrastructure

5.5.1 No Virgin Media assets are recorded within the proposed site boundary.

5.5.2 Virgin Media asset records show an underground cable along the east side of Rayleigh Road.

5.6 Diversionary Works

5.6.1 Diversion may be required for the cables to the east side of Rayleigh Road, however, this will depend on the actual location of the cables and the chambers and may require diversion or protection depending on the construction traffic site access design.

5.6.2 We have requested an indicative budget estimate from Virgin Media and the information is currently outstanding.

5.7 Proposed Infrastructure

5.7.1 It is assumed the supply strategy is likely to be via a new connection to the telecommunications infrastructure from existing duct networks from either Rayleigh Road, Stadium Way or Daws Heath Road, at the proposed access locations with new infrastructure running through the development in line with the proposed masterplan.

5.7.2 A check of the availability and quality of BT Broadband within the area of the proposed development has been undertaken from bt.com, BT's Official Site. The estimated download average speed at present of up to 80Mbs for the Superfast Fibre broadband.

5.7.3 As of 2017, Openreach only provide fibre optic networks to new residential developments. Therefore, this development will benefit from fibre to the premise (FTTP) to all dwellings.

5.7.4 Openreach normally undertake to provide telephone and broadband services to all new developments free of charge with the end user ultimately paying for connection costs. All civils works will typically be undertaken by the developer using free issue Openreach ducts and Openreach specified duct boxes to Openreach confirmed design. Openreach will then pull cables through the newly installed ducts as and when required.

5.7.5 Openreach will make payments to the developer for the construction and installation of the Openreach network on new developments on a per unit basis. The payment amounts are agreed between Openreach and the House Builders Federation (HBF). Openreach will make payments for all sites of 11 or more plots, providing standards are met on completion, of £140 per house and £50 per flat. In addition, if the developer has opted to self-install the internal Openreach equipment (Connectorised fibre cable, Optical Network Termination (ONT) and the battery back-up (BBU)), and this has been commissioned by Openreach, then the developer can claim an extra £20 payment per plot.

5.8 TV and DAB Services

5.8.1 The proposed development site is predicted to receive a terrestrial TV signal from the Rouncefall transmitter. This area should receive 122 Freeview channels.

5.8.2 The above information has been sourced online from freeview.co.uk.

6 Potable Water

Essex and Suffolk Water (EWS)

6.1 Existing Potable Water Infrastructure

6.1.1 EWS record mapping indicates there are a 125mm diameter Poly Ethelyn (PE) water main on the west side and a 9in diameter Cast Iron (CI) water main on the east side of Rayleigh Road. A 6in diameter Asbestos Cement (AC) spur running along the footpath and into Asquith Gardens.

6.1.2 There is an EWS 6in diameter (AC) water main along the southern side of Stadium Way.

6.1.3 Within Daws Heath Road, a 12in diameter (CI) water main is present in the north side of the road and verge, and a 6in diameter Polyvinyl Chloride (PVC) water main runs along the south side, with a 3in diameter (AC) spur into Firfield Road.

6.2 Diversionary Works

6.2.1 EWS have advised in their letter ref WN023_0058_4.52 dated 23 May 2022, that the water mains within Stadium Way, Rayleigh Road and Daws Heath Road will require local diversions to accommodate the site accesses.

6.3 Proposed Infrastructure

6.3.1 EWS have confirmed in their pre-development report ref NS/RAYL/300754, dated 5 April 2022, that at the time of enquiry there is sufficient capacity within the local network to supply the site.

6.3.2 A preliminary POC is anticipated off the 6in diameter AC water main located within Stadium Way, with new water mains extended into the development site. EWS suggest an expected water pressure of between 34 meters and 38 meters head depending on the location within the site boundary, based on network modelling carried out in March 2022.

6.3.3 New mains infrastructure to serve the development will be requisitioned from EWS via Section 41 of the Water Industry Act.

6.4 Water Quality

6.4.1 The water supply in this area is classed as "very hard". A copy of EWS water quality parameters report can be found in Appendix D.

6.4.2 The above information has been sourced online from affinitywater.co.uk.

7 Foul Water

Anglian Water Services (AWS)

7.1 Existing Foul Sewer Network

7.1.1 AWS record mapping indicates there is a 6in diameter foul sewer in the east side of Rayleigh Road flowing to the north. There is also a 9in diameter surface water to the west of Rayleigh Road, within the site boundary.

7.1.2 There is a 225mm diameter foul sewer and a 375mm surface water sewer within Stadium Way flowing to the east.

7.1.3 There is a 6in diameter foul sewer in Daws Heath Road, flowing to the west.

7.2 Diversionary Works

7.2.1 AWS have advised in their email dated 13 June 2022, provided a minimum 1.2m 'depth of cover' to the existing sewers can be maintained then they do not envisage that a diversion or any additional protective measures would be required to enable the construction of the new site access.

7.2.2 However, if the 'depth of cover' to these sewers were to be reduced to less than 1.2m then AWS would expect a 175mm thick reinforced concrete protection slab to be cast 150mm above the established crown of the pipe and span the original trench by a minimum of 300mm on either side of the pipe.

7.2.3 Any existing public manholes would need to be adjusted to suit the finish surface level with the MH Cover/frames being replaced to comply with BS EN 124 D400 (150mm frame depth). Any works on the public sewerage system should be undertaken in accordance with the Sewerage Sector Guidance: Design & Construction Guide.

7.3 Proposed Infrastructure

7.3.1 AWS have confirmed in their Wastewater Pre-planning report ref PPE0117076, dated 29 March 2021, that at present there is available capacity within their existing foul water sewer network to support the development proposals, based on the following strategy.

- Phase 1 via a 150mm diameter sewer to Rayleigh Road MH ref 0300
- Phase 2 via 225mm diameter sewer to Stadium Way MH ref 3301
- Phase 3 via 150mm diameter sewer to Daws Heath Road MH ref 0800
- Phase 4 via 300mm diameter sewer to Stadium Way MH ref 7300
- Phase 5 via 300mm diameter sewer pumped to Stadium Way MH ref 7300
- Phase 6 via 150mm diameter sewer pumped to Daws Heath Road MH ref 6800.

7.3.2 The foul drainage from the proposed development is in the catchment of Rayleigh-East Water Recycling Centre, which does not currently have capacity to accept the additional flows. Anglian Water are obligated to accept the foul flows from the proposed development with the benefit of planning consent and would take the necessary steps to ensure there is sufficient treatment capacity should the planning authority grant planning permission.

7.3.3 When a connection is required, if there is no longer capacity withing the foul network to accommodate the additional flows, it will be the responsibility of AWS to upgrade the network. Under the connection's regulations now in force, the Sewerage Company is obliged to provide a point of connection for new developments at "the nearest reasonably practicable point" on its network where the parent sewer is the same diameter, or greater, than that of the connection from the development. Should the Company require the connection to be made elsewhere on its network, for capacity reasons, it will be responsible for any works required to provide that capacity downstream of "the nearest reasonably practicable point" of connection meeting the condition on respective pipe sizes. Any network reinforcement costs required shall be recovered by the Company through the infrastructure charges levied on new connections, and/or its own capital program allocation.

7.3.4 The surface water strategy summary is as follows.

- Phase 1 via manhole 0345 off Rayleigh Road at a rate of 1.7l/s
- Phase 2 via manhole 2351 in Stadium Way at a rate of 3.1l/s
- Phase 3 via manhole 0851 in Firfield Road at a rate of 1.4l/s
- Phases 4 to 6 to discharge via watercourse

7.3.5 The onsite drainage will be constructed under Section 104 agreement of the Water Industry Act 1991.

7.3.6 For detailed information in respect of the proposed development site drainage see the Stantec Drainage Strategy Report.

8 Conclusion

8.1 Summary

8.1.1 The following table summarises the results of the investigations undertaken by Stantec in respect of utility services and foul drainage and outlines the likely requirements in terms of diversions and or new infrastructure to support the development proposals.

Statutory Undertaker	Existing Utility Infrastructure		New Utility Infrastructure
	Onsite / Near Development	**Diversion Requirements**	**Requirements**
UK Power Networks	11kV underground cable to the west site boundary. 33kV, 11kV and LV cables present in Rayleigh Road, Stadium Way, and Daws Heath Road.	11kV underground cable to be accommodated within the masterplan. 33kV, 11kV and LV cables to be diverted or protected if affected by the site access.	2 new circuit breakers and 1.65 HV cabling from Hadleigh Primary Substation. 5No onsite ground mounted distribution substations will need to be established on site.
Cadent Gas	No infrastructure onsite. 12in MP and 14in LP gas mains in Rayleigh Road, 180mm MP and 90mm LP gas mains in Daws Heath Road, 90mm LP gas main in Stadium Way.	12in MP gas main to be protected as affected by the construction traffic site access on Rayleigh Road.	No gas connection required
Openreach	Telecoms cables in Rayleigh Road, Stadium Way, and Daws Heath Road.	Diversions may be required to accommodate site accesses.	Assumed connection to infrastructure along Rayleigh Road, Stadium Way, and Daws Heath Road at the location of the proposed access junction.
Vodafone	Telecoms cables in Rayleigh Road	Diversions may be required to accommodate construction traffic site access.	N/A
Virgin Media	Telecoms cables in Rayleigh Road	Diversions may be required to accommodate construction traffic site access.	N/A
Essex & Suffolk Water (Potable)	No infrastructure onsite. 125mm PE and 9in CI water main in Rayleigh Road, 6in AC water main in Stadium Way,	Diversions will be required to accommodate construction traffic site access.	Sufficient capacity within local network to serve the proposed development. Preliminary POC off

	12in CI and 6in PVC water mains in Daws Heath Road.	Diversions may be required to accommodate site accesses.	existing 6in water main in Stadium Way.
Anglian Water Services (Foul)	9in surface water sewer to east of Rayleigh Road inside site boundary. 6in foul sewer in Rayleigh Road, 225mm foul and 375mm surface water sewers in stadium Way, and 6in foul sewer in Daws Heath Road.	Diversions may be required to accommodate site accesses.	Phased approached to foul water connection to existing sewers in Rayleigh Road, Stadium Way and Daws Heath Road.

Table 8-1: Summary of Investigations

Appendix A Site Location Plan

Contractors and consultants are not to scale dimensions from this drawing

Red line shows extent of application site

Application site measures
27.89 hectares (68.92 acres)

N

Revision	Date	Description
--	YY-MM-DD	--

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Client
This Land

Project
Land East of Rayleigh Road
Thundersley

Description
Proposed
Extent of Site

Status
Preliminary

Scale	Drawn By	Date
1:2000@A1	MJ	Nov 22
Job Number	Drawing Number	Revision
34580	101	B

02.11.2022 Matthew Johnson U:\34580\Issued\221103 PPs\34580_101revB_extent of site.dwg

Appendix B Parameter Plan

Contractors and consultants are not to scale dimensions from this drawing

KEY

- Application site area - 27.89ha
- Developable area - 13.62ha (49% of site area)
  Including all buildings, streets, parking, private gardens, some play areas, hard and soft landscaping and other incidental open space
- Multi functional open space - (51% of site area)
  Multi functional open space is described in the Design and Access Statement and shown in greater detail on the Multi Functional Open Space Parameters Plan
- Medical centre - 0.31ha (indicative location)
- Community/sports hall - 0.29ha (indicative location)
- Early years centre - 0.13ha (indicative location)
- Indicative location of local centre building
- Vehicular access - main (indicative location)
- Vehicular access - private (indicative location)
- Main street (indicative)
- Bus only link (indicative)
- Private vehicular access to third party land
- SuDS (indicative extent)
- Retained ornamental lake

N

Revision	Date	Description
--	YY-MM-DD	--

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Client
This Land

Project
Land East of Rayleigh Road
Thundersley

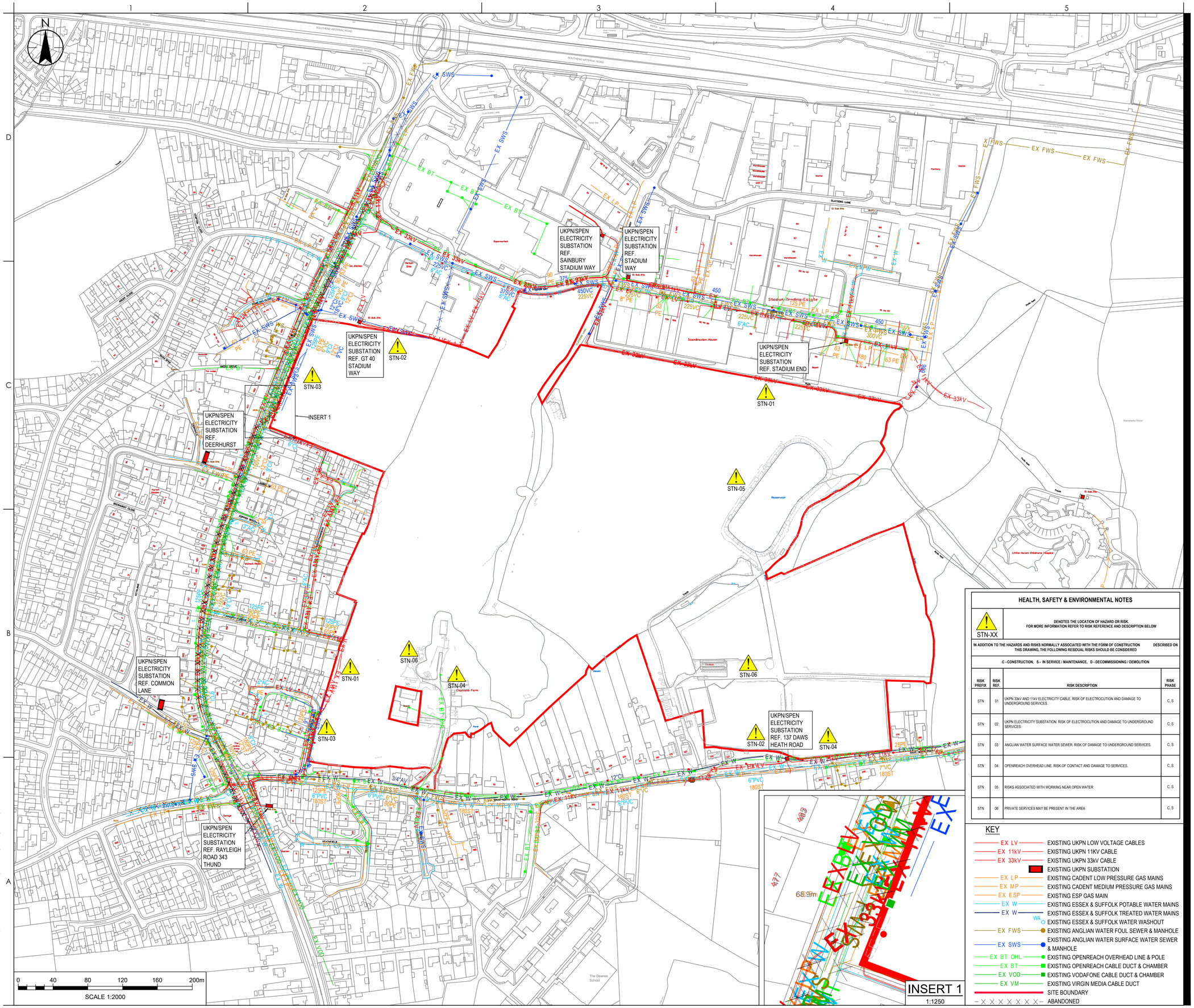
Description
Proposed Parameter Plan
Land Use and Vehicular Access

Status
Preliminary

Scale	Drawn By	Date
1:2000@A1	JW	Nov 22
Job Number	**Drawing Number**	**Revision**
34580	301	L

10.11.2022 Matthew Johnson U:\34580\Issued\221110 PPs\34580_301revL_PP Land use and vehicular access.dwg

Appendix C Existing Utility Infrastructure Constraints Plan



HEALTH, SAFETY & ENVIRONMENTAL NOTES

STN-XX — DENOTES THE LOCATION OF HAZARD OR RISK. FOR MORE INFORMATION REFER TO RISK REFERENCE AND DESCRIPTION BELOW

IN ADDITION TO THE HAZARDS AND RISKS NORMALLY ASSOCIATED WITH THE FORM OF CONSTRUCTION DESCRIBED ON THIS DRAWING, THE FOLLOWING RESIDUAL RISKS SHOULD BE CONSIDERED

C - CONSTRUCTION, S - IN SERVICE / MAINTENANCE, D - DECOMMISSIONING / DEMOLITION

RISK PREFIX	RISK REF.	RISK DESCRIPTION	RISK PHASE
STN	01	UKPN 33kV AND 11kV ELECTRICITY CABLE. RISK OF ELECTROCUTION AND DAMAGE TO UNDERGROUND SERVICES.	C, S
STN	02	UKPN ELECTRICITY SUBSTATION. RISK OF ELECTROCUTION AND DAMAGE TO UNDERGROUND SERVICES.	C, S
STN	03	ANGLIAN WATER SURFACE WATER SEWER. RISK OF DAMAGE TO UNDERGROUND SERVICES.	C, S
STN	04	OPENREACH OVERHEAD LINE. RISK OF CONTACT AND DAMAGE TO SERVICES.	C, S
STN	05	RISKS ASSOCIATED WITH WORKING NEAR OPEN WATER	C, S
STN	06	PRIVATE SERVICES MAY BE PRESENT IN THE AREA	C, S

KEY

- EX LV — EXISTING UKPN LOW VOLTAGE CABLES
- EX 11kV — EXISTING UKPN 11KV CABLE
- EX 33kV — EXISTING UKPN 33kV CABLE
- EXISTING UKPN SUBSTATION
- EX LP — EXISTING CADENT LOW PRESSURE GAS MAINS
- EX MP — EXISTING CADENT MEDIUM PRESSURE GAS MAINS
- EX ESP — EXISTING ESP GAS MAIN
- EX W — EXISTING ESSEX & SUFFOLK POTABLE WATER MAINS
- EX W — EXISTING ESSEX & SUFFOLK TREATED WATER MAINS
- WA — EXISTING ESSEX & SUFFOLK WATER WASHOUT
- EX FWS — EXISTING ANGLIAN WATER FOUL SEWER & MANHOLE
- EX SWS — EXISTING ANGLIAN WATER SURFACE WATER SEWER & MANHOLE
- EX BT OHL — EXISTING OPENREACH OVERHEAD LINE & POLE
- EX BT — EXISTING OPENREACH CABLE DUCT & CHAMBER
- EX VOD — EXISTING VODAFONE CABLE DUCT & CHAMBER
- EX VM — EXISTING VIRGIN MEDIA CABLE DUCT
- SITE BOUNDARY
- ABANDONED

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Notes

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

1. ABANDONED SERVICES MAY NOT BE SHOWN ON THIS PLAN.
2. TRUE POSITION OF THE SERVICES MAY BE DIFFERENT TO THAT SHOWN ON THIS PLAN, WHICH IS INTENDED FOR GENERAL GUIDANCE ONLY. NO GUARANTEE CAN BE GIVEN TO ITS ACCURACY AND IT SHOULD NOT BE RELIED UPON DURING MASTERPLANNING, INTRUSIVE INVESTIGATIONS, EXCAVATIONS AND CONSTRUCTION.
3. THESE SERVICES MAY NOT RUN IN A STRAIGHT LINE EITHER HORIZONTALLY OR VERTICALLY BECAUSE OF GROUND CONDITIONS, OBSTACLES AND OTHER REASONS.
4. BURIED SERVICES MAY EXIST AT VARIOUS DEPTHS AS GROUND LEVEL MAY HAVE BEEN ALTERED SINCE THE UTILITY APPARATUS WAS LAID.
5. UTILITY COMPANY ASSET RECORDS (ASSETS, LOCATION AND DETAILS) ARE VALID FOR UP TO 3 MONTHS. IF WORKS DO NOT COMMENCE WITHIN THIS TIME PERIOD, THE ASSET RECORDS WILL NEED TO BE REFRESHED BEFORE ANY WORKS COMMENCE ON OR NEAR THE SITE.

BEFORE EXCAVATING OR GROUND WORKS

6. ANY SITE INVESTIGATION OR GROUND PENETRATING ACTIVITY SHALL COMPLY WITH THE REQUIREMENTS OF HSE GUIDANCE DOCUMENT HSG() 47 "AVOIDING DANGER FROM UNDERGROUND SERVICES"
7. ALL UNDERGROUND SERVICES i.e. CABLES, PIPES, DUCTS SHOULD BE LOCATED USING THE FOLLOWING TECHNIQUES;
   a. REFERENCE TO DETAILED LARGER SCALE DRAWINGS AND CABLE ROUTE PROFILES. THESE WILL NEED TO BE REQUESTED FROM THE SERVICE PROVIDER AND REFERRED TO DURING THE DESIGN STAGE AND MADE AVAILABLE ON SITE TO SITE OPERATIVES PRIOR TO THE COMMENCEMENT OF ANY GROUNDWORKS.
   b. SUITABLE INSTRUMENTS i.e. GROUND PENETRATING RADAR, CABLE LOCATING DEVICES WILL NEED TO BE USED TO DETERMINE THE LOCATION AND PRESENCE OF UNDERGROUND SERVICES/OBSTRUCTIONS BEFORE EXCAVATION WORKS PROCEED.
   c. SAFE DIGGING TECHNIQUES (HAND EXCAVATION) AS DETAILED IN HS(G) 47 WILL BE NECESSARY TO DETERMINE THE EXACT POSITION OF BURIED SERVICES AND OBSTRUCTIONS BEFORE WORK CAN PROCEED.
   d. ALL APPARATUS FOUND SHOULD BE CROSS REFERENCED WITH THE DETAILED RECORD PLANS. ANY ABNORMALITIES SHOULD BE REPORTED TO THE PROJECT MANAGER.
7. INFORMATION CONCERNING THE POSITION OF EXISTING UTILITY INFRASTRUCTURE HAS BEEN EXTRACTED FROM RECORD MAPPING OBTAINED FROM THE FOLLOWING STATUTORY UNDERTAKERS:

STATUTORY UNDERTAKER	MAPPING RECEIVED
UKPN	10/02/2022
ANGLIAN WATER	10/02/2022
ESSEX & SUFFOLK WATER	10/03/2022
ESP	10/02/2022
CADENT	10/02/2022
VODAFONE	10/02/2022
OPENREACH BT	10/02/2022

	By	Appd	
P01 - Issued/Revision	JL	-	2022.03.11 YYYY.MM.DD
	Dwn.	Dsgn.	Chkd.
	JL	JL	- 2022.03.11 YYYY.MM.DD

Issue Status

FOR INFORMATION

This document is suitable only for the purpose noted above.
Use of this document for any other purpose is not permitted.

Client/Project Logo

this Land. A DEVELOPMENT BUSINESS

Client/Project

HADLEIGH SITE CASTLE POINT

THIS LAND DEVELOPMENT LIMITED

Title

EXISTING UTILITIES CONSTRAINTS PLAN

Project No.	Scale
332210105	1:2000
Revision	Drawing No.
P01	RR-STN-EU-XX-DR-C-0001

Plotted: 25/12/2022 13:29:31 PM By: carlos.zacchon
DOCS4LS_64BIT - ACAD - \\Data\Projects\Projects\332210105\Land east of rayleigh road hadleigh\3_design\cad\dwg\rr-sth-eu-xx-dr-c-0001

Appendix D Water Hardness

Water quality information

Water quality
Very hard

Calcium Carbonate
300.0000

Degrees Clarke
20.6880

French Degrees
30.0000

German Degrees
17.0400

More about water hardness

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More about water quality